CALIFORNIA
RESOURCES CORPORATION

June 16, 2016

Ronald E. Holcomb
Senior Engineering Geologist
Central Valley Regional Water Quality Control Board
1685 E Street
Fresno, California 93706

Re: Technical Report – Reclaimed Water for Beneficial Use by Water Districts

Dear Mr. Holcomb,

California Resources Production Corporation (CRPC) received a Section 13267 technical report request (Letter) from the Central Valley Regional Water Quality Control Board (Board) on May 9, 2016. The Letter requests that CRPC provide information regarding the production of treated, reclaimed produced water (reclaimed water) from oil and gas operations in the Kern Front Oil Field (Kern Front) and the northern portion of the Mount Poso Oil Field (North Mount Poso) located in Kern County, California. CRPC's reclaimed water is permitted and provided for beneficial use to the Cawelo Water District (Cawelo) and the North Kern Water Storage District (North Kern) under the following approved waste discharge requirements (WDRs):

- Cawelo
  - WDR Order No. R5-2006-0050 – operated by CRPC or prior operator SOC Resources Inc. for reclaimed water from their North Mount Poso production operations; and
  - WDR Order No. R5-2012-0059 – operated by Valley Water Management Company (VWMC) and Cawelo, which receive reclaimed water from CRPC's Kern Front production operations.

- North Kern
  - WDR Order No. R5-2015-0127 – operated by CRPC and North Kern for reclaimed water from Kern Front production operations.

Enclosed are summary tables identifying products used at Kern Front and North Mount Poso between January 1, 2014 and April 30, 2016 in petroleum production, treatment and transportation processes that generate reclaimed water that is supplied to water districts for beneficial use. The summary tables are categorized in the following order: (1) CRPC's reclaimed water volumes supplied to water districts, (2) products used at CRPC's Kern Front and North Mount Poso water production, treatment and conveyance facilities, (3) drilling products, and (4) products used during other operations such as completions, workovers and well testing. As requested in the Letter, the summary tables identify the product name as listed on the Safety Data Sheet (SDS), the product's primary purpose, the activity the product is used for/in, the frequency of use, and the total volume/amount of the product used during each quarter from

January 1, 2014 through April 30, 2016 based on CRPC's available records. An SDS is also enclosed for each product in the summary tables. Information regarding the summary tables is provided below.

Reclaimed Water Volumes Supplied to Water Districts

CRPC's total reclaimed water volume provided to the water districts for beneficial use from January 1, 2014 through April 30, 2016 is:

- Cawelo
    - From North Mount Poso (R5-2006-0050): 10,302,686 barrels (bbls); refer to Table 1, Attachment A.
        - SOC Resources Inc operated the WDR from January 1, 2014 through July 2014. CRPC acquired North Mount Poso in July 2014 and has managed the WDR since then.
    - From Kern Front (R5-2012-0059): 97,570,194 bbls; refer to Table 2, Attachment A.
        - CRPC conveys reclaimed water to VWMC, which then consolidates and delivers reclaimed water to Cawelo. Reclaimed water is currently being provided to VWMC.

- North Kern
    - From Kern Front (R5-2015-0127): 36,143,641 bbls; refer to Table 3, Attachment A.
        - Reclaimed water is currently being provided to North Kern.

Products Used in Water Production, Treatment and Conveyance Facilities at Kern Front and North Mount Poso

CRPC's Kern Front treatment facilities (located in Sections 11, 22, and 23, Township 28 South, Range 27 East) and North Mount Poso treatment facility (located in Section 28, Township 26 South, Range 28 East) are where the oil, natural gas and water produced from Kern Front and North Mount Poso are physically separated. Attachment B provides the products applied (i) to production or injection wells, (ii) at the water treatment facilities, or (iii) in associated piping that conveys production fluids from production wells to water treatment facilities, steam to injection wells, or reclaimed water to water districts for beneficial use.

Drilling Products

The products used during the drilling of new wells and/or redrilling of existing wells at Kern Front are provided in Attachment C. No drilling occurred at North Mount Poso between January 1, 2014 and April 30, 2016, and no drilling has occurred at Kern Front in 2016.

Products Used in Completions, Workovers and Well Testing

CRPC's products used during completions and workovers at Kern Front and North Mount Poso to initiate and maintain oil and gas production, and products used to perform testing of injection wells required by California's Division of Oil, Gas & Geothermal Resources, are provided in Attachment D. No completions or workovers occurred at North Mount Poso between January 1, 2014 and April 30, 2016 and no completions have occurred at Kern Front in 2016.

Safety Data Sheets for products identified in the summary tables are provided in Attachment E, as well as the SDS for CRPC's reclaimed water supplied to the local water districts noted above.

Certification Statement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties of submitting false information, including the possibility of fine or imprisonment for knowing violations.

Please contact me at (661) 529-4382 if you would like to discuss the enclosed information.

Sincerely,

Richard F. Garcia
Projects Lead

Enclosures: Summary Tables
Safety Data Sheets

ATTACHMENT A

Reclaimed Water Volumes Supplied to Water Districts

Table 1 - North Mt. Poso Reclaimed Water Volume to Cawelo Water District

WDR Order #R5-2006-0050

Year/Qtr.	Barrels	Acre Feet	Operated By:
1st Qtr. 2014	2,356,903	304	SOC ↓
2nd Qtr. 2014	2,518,810	325	
3rd Qtr. 2014	875,400	113	CRPC
4th Qtr. 2014	0	0	
Total 2014	**5,751,113**	**742**	
1st Qtr. 2015	0	0	
2nd Qtr. 2015	1,591,304	205	
3rd Qtr. 2015	1,784,848	230	
4th Qtr. 2015	1,072,430	138	
Total 2015	**4,448,582**	**573**	
1st Qtr. 2016	107,608	14	
Apr-2016	0	0	
Total 2016	**107,608**	**14**	
Grand Total	**10,307,303**	**1,329**	

Table 2 - Kern Front Reclaimed Water Volume to Valley Water/Cawelo

WDR Order #R5-2012-0059

Year/Qtr.	Barrels	Acre Feet	Operated By:
1st Qtr. 2014	12,265,617	1,581	Valley Water Management Company
2nd Qtr. 2014	11,898,698	1,534	
3rd Qtr. 2014	12,754,863	1,644	
4th Qtr. 2014	11,623,691	1,498	
Total 2014	**48,542,869**	**6,257**	
1st Qtr. 2015	11,852,633	1,528	
2nd Qtr. 2015	12,191,657	1,572	
3rd Qtr. 2015	10,607,233	1,367	
4th Qtr. 2015	6,563,895	846	
Total 2015	**41,215,418**	**5,313**	
1st Qtr. 2016	6,788,848	875	
Apr-2016	1,023,059	132	
Total 2016	**7,811,907**	**1,007**	
Grand Total	**97,570,194**	**12,577**	

Table 3 - KF Reclaimed Water Volume to North Kern Water Storage District

WDR Order #R5-2015-0127

Year/Qtr.	Barrels	Acre Feet	Operated By:
3rd Qtr. 2015	3,755,919	484	CRPC
4th Qtr. 2015	13,762,995	1,774	
Total 2015	**17,518,914**	**2,258**	
1st Qtr. 2016	11,182,939	1,442	
Apr-2016	7,441,788	959	
Total 2016	**18,624,727**	**2,401**	
Grand Total	**36,143,641**	**4,659**	

ATTACHMENT B

Products Used in Production, Water Treatment, and Conveyance Facilities Products

Quarter 1 – 2014 North Mt. Poso Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons)
MC WC-7820*	Water Clarifier	Treatment of fluid tanks	Daily	68
MC WC-7835*	Reverse Demulsifier	Treatment of production transfer lines	Daily	426

*Products used by SOC Resources Inc. prior to CRPC's operation.

Quarter 2 – 2014 North Mt. Poso Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons)
MC WC-7820*	Water Clarifier	Treatment of fluid tanks	Daily	68
MC WC-7835*	Reverse Demulsifier	Treatment of production transfer lines	Daily	430

*Products used by SOC Resources Inc. prior to CRPC's operation.

Quarter 3 – 2014 North Mt. Poso Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons)
CRW9070 CORROSION INHIBITOR	Corrosion Inhibitor	Treatment for transfer lines and wells	Daily	60
TRETOLITE RBW264X WATER CLARIFIER	Reverse Breaker	Treatment for production headers and flowlines from wells	Daily	220
MC WC-7820*	Water Clarifier	Treatment of fluid tanks	Daily	23
MC WC-1835*	Reverse Demulsifier	Treatment of production transfer lines	Daily	147

*Products used by SOC Resources Inc. prior to CRPC's operation.

Quarter 4 – 2014 North Mt. Poso Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons)
CRW9070 CORROSION INHIBITOR	Corrosion Inhibitor	Treatment for transfer lines and wells	Daily	172
BDMO7065-00	Demulsifier	Treatment for flowlines from wells	Daily	22
TRETOLITE RBW264X WATER CLARIFIER	Reverse Breaker	Treatment for production headers and flowlines from wells	Daily	517
TRETOLITE RBW507 WATER CLARIFIER	Water Clarifier	Treatment at water facility to improve efficiency of water clarification process	Daily	110

Quarter 1 – 2015 North Mt. Poso Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons)
CRW9070 CORROSION INHIBITOR	Corrosion Inhibitor	Treatment for transfer lines and wells	Daily	176
BDMO7065-00	Demulsifier	Treatment for flowlines from wells	Daily	6
TRETOLITE RBW264X WATER CLARIFIER	Reverse Breaker	Treatment for production headers and flowlines from wells	Daily	552
TRETOLITE RBW517 WATER CLARIFIER	Water Clarifier	Treatment at water facility to improve efficiency of water clarification process	Daily	88

Quarter 2 – 2015 North Mt. Poso Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons)
CRW9070 CORROSION INHIBITOR	Corrosion Inhibitor	Treatment for transfer lines and wells	Daily	31
TRETOLITE RBW264X WATER CLARIFIER	Reverse Breaker	Treatment for production headers and flowlines from wells	Daily	502
TRETOLITE RBW517 WATER CLARIFIER	Water Clarifier	Treatment at water facility to improve efficiency of water clarification process	Daily	89

Quarter 3 – 2015 North Mt. Poso Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons)
TRETOLITE RBW264X WATER CLARIFIER	Reverse Breaker	Treatment for production headers and flowlines from wells	Daily	289
TRETOLITE RBW517 WATER CLARIFIER	Water Clarifier	Treatment at water facility to improve efficiency of water clarification process	Daily	67

Quarter 4 – 2015 North Mt. Poso Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons)
TRETOLITE RBW264X WATER CLARIFIER	Reverse Breaker	Treatment for production headers and flowlines from wells	Daily	101
TRETOLITE RBW517 WATER CLARIFIER	Water Clarifier	Treatment at water facility to improve efficiency of water clarification process	Daily	62

Quarter 1 – 2016 North Mt. Poso Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons)
TRETOLITE RBW264X WATER CLARIFIER	Reverse Breaker	Treatment for production headers and flowlines from wells	Daily	5
TRETOLITE RBW517 WATER CLARIFIER	Water Clarifier	Treatment at water facility to improve efficiency of water clarification process	Daily	5

Quarter 1 – 2014 Kern Front Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
DFO3009 DEFOAMER	De-Foamer	Treatment for production transfer lines	Daily	767
TRETOLITE DMO7040 DEMULSIFIER	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	1256
TRETOLITE DMO761G DEMULSIFIER	Demulsifier	Treatment for production transfer lines	Daily	606
TRETOLITE DMO8026U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	1055
TRETOLITE DMO8298U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	65
TRETOLITE RBW118X REVERSE DEMULSIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	986
TRETOLITE RBW213 WATER CLARIFIER	Reverse Breaker	Treatment for produced fluid vessel	Daily	25
TRETOLITE RBW255 WATER CLARIFIER	Water Clarifier	Treatment for production transfer lines	Daily	95
TRETOLITE RBW264X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	4286
TRETOLITE RBW301X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	2295
TRETOLITE RBW503X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	331
TRETOLITE RBW507 WATER CLARIFIER	Water Clarifier	Treatment at water facility to improve efficiency of water clarification process	Daily	4003
TRETOLITE RBW517 WATER CLARIFIER	Water Clarifier	Treatment for production transfer lines	Daily	25
TRETOLITE RBW520 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	175
TRETOLITE RBW6006X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	1171
TRETOLITE RBW611 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	610
TRETOLITE RBW6508X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	75
RE30472DMO DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	360
RE8869DMO	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	3058

Quarter 2 – 2014 Kern Front Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Treatment for transfer lines of soft water	Daily	22
DFO3009 DEFOAMER	De-Foamer	Treatment for production transfer lines	Daily	913
TRETOLITE DMO7040 DEMULSIFIER	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	1283
TRETOLITE DMO761G DEMULSIFIER	Demulsifier	Treatment for production transfer lines	Daily	629
TRETOLITE DMO8026U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	1460
TRETOLITE DMO8298U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	100
TRETOLITE RBW118X REVERSE DEMULSIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	878
TRETOLITE RBW264X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	5161
TRETOLITE RBW301X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	2455
TRETOLITE RBW503X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	382
TRETOLITE RBW507 WATER CLARIFIER	Water Clarifier	Treatment at water facility to improve efficiency of water clarification process	Daily	3797
TRETOLITE RBW520 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	234
TRETOLITE RBW6006X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	1462
TRETOLITE RBW611 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	830
TRETOLITE RBW6508X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	99
RE30472DMO DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	905
RE8869DMO	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	5278
MAGNACIDE B MICROBIOCIDE	Biocide	Treatment for produced fluids tank and water disposal transfer lines	As Needed	370 (lbs)
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Downhole for reliability	Daily	85

Quarter 3 – 2014 Kern Front Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Treatment for transfer lines of soft water	Daily	99
DFO3009 DEFOAMER	De-Foamer	Treatment for production transfer lines	Daily	770
TRETOLITE DMO7040 DEMULSIFIER	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	1354
TRETOLITE DMO761G DEMULSIFIER	Demulsifier	Treatment for production transfer lines	Daily	825
TRETOLITE DMO8026U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	600
TRETOLITE DMO8298U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	160
TRETOLITE RBW118X REVERSE DEMULSIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	734
TRETOLITE RBW264X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	5244
TRETOLITE RBW301X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	2454
TRETOLITE RBW503X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	226
TRETOLITE RBW507 WATER CLARIFIER	Water Clarifier	Treatment at water facility to improve efficiency of water clarification process	Daily	3900
TRETOLITE RBW520 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	288
TRETOLITE RBW6006X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	1398
TRETOLITE RBW611 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	960
TRETOLITE RBW6508X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	95
RE30472DMO DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	180
RE8869DMO	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	3423
MAGNACIDE B MICROBIOCIDE	Biocide	Treatment for produced fluids tank and water disposal transfer lines	As Needed	740 (lbs)
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Downhole for reliability	Daily	511

Quarter 4 – 2014 Kern Front Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Treatment for transfer lines of soft water	Daily	102
DFO3009 DEFOAMER	De-Foamer	Treatment for production transfer lines	Daily	837
TRETOLITE DMO7040 DEMULSIFIER	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	1210
TRETOLITE DMO761G DEMULSIFIER	Demulsifier	Treatment for production transfer lines	Daily	677
TRETOLITE DMO8026U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	613
TRETOLITE DMO8298U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	125
TRETOLITE RBW118X REVERSE DEMULSIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	835
TRETOLITE RBW213 WATER CLARIFIER	Reverse Breaker	Treatment for produced fluid vessel	Daily	473
TRETOLITE RBW264X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	5680
TRETOLITE RBW301X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	1899
TRETOLITE RBW503X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	309
TRETOLITE RBW507 WATER CLARIFIER	Water Clarifier	Treatment at water facility to improve efficiency of water clarification process	Daily	4510
TRETOLITE RBW520 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	251
TRETOLITE RBW6006X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	1456
TRETOLITE RBW611 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	888
TRETOLITE RBW6508X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	68
RE30472DMO DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	As Needed	67
RE8869DMO	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	3234
MAGNACIDE B MICROBIOCIDE	Biocide	Treatment for produced fluid tank and water disposal transfer lines	As Needed	370 (lbs)
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Downhole for reliability	Daily	462

Quarter 1 – 2015 Kern Front Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Treatment for transfer lines of soft water	Daily	79
DFO3009 DEFOAMER	De-Foamer	Treatment for production transfer lines	Daily	755
TRETOLITE DMO7040 DEMULSIFIER	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	1305
TRETOLITE DMO761G DEMULSIFIER	Demulsifier	Treatment for production transfer lines	Daily	1088
TRETOLITE DMO8026U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	609
TRETOLITE DMO8298U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	91
TRETOLITE RBW118X REVERSE DEMULSIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	687
TRETOLITE RBW213 WATER CLARIFIER	Reverse Breaker	Treatment for produced fluid vessel	Daily	429
TRETOLITE RBW264X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	6559
TRETOLITE RBW301X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	2354
TRETOLITE RBW503X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	350
TRETOLITE RBW507 WATER CLARIFIER	Water Clarifier	Treatment at water facility to improve efficiency of water clarification process	Daily	3619
TRETOLITE RBW520 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	219
TRETOLITE RBW6006X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	1270
TRETOLITE RBW611 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	973
TRETOLITE RBW6508X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	87
RE30472DMO DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	As Needed	24
RE8869DMO	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	3139
MAGNACIDE B MICROBIOCIDE	Biocide	Treatment for produced fluid tank and water disposal transfer lines	As Needed	370 (lbs)
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Downhole for reliability	Daily	491

Quarter 2 – 2015 Kern Front Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Treatment for transfer lines of soft water	Daily	59
DFO3009 DEFOAMER	De-Foamer	Treatment for production transfer lines	Daily	795
TRETOLITE DMO7040 DEMULSIFIER	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	1262
TRETOLITE DMO761G DEMULSIFIER	Demulsifier	Treatment for production transfer lines	Daily	1259
TRETOLITE DMO8026U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	424
TRETOLITE DMO8298U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	94
TRETOLITE RBW118X REVERSE DEMULSIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	739
TRETOLITE RBW213 WATER CLARIFIER	Reverse Breaker	Treatment for produced fluid vessel	Daily	338
TRETOLITE RBW264X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	6544
TRETOLITE RBW301X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	2670
TRETOLITE RBW503X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	339
TRETOLITE RBW507 WATER CLARIFIER	Water Clarifier	Treatment at water facility to improve efficiency of water clarification process	Daily	3636
TRETOLITE RBW520 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	233
TRETOLITE RBW6006X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	1446
TRETOLITE RBW611 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	957
TRETOLITE RBW6508X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	79
RE30472DMO DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	As Needed	55
RE8869DMO	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	2989
MAGNACIDE B MICROBIOCIDE	Biocide	Treatment for produced fluid tank and water disposal transfer lines	As Needed	330 (lbs)
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Downhole for reliability	Daily	582

Quarter 3 – 2015 Kern Front Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Treatment for transfer lines of soft water	Daily	196
DFO3009 DEFOAMER	De-Foamer	Treatment for production transfer lines	Daily	856
TRETOLITE DMO7040 DEMULSIFIER	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	1173
TRETOLITE DMO761G DEMULSIFIER	Demulsifier	Treatment for production transfer lines	Daily	1364
TRETOLITE DMO8026U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	329
TRETOLITE DMO8298U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	106
TRETOLITE RBW118X REVERSE DEMULSIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	740
TRETOLITE RBW264X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	7116
TRETOLITE RBW301X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	2646
TRETOLITE RBW503X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	303
TRETOLITE RBW507 WATER CLARIFIER	Water Clarifier	Treatment at water facility to improve efficiency of water clarification process	Daily	3676
TRETOLITE RBW520 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	226
TRETOLITE RBW6006X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	1548
TRETOLITE RBW611 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	934
TRETOLITE RBW6508X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	85
RE30472DMO DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	As Needed	145
RE8869DMO	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	3319
MAGNACIDE B MICROBIOCIDE	Biocide	Treatment for produced fluid tank and water disposal transfer lines	As Needed	370 (lbs)
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Downhole for reliability	Daily	522

Quarter 4 – 2015 Kern Front Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Treatment for transfer lines of soft water	Daily	1750
DFO3009 DEFOAMER	De-Foamer	Treatment for production transfer lines	Daily	688
TRETOLITE DMO7040 DEMULSIFIER	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	1121
TRETOLITE DMO761G DEMULSIFIER	Demulsifier	Treatment for production transfer lines	Daily	1214
TRETOLITE DMO8026U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	359
TRETOLITE DMO8298U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	48
MONOETHANOLAMINE 99%	Demulsifier	Treatment for produced fluid tanks	As Needed	70
TRETOLITE RBW118X REVERSE DEMULSIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	818
TRETOLITE RBW264X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	9870
TRETOLITE RBW301X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	2526
TRETOLITE RBW503X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	308
TRETOLITE RBW507 WATER CLARIFIER	Water Clarifier	Treatment at water facility to improve efficiency of water clarification process	Daily	3599
TRETOLITE RBW520 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	191
TRETOLITE RBW6006X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	1442
TRETOLITE RBW611 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	917
TRETOLITE RBW6508X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	77
RE30472DMO DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	As Needed	167
RE8869DMO	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	3379
MAGNACIDE B MICROBIOCIDE	Biocide	Treatment for produced fluid tank and water disposal transfer lines	As Needed	370 (lbs)
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Downhole for reliability	Daily	470

Quarter 1 – 2016 Kern Front Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Treatment for transfer lines of soft water	Daily	1676
DFO3009 DEFOAMER	De-Foamer	Treatment for production transfer lines	Daily	390
TRETOLITE DMO7040 DEMULSIFIER	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	1201
TRETOLITE DMO761G DEMULSIFIER	Demulsifier	Treatment for production transfer lines	Daily	1306
TRETOLITE DMO8026U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	228
TRETOLITE DMO8298U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	11
MONOETHANOLAMINE 99%	Demulsifier	Treatment for produced fluid tanks	As Needed	66
TRETOLITE RBW118X REVERSE DEMULSIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	800
TRETOLITE RBW264X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	10237
TRETOLITE RBW301X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	2542
TRETOLITE RBW503X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	317
TRETOLITE RBW507 WATER CLARIFIER	Water Clarifier	Treatment at water facility to improve efficiency of water clarification process	Daily	3068
TRETOLITE RBW520 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	190
TRETOLITE RBW6006X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	1503
TRETOLITE RBW611 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	1000
TRETOLITE RBW6508X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	101
RE30472DMO DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	As Needed	69
RE8869DMO	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	2947
WAW4000 WETTING AGENT	Wetting Agent	Treatment for produced fluid tank and water facility	As Needed	56
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Downhole for reliability	Daily	458
WCW3003 COMBINATION INHIBITOR	Scale/Corrosion Inhibitor	Downhole for reliability	As Needed	63

Quarter 2 – 2016 Kern Front Water Production, Treatment, and Conveyance Facilities Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Treatment for transfer lines of soft water	Daily	467
DFO3009 DEFOAMER	De-Foamer	Treatment for production transfer lines	Daily	124
TRETOLITE DMO7040 DEMULSIFIER	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	413
TRETOLITE DMO761G DEMULSIFIER	Demulsifier	Treatment for production transfer lines	Daily	336
TRETOLITE DMO8026U DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	Daily	66
MONOETHANOLAMINE 99%	Demulsifier	Treatment for produced fluid tanks	As Needed	33
TRETOLITE RBW118X REVERSE DEMULSIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	255
TRETOLITE RBW264X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	3399
TRETOLITE RBW301X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	850
TRETOLITE RBW503X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	155
TRETOLITE RBW507 WATER CLARIFIER	Water Clarifier	Treatment at water facility to improve efficiency of water clarification process	Daily	1123
TRETOLITE RBW520 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	82
TRETOLITE RBW6006X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	476
TRETOLITE RBW611 WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	284
TRETOLITE RBW6508X WATER CLARIFIER	Reverse Breaker	Treatment for production transfer lines	Daily	37
RE30472DMO DEMULSIFIER	Demulsifier	Treatment for produced fluid tanks	As Needed	2
RE8869DMO	Demulsifier	Treatment for production transfer lines and produced fluid tank	Daily	710
WAW4000 WETTING AGENT	Wetting Agent	Treatment for produced fluid tank and water facility	As Needed	160
CRW9058A CORROSION INHIBITOR	Corrosion Inhibitor	Downhole for reliability	Daily	195
WCW3003 COMBINATION INHIBITOR	Scale/Corrosion Inhibitor	Downhole for reliability	As Needed	54
SURFATRON DQ88	Surfactant	Downhole for production purposes	As Needed	70
EC6746A	Mineral Acid	Downhole for production purposes	As Needed	440
NALCO EC6818A	Oxydizer	Downhole for production purposes	As Needed	140
FLOTRON M-154	Asphaltene Dispersant	Downhole for production purposes	As Needed	930
R-2005 (XYLENE)	Solvent	Downhole for production purposes	As Needed	110

ATTACHMENT C

Drilling Products

Quarter 1 – 2014 Kern Front Drilling Products – 65 wells drilled/re-drilled in Q1

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
Amberguard 215	Preservative	Drilling Fluid Additive	As Needed	10
Amber D.M.S. 30	Drilling detergent to prevent balling	Drilling Fluid Additive	As Needed	585
Amber Defoamer 7	Liquid Defoamer	Drilling Fluid Additive	As Needed	65
Benex	Bentonite extender	Drilling Fluid Additive	As Needed	186 (lbs)
Chlorine Bleach / Sodium Hypochlorite	Polymer oxidizer	Post Well Fluid Conditioning	As Needed	70
Cottonseed Hulls	Lost Circulation Material	Drilling Fluid Additive	As Needed	250 (lbs)
Defoam X	Liquid Defoamer	Drilling Fluid Additive	As Needed	10
DMA / Alcomer 507	Filtrate reduction, rheology stabilizer	Drilling Fluid Additive	As Needed	17,050 (lbs)
LP-701	Encapsulating and viscosifying polymer	Drilling Fluid Additive	As Needed	145
Drilzone L	Lubricant/Antiaccretion agent	Drilling Fluid Additive	As Needed	325
Dual Flo	Fluid loss control	Drilling Fluid Additive	As Needed	2,750 (lbs)
Duo-Vis	To add viscosity and suspension	Drilling Fluid Additive	As Needed	5,875 (lbs)
Gelex	Bentonite extender	Drilling Fluid Additive	As Needed	956 (lbs)
GEO GEL / Volclay Premium Gel	Provides viscosity, gel strengths, and filtration control	Drilling Fluid Additive	As Needed	681,700 (lbs)
HEC Polymer	Biodegradable Viscosifyer	Drilling Fluid Additive	As Needed	3,450 (lbs)
Magma Fiber	Acid soluble mineral fiber for lost circulation	Drilling Fluid Additive	As Needed	18,450 (lbs)
MD-C	Drilling detergent to prevent balling	Drilling Fluid Additive	As Needed	120
MI GEL	Provides viscosity, gel strengths, and filtration control	Drilling Fluid Additive	As Needed	1,415,600 (lbs)
M-I-X-II	Bridging and sealing permeable formations	Drilling Fluid Additive	As Needed	4,075 (lbs)
Myacide GA25	Preservative	Drilling Fluid Additive	As Needed	5
Omni-Pol II	Thinner	Drilling Fluid Additive	As Needed	320
Polypac UL	Fluid loss control with low viscosity increase	Drilling Fluid Additive	As Needed	7,250 (lbs)
Potassium Chloride	Clay inhibitor	Drilling Fluid Additive	As Needed	6,050 (lbs)
Prima Seal	Blended Lost Circulation Material	Drilling Fluid Additive	As Needed	48,760 (lbs)
SAFE-BREAK L	Polymer oxidizer	Drilling Fluid Additive	As Needed	200 (lbs)
Safe-Carb	Weighting/bridging agent	Drilling Fluid Additive	As Needed	15,750 (lbs)
SAPP	Thinner and Calcium Sequestering Agent	Drilling Fluid Additive	As Needed	150 (lbs)
Sawdust	Loss circulation material	Drilling Fluid Additive	As Needed	38,772 (lbs)
Silica Sand	Formation Sand Control	Provide Filter Pack	As Needed	11,768 (cu ft)
Soda Ash	Calcium precipitant	Drilling Fluid Additive	As Needed	8,450 (lbs)
Sodium Bicarbonate	Calcium precipitant and pH reducer	Drilling Fluid Additive	As Needed	4,450 (lbs)
SP-101	Filtrate reduction, rheology stabilizer	Drilling Fluid Additive	As Needed	18,900 (lbs)
Tackle	Thinner	Drilling Fluid Additive	As Needed	40
Thrucarb	Weighting/bridging agent	Drilling Fluid Additive	As Needed	1,550 (lbs)
Thrutrol	Filtration control additive	Drilling Fluid Additive	As Needed	50,710 (lbs)
Wall Nut Plug / Wall Nut Shells	Lost Circulation Material, abrasive material	Drilling Fluid Additive	As Needed	65,650 (lbs)

Quarter 2 – 2014 Kern Front Drilling Products – 57 wells drilled/re-drilled in Q2

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
Amber D.M.S. 30	Drilling detergent to prevent balling	Drilling Fluid Additive	As Needed	385
Amber Defoamer 7	Liquid Defoamer	Drilling Fluid Additive	As Needed	140
Benex	Bentonite extender	Drilling Fluid Additive	As Needed	88 (lbs)
CF Desco II	De-flocculent, mud thinner	Drilling Fluid Additive	As Needed	25 (lbs)
Chlorine Bleach / Sodium Hypochlorite	Polymer oxidizer	Post Well Fluid Conditioning	As Needed	200
Citric Acid	pH Reducer	Drilling Fluid Additive	As Needed	1,700 (lbs)
Cottonseed Hulls	Lost Circulation Material	Drilling Fluid Additive	As Needed	100 (lbs)
Defoam X	Liquid Defoamer	Drilling Fluid Additive	As Needed	70
DMA / Alcomer 507	Filtrate reduction, rheology stabilizer	Drilling Fluid Additive	As Needed	13,650 (lbs)
LP-701	Encapsulating and viscosifying polymer	Drilling Fluid Additive	As Needed	125
Drilzone L	Lubricant/Antiaccretion agent	Drilling Fluid Additive	As Needed	805
Duo-Vis	To add viscosity and suspension	Drilling Fluid Additive	As Needed	1,600 (lbs)
Gelex	Bentonite extender	Drilling Fluid Additive	As Needed	466 (lbs)
GEO GEL / Volclay Premium Gel	Provides viscosity, gel strengths, and filtration control	Drilling Fluid Additive	As Needed	557,000 (lbs)
HEC Polymer	Biodegradable Viscosifyer	Drilling Fluid Additive	As Needed	8,100 (lbs)
LP-701	Encapsulating and viscosifying polymer	Drilling Fluid Additive	As Needed	35
Lube 167	Lubricant/Antiaccretion agent	Drilling Fluid Additive	As Needed	550
LVT 200	Shale Stabilizer	Drilling Fluid Additive	As Needed	42
Magma Fiber	Acid soluble mineral fiber for lost circulation	Drilling Fluid Additive	As Needed	2,475 (lbs)
MD-C	Drilling detergent to prevent balling	Drilling Fluid Additive	As Needed	470
MI GEL	Provides viscosity, gel strengths, and filtration control	Drilling Fluid Additive	As Needed	1,320,500 (lbs)
M-I-X-II	Bridging and sealing permeable formations	Drilling Fluid Additive	As Needed	5,000 (lbs)
Myacide GA25	Preservative	Drilling Fluid Additive	As Needed	5
Omni-Pol II	Thinner	Drilling Fluid Additive	As Needed	125
Phosphoric Acid	pH reducer	Drilling Fluid Additive	As Needed	60
Polypac UL	Fluid loss control with low viscosity increase	Drilling Fluid Additive	As Needed	6,900 (lbs)
Poly-Plus	Fluid loss control with low viscosity increase	Drilling Fluid Additive	As Needed	680
Potassium Chloride	Clay inhibitor	Drilling Fluid Additive	As Needed	350 (lbs)
Prima Seal	Blended Lost Circulation Material	Drilling Fluid Additive	As Needed	45,720 (lbs)
Safe-Carb	Weighting/bridging agent	Drilling Fluid Additive	As Needed	3,000 (lbs)
SAPP	Thinner and Calcium Sequestering Agent	Drilling Fluid Additive	As Needed	500 (lbs)
Sawdust	Loss circulation material	Drilling Fluid Additive	As Needed	79,425 (lbs)
Silica Sand	Formation Sand Control	Provide Filter Pack	As Needed	19,388 (cu ft)
Soda Ash	Calcium precipitant	Drilling Fluid Additive	As Needed	12,150 (lbs)
Sodium Bicarbonate	Calcium precipitant and pH reducer	Drilling Fluid Additive	As Needed	3,950 (lbs)
SP-101	Filtrate reduction, rheology stabilizer	Drilling Fluid Additive	As Needed	19,250 (lbs)
Tackle	Thinner	Drilling Fluid Additive	As Needed	45
Thrutrol	Filtration control additive	Drilling Fluid Additive	As Needed	66,990 (lbs)
Wall Nut Plug / Wall Nut Shells	Lost Circulation Material, abrasive material	Drilling Fluid Additive	As Needed	77,550 (lbs)

Quarter 3 – 2014 Kern Front Drilling Products – 53 wells drilled/re-drilled in Q3

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
Amber D.M.S. 30	Drilling detergent to prevent balling	Drilling Fluid Additive	As Needed	130
Amber Defoamer 7	Liquid Defoamer	Drilling Fluid Additive	As Needed	135
CF Desco II	De-flocculent, mud thinner	Drilling Fluid Additive	As Needed	125 (lbs)
Chlorine Bleach / Sodium Hypochlorite	Polymer oxidizer	Post Well Fluid Conditioning	As Needed	220
Citric Acid	pH Reducer	Drilling Fluid Additive	As Needed	5,150 (lbs)
Defoam X	Liquid Defoamer	Drilling Fluid Additive	As Needed	65
DMA / Alcomer 507	Filtrate reduction, rheology stabilizer	Drilling Fluid Additive	As Needed	13,150 (lbs)
LP-701	Encapsulating and viscosifying polymer	Drilling Fluid Additive	As Needed	150
Drilzone L	Lubricant/Antiaccretion agent	Drilling Fluid Additive	As Needed	715
Duo-Vis	To add viscosity and suspension	Drilling Fluid Additive	As Needed	5,650 (lbs)
Gelex	Bentonite extender	Drilling Fluid Additive	As Needed	119 (lbs)
GEO GEL / Volclay Premium Gel	Provides viscosity, gel strengths, and filtration control	Drilling Fluid Additive	As Needed	617,500 (lbs)
HEC Polymer	Biodegradable Viscosifyer	Drilling Fluid Additive	As Needed	8,300 (lbs)
Magma Fiber	Acid soluble mineral fiber for lost circulation	Drilling Fluid Additive	As Needed	5,070 (lbs)
MD-C	Drilling detergent to prevent balling	Drilling Fluid Additive	As Needed	175
MI GEL	Provides viscosity, gel strengths, and filtration control	Drilling Fluid Additive	As Needed	946,800 (lbs)
MI Wate	Increasing Mud Density	Drilling Fluid Additive	As Needed	1,000 (lbs)
M-I-X-II	Bridging and sealing permeable formations	Drilling Fluid Additive	As Needed	4,900 (lbs)
Omni-Pol II	Thinner	Drilling Fluid Additive	As Needed	70
Phosphoric Acid	pH reducer	Drilling Fluid Additive	As Needed	95
Polypac UL	Fluid loss control with low viscosity increase	Drilling Fluid Additive	As Needed	2,500 (lbs)
Poly-Plus	Fluid loss control with low viscosity increase	Drilling Fluid Additive	As Needed	745
Prima Seal	Blended Lost Circulation Material	Drilling Fluid Additive	As Needed	28,200 (lbs)
Safe-Carb	Weighting/bridging agent	Drilling Fluid Additive	As Needed	950 (lbs)
Sawdust	Loss circulation material	Drilling Fluid Additive	As Needed	93,915 (lbs)
Silica Sand	Formation Sand Control	Provide Filter Pack	As Needed	12,526 (cu ft)
Soda Ash	Calcium precipitant	Drilling Fluid Additive	As Needed	8,550 (lbs)
Sodium Bicarbonate	Calcium precipitant and pH reducer	Drilling Fluid Additive	As Needed	8,300 (lbs)
SP-101	Filtrate reduction, rheology stabilizer	Drilling Fluid Additive	As Needed	27,350 (lbs)
Tackle	Thinner	Drilling Fluid Additive	As Needed	15
Thrutrol	Filtration control additive	Drilling Fluid Additive	As Needed	48,015 (lbs)
Wall Nut Plug / Wall Nut Shells	Lost Circulation Material, abrasive material	Drilling Fluid Additive	As Needed	52,800 (lbs)

Quarter 4 – 2014 Kern Front Drilling Products – 29 wells drilled/re-drilled in Q4

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
Aluminum Stearate	Defoamer	Drilling Fluid Additive	As Needed	50 (lbs)
Amber D.M.S. 30	Drilling detergent to prevent balling	Drilling Fluid Additive	As Needed	95
Amber Defoamer 7	Liquid Defoamer	Drilling Fluid Additive	As Needed	95
CF Desco II	De-flocculent, mud thinner	Drilling Fluid Additive	As Needed	125 (lbs)
Chlorine Bleach / Sodium Hypochlorite	Polymer oxidizer	Post Well Fluid Conditioning	As Needed	145
Citric Acid	pH Reducer	Drilling Fluid Additive	As Needed	2,100 (lbs)
Defoam X	Liquid Defoamer	Drilling Fluid Additive	As Needed	45
DMA / Alcomer 507	Filtrate reduction, rheology stabilizer	Drilling Fluid Additive	As Needed	10,750 (lbs)
LP-701	Encapsulating and viscosifying polymer	Drilling Fluid Additive	As Needed	170
Drilzone L	Lubricant/Antiaccretion agent	Drilling Fluid Additive	As Needed	400
Duo-Vis	To add viscosity and suspension	Drilling Fluid Additive	As Needed	2,925 (lbs)
Flo-Vis	To add viscosity and suspension	Drilling Fluid Additive	As Needed	15
Flo-Vis Plus	To add viscosity and suspension	Drilling Fluid Additive	As Needed	225 (lbs)
Gelex	Bentonite extender	Drilling Fluid Additive	As Needed	134 (lbs)
Gelite	Viscosity and filtration control	Drilling Fluid Additive	As Needed	17,400 (lbs)
GEO GEL / Volclay Premium Gel	Provides viscosity, gel strengths, and filtration control	Drilling Fluid Additive	As Needed	392,500 (lbs)
Geozan	To add viscosity and suspension	Drilling Fluid Additive	As Needed	250 (lbs)
G-Seal Plus	Lost circulation, seepage prevention, lubricity	Drilling Fluid Additive	As Needed	1,155 (lbs)
HEC Polymer	Biodegradable Viscosifyer	Drilling Fluid Additive	As Needed	7,800 (lbs)
Magma Fiber	Acid soluble mineral fiber for lost circulation	Drilling Fluid Additive	As Needed	2,980 (lbs)
MD-C	Drilling detergent to prevent balling	Drilling Fluid Additive	As Needed	85
MI GEL	Provides viscosity, gel strengths, and filtration control	Drilling Fluid Additive	As Needed	584,500 (lbs)
MI Wate	Increasing Mud Density	Drilling Fluid Additive	As Needed	34,600 (lbs)
MI-Seal	Blended Lost Circulation Material	Drilling Fluid Additive	As Needed	1,960 (lbs)
M-I-X-II	Bridging and sealing permeable formations	Drilling Fluid Additive	As Needed	4,000 (lbs)
Omni-Pol II	Thinner	Drilling Fluid Additive	As Needed	40
Phosphoric Acid	pH reducer	Drilling Fluid Additive	As Needed	75
Polypac R	Fluid loss control with low viscosity increase	Drilling Fluid Additive	As Needed	1,350 (lbs)
Polypac UL	Fluid loss control with low viscosity increase	Drilling Fluid Additive	As Needed	2,750 (lbs)
Poly-Plus	Fluid loss control with low viscosity increase	Drilling Fluid Additive	As Needed	280
Potassium Chloride	Clay inhibitor	Drilling Fluid Additive	As Needed	20,450 (lbs)
Prima Seal	Blended Lost Circulation Material	Drilling Fluid Additive	As Needed	7,800 (lbs)
Safe-Carb	Weighting/bridging agent	Drilling Fluid Additive	As Needed	33,750 (lbs)
SAPP	Thinner and Calcium Sequestering Agent	Drilling Fluid Additive	As Needed	100 (lbs)
Sawdust	Loss circulation material	Drilling Fluid Additive	As Needed	58,581 (lbs)
SDIC	Polymer oxidizer	Drilling Fluid Additive	As Needed	5
Silica Sand	Formation Sand Control	Provide Filter Pack	As Needed	8,380 (cu ft)
Soda Ash	Calcium precipitant	Drilling Fluid Additive	As Needed	3,700 (lbs)
Sodium Bicarbonate	Calcium precipitant and pH reducer	Drilling Fluid Additive	As Needed	6,500 (lbs)
SP-101	Filtrate reduction, rheology stabilizer	Drilling Fluid Additive	As Needed	11,100 (lbs)
Tackle	Thinner	Drilling Fluid Additive	As Needed	60
Thrucarb	Weighting/bridging agent	Drilling Fluid Additive	As Needed	2,300 (lbs)
Thrutrol	Filtration control additive	Drilling Fluid Additive	As Needed	75,680 (lbs)
Wall Nut Plug / Wall Nut Shells	Lost Circulation Material, abrasive material	Drilling Fluid Additive	As Needed	80,500 (lbs)

Quarter 1 – 2015 Kern Front Drilling Products – 26 wells drilled/re-drilled in Q1

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
Amber D.M.S. 30	Drilling detergent to prevent balling	Drilling Fluid Additive	As Needed	55
Amber Defoamer 7	Liquid Defoamer	Drilling Fluid Additive	As Needed	220
CF Desco II	De-flocculent, mud thinner	Drilling Fluid Additive	As Needed	150 (lbs)
Chlorine Bleach / Sodium Hypochlorite	Polymer oxidizer	Post Well Fluid Conditioning	As Needed	165
Citric Acid	pH Reducer	Drilling Fluid Additive	As Needed	450 (lbs)
COS	Oxygen Scavenger	Drilling Fluid Additive	As Needed	25
DMA / Alcomer 507	Filtrate reduction, rheology stabilizer	Drilling Fluid Additive	As Needed	10,400 (lbs)
LP-701	Encapsulating and viscosifying polymer	Drilling Fluid Additive	As Needed	285
Drilzone L	Lubricant/Antiaccretion agent	Drilling Fluid Additive	As Needed	5
Dual Flo	Fluid loss control	Drilling Fluid Additive	As Needed	6,700 (lbs)
Duo-Vis	To add viscosity and suspension	Drilling Fluid Additive	As Needed	925 (lbs)
Gelex	Bentonite extender	Drilling Fluid Additive	As Needed	58 (lbs)
GEO GEL / Volclay Premium Gel	Provides viscosity, gel strengths, and filtration control	Drilling Fluid Additive	As Needed	542,600 (lbs)
Geozan	To add viscosity and suspension	Drilling Fluid Additive	As Needed	2,350 (lbs)
HEC Polymer	Biodegradable Viscosifyer	Drilling Fluid Additive	As Needed	8,500 (lbs)
Lignite	Dispersant and hole stabilization	Drilling Fluid Additive	As Needed	50 (lbs)
Magma Fiber	Acid soluble mineral fiber for lost circulation	Drilling Fluid Additive	As Needed	440 (lbs)
MD-C	Drilling detergent to prevent balling	Drilling Fluid Additive	As Needed	20
MI GEL	Provides viscosity, gel strengths, and filtration control	Drilling Fluid Additive	As Needed	501,400 (lbs)
MI-Seal	Blended Lost Circulation Material	Drilling Fluid Additive	As Needed	7,000 (lbs)
M-I-X-II	Bridging and sealing permeable formations	Drilling Fluid Additive	As Needed	2,350 (lbs)
Omni-Pol II	Thinner	Drilling Fluid Additive	As Needed	60
Phosphoric Acid	pH reducer	Drilling Fluid Additive	As Needed	50
Polypac UL	Fluid loss control with low viscosity increase	Drilling Fluid Additive	As Needed	550 (lbs)
Poly-Plus	Fluid loss control with low viscosity increase	Drilling Fluid Additive	As Needed	150
Potassium Chloride	Clay inhibitor	Drilling Fluid Additive	As Needed	6,850 (lbs)
Prima Seal	Blended Lost Circulation Material	Drilling Fluid Additive	As Needed	6,280 (lbs)
Safe-Carb	Weighting/bridging agent	Drilling Fluid Additive	As Needed	4,000 (lbs)
SAPP	Thinner and Calcium Sequestering Agent	Drilling Fluid Additive	As Needed	150 (lbs)
Sawdust	Loss circulation material	Drilling Fluid Additive	As Needed	19,185 (lbs)
SDIC	Polymer oxidizer	Drilling Fluid Additive	As Needed	40 (lbs)
Silica Sand	Formation Sand Control	Provide Filter Pack	As Needed	5,947 (cu ft)
Soda Ash	Calcium precipitant	Drilling Fluid Additive	As Needed	9,000 (lbs)
Sodium Bicarbonate	Calcium precipitant and pH reducer	Drilling Fluid Additive	As Needed	4,950 (lbs)
SP-101	Filtrate reduction, rheology stabilizer	Drilling Fluid Additive	As Needed	3,650 (lbs)
Thrutrol	Filtration control additive	Drilling Fluid Additive	As Needed	13,200 (lbs)
Wall Nut Plug / Wall Nut Shells	Lost Circulation Material, abrasive material	Drilling Fluid Additive	As Needed	25,300 (lbs)

Quarter 2 – 2015 Kern Front Drilling Products – 17 wells drilled/re-drilled in Q2

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
Amber D.M.S. 30	Drilling detergent to prevent balling	Drilling Fluid Additive	As Needed	50
Amber Defoamer 7	Liquid Defoamer	Drilling Fluid Additive	As Needed	185
Amberguard 215	Preservative	Drilling Fluid Additive	As Needed	25
CAP	Corrosion Inhibitor	Drilling Fluid Additive	As Needed	15
CF Desco II	De-flocculent, mud thinner	Drilling Fluid Additive	As Needed	25 (lbs)
Chlorine Bleach / Sodium Hypochlorite	Polymer oxidizer	Post Well Fluid Conditioning	As Needed	150
COS	Oxygen Scavenger	Drilling Fluid Additive	As Needed	15
DMA / Alcomer 507	Filtrate reduction, rheology stabilizer	Drilling Fluid Additive	As Needed	8,850 (lbs)
DP-701	Encapsulating and viscosifying polymer	Drilling Fluid Additive	As Needed	505
Drispac Super Low	Fluid loss control with low viscosity increase	Drilling Fluid Additive	As Needed	200
Duo-Vis, Geozan, XCD Polymer	To add viscosity and suspension	Drilling Fluid Additive	As Needed	3,075 (lbs)
GEO GEL / Volclay Premium Gel	Provides viscosity, gel strengths, and filtration control	Drilling Fluid Additive	As Needed	628,000 (lbs)
Geozan	To add viscosity and suspension	Drilling Fluid Additive	As Needed	4,575 (lbs)
HEC Polymer	Biodegradable Viscosifyer	Drilling Fluid Additive	As Needed	2,800 (lbs)
Magma Fiber	Acid soluble mineral fiber for lost circulation	Drilling Fluid Additive	As Needed	40 (lbs)
Omni-Pol II	Thinner	Drilling Fluid Additive	As Needed	20
Phosphoric Acid	pH reducer	Drilling Fluid Additive	As Needed	20
Potassium Chloride	Clay inhibitor	Drilling Fluid Additive	As Needed	150 (lbs)
Prima Seal	Blended Lost Circulation Material	Drilling Fluid Additive	As Needed	4,520 (lbs)
SAPP	Thinner and Calcium Sequestering Agent	Drilling Fluid Additive	As Needed	200 (lbs)
Sawdust	Loss circulation material	Drilling Fluid Additive	As Needed	4,395 (lbs)
SDIC	Polymer oxidizer	Drilling Fluid Additive	As Needed	80 (lbs)
Silica Sand	Formation Sand Control	Provide Filter Pack	As Needed	1,933 (cu ft)
Soda Ash	Calcium precipitant	Drilling Fluid Additive	As Needed	7,000 (lbs)
Sodium Bicarbonate	Calcium precipitant and pH reducer	Drilling Fluid Additive	As Needed	5,000 (lbs)
Wall Nut Plug / Wall Nut Shells	Lost Circulation Material, abrasive material	Drilling Fluid Additive	As Needed	11,300 (lbs)

Quarter 3 – 2015 Kern Front Drilling Products – 22 wells drilled/re-drilled in Q3

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
Amber D.M.S. 30	Drilling detergent to prevent balling	Drilling Fluid Additive	As Needed	40
Amber Defoamer 7	Liquid Defoamer	Drilling Fluid Additive	As Needed	220
Amberguard 215	Preservative	Drilling Fluid Additive	As Needed	5
Carbon Seal	Lost circulation, seepage prevention, lubricity	Drilling Fluid Additive	As Needed	1,300 (lbs)
Chlorine Bleach / Sodium Hypochlorite	Polymer oxidizer	Post Well Fluid Conditioning	As Needed	100
Defoam X	Liquid Defoamer	Drilling Fluid Additive	As Needed	10
DMA / Alcomer 507	Filtrate reduction, rheology stabilizer	Drilling Fluid Additive	As Needed	12,000 (lbs)
LP-701	Encapsulating and viscosifying polymer	Drilling Fluid Additive	As Needed	275
Drilzone L	Lubricant/Antiaccretion agent	Drilling Fluid Additive	As Needed	245
Duo-Vis	To add viscosity and suspension	Drilling Fluid Additive	As Needed	75 (lbs)
Flo-Vis Plus	To add viscosity and suspension	Drilling Fluid Additive	As Needed	125 (lbs)
Gelex	Bentonite extender	Drilling Fluid Additive	As Needed	1,366 (lbs)
GEO GEL / Volclay Premium Gel	Provides viscosity, gel strengths, and filtration control	Drilling Fluid Additive	As Needed	417,500 (lbs)
Geozan	To add viscosity and suspension	Drilling Fluid Additive	As Needed	950 (lbs)
HEC Polymer	Biodegradable Viscosifyer	Drilling Fluid Additive	As Needed	7,700 (lbs)
MD-C	Drilling detergent to prevent balling	Drilling Fluid Additive	As Needed	20
MI GEL	Provides viscosity, gel strengths, and filtration control	Drilling Fluid Additive	As Needed	48,400 (lbs)
Omni-Pol II	Thinner	Drilling Fluid Additive	As Needed	35
PAC-LV	Fluid loss control with low viscosity increase	Drilling Fluid Additive	As Needed	1,000 (lbs)
Phosphoric Acid	pH reducer	Drilling Fluid Additive	As Needed	745
Poly Plus	Fluid loss control with low viscosity increase	Drilling Fluid Additive	As Needed	45
Polypac UL	Fluid loss control with low viscosity increase	Drilling Fluid Additive	As Needed	700 (lbs)
Potassium Chloride, KCL	Clay inhibitor	Drilling Fluid Additive	As Needed	4,613 (lbs)
Prima Seal	Blended Lost Circulation Material	Drilling Fluid Additive	As Needed	3,740 (lbs)
Safe-Carb	Weighting/bridging agent	Drilling Fluid Additive	As Needed	6,600 (lbs)
SAPP	Thinner and Calcium Sequestering Agent	Drilling Fluid Additive	As Needed	200 (lbs)
Sawdust	Loss circulation material	Drilling Fluid Additive	As Needed	6,180 (lbs)
Silica Sand	Formation Sand Control	Provide Filter Pack	As Needed	3,691 (cu ft)
Soda Ash	Calcium precipitant	Drilling Fluid Additive	As Needed	6,400 (lbs)
Sodium Bicarbonate	Calcium precipitant and pH reducer	Drilling Fluid Additive	As Needed	7,400 (lbs)
Sodium Hypochlorite	Polymer oxidizer	Drilling Fluid Additive	As Needed	10
SP-101	Filtrate reduction, rheology stabilizer	Drilling Fluid Additive	As Needed	1,500 (lbs)
Tackle	Thinner	Drilling Fluid Additive	As Needed	5
Tannathin	Dispersant and hole stabilization	Drilling Fluid Additive	As Needed	1,550 (lbs)
Thrutrol	Filtration control additive	Drilling Fluid Additive	As Needed	5,940 (lbs)
Wall Nut Plug / Wall Nut Shells	Lost Circulation Material, abrasive material	Drilling Fluid Additive	As Needed	37,750 (lbs)
XCD Polymer	To add viscosity and suspension	Drilling Fluid Additive	As Needed	275 (lbs)

Quarter 4 – 2015 Kern Front Drilling Products – 38 wells drilled/re-drilled in Q4

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
Amber D.M.S. 30	Drilling detergent to prevent balling	Drilling Fluid Additive	As Needed	140
Amber Defoamer 7	Liquid Defoamer	Drilling Fluid Additive	As Needed	180
Amberguard 215	Preservative	Drilling Fluid Additive	As Needed	25
Calcium Carbonate	Weighting/bridging agent	Drilling Fluid Additive	As Needed	60,300 (lbs)
CAP	Corrosion Inhibitor	Drilling Fluid Additive	As Needed	10
Chlorine Bleach / Sodium Hypochlorite	Polymer oxidizer	Post Well Fluid Conditioning	As Needed	70
Citric Acid	pH Reducer	Drilling Fluid Additive	As Needed	550 (lbs)
Cottonseed Hulls	Lost Circulation Material	Drilling Fluid Additive	As Needed	120 (cu ft)
Defoam X	Liquid Defoamer	Drilling Fluid Additive	As Needed	5
DMA / Alcomer 507	Filtrate reduction, rheology stabilizer	Drilling Fluid Additive	As Needed	8,350 (lbs)
LP-701	Encapsulating and viscosifying polymer	Drilling Fluid Additive	As Needed	440
Drilzone L	Lubricant/Antiaccretion agent	Drilling Fluid Additive	As Needed	200
Drispac Super Low	Fluid loss control with low viscosity increase	Drilling Fluid Additive	As Needed	1,950 (lbs)
Duo-Vis	To add viscosity and suspension	Drilling Fluid Additive	As Needed	1,575 (lbs)
Flo-Vis	To add viscosity and suspension	Drilling Fluid Additive	As Needed	50 (lbs)
Flo-Vis Plus	To add viscosity and suspension	Drilling Fluid Additive	As Needed	25 (lbs)
Gelex	Bentonite extender	Drilling Fluid Additive	As Needed	50 (lbs)
GEO GEL / Volclay Premium Gel	Provides viscosity, gel strengths, and filtration control	Drilling Fluid Additive	As Needed	729,000 (lbs)
Geozan	To add viscosity and suspension	Drilling Fluid Additive	As Needed	1,875 (lbs)
HEC	Biodegradable Viscosifyer	Drilling Fluid Additive	As Needed	2,850 (lbs)
HEC 10	Biodegradable Viscosifyer	Drilling Fluid Additive	As Needed	25
Kwick Seal	Blended Lost Circulation Material	Drilling Fluid Additive	As Needed	4,400 (lbs)
MD-C	Drilling detergent to prevent balling	Drilling Fluid Additive	As Needed	170
MI GEL	Provides viscosity, gel strengths, and filtration control	Drilling Fluid Additive	As Needed	215,400 (lbs)
MI-Seal	Blended Lost Circulation Material	Drilling Fluid Additive	As Needed	5,200 (lbs)
M-I-X-II	Bridging and sealing permeable formations	Drilling Fluid Additive	As Needed	22,000 (lbs)
Omni-Pol II	Thinner	Drilling Fluid Additive	As Needed	40
Phosphoric Acid	pH reducer	Drilling Fluid Additive	As Needed	60
Polypac UL	Fluid loss control with low viscosity increase	Drilling Fluid Additive	As Needed	3,600 lbs
Poly-Plus	Fluid loss control with low viscosity increase	Drilling Fluid Additive	As Needed	255
Potassium Chloride	Clay inhibitor	Drilling Fluid Additive	As Needed	14,850 (lbs)
Prima Seal	Blended Lost Circulation Material	Drilling Fluid Additive	As Needed	4,040 (lbs)
Safe-Carb	Weighting/bridging agent	Drilling Fluid Additive	As Needed	2,800 (lbs)
SAPP	Thinner and Calcium Sequestering Agent	Drilling Fluid Additive	As Needed	500 (lbs)
Sawdust	Loss circulation material	Drilling Fluid Additive	As Needed	24,030 (lbs)
Silica Sand	Formation Sand Control	Provide Filter Pack	As Needed	5,874 (cu ft)
Soda Ash	Calcium precipitant	Drilling Fluid Additive	As Needed	8,750 (lbs)
Sodium Bicarbonate	Calcium precipitant and pH reducer	Drilling Fluid Additive	As Needed	7,400 (lbs)
SP-101	Filtrate reduction, rheology stabilizer	Drilling Fluid Additive	As Needed	6,400 (lbs)
Tackle	Thinner	Drilling Fluid Additive	As Needed	35
Tannathin	Dispersant and hole stabilization	Drilling Fluid Additive	As Needed	13,750 (lbs)
Thrutrol	Filtration control additive	Drilling Fluid Additive	As Needed	22,385 (lbs)
Wall Nut Plug / Wall Nut Shells	Lost Circulation Material, abrasive material	Drilling Fluid Additive	As Needed	141,000 (lbs)

ATTACHMENT D

Completions, Workovers, and Testing Products

Quarter 2 - 2015 North Mt. Poso Well Workover, Completions, and Testing Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Product Used During the Quarter (millicuries - mCi)
Iodine	Tracer survey	Determines injection profile in water injection well per DOGGR requirement.	As needed	2.80

Quarter 1 – 2014 Kern Front Well Workover, Completion, and Testing Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
12-3% HCl-HF	Dissolve clay	Wellbore clean-out	As needed	16,830
15% HCl	Dissolve carbonate/prep for mud acid	Wellbore clean-out	As needed	14,830
Aromatic 100 Exxon	Solvent for oil coating	Wellbore clean-out	As needed	1,200
Citric Acid	Iron control	Wellbore clean-out	As needed	1565 (lbs)
Cronox Inhibitor	Corrosion inhibitor	Wellbore clean-out	As needed	222
Glycol Ether EB Mutual Solvent	Control surface wettability and prevent detrimental emulsions	Wellbore clean-out	As needed	262
Iodine	Tracer survey	Determines injection profile in water injection well per DOGGR requirement.	As needed	34 (millicuries)
Krypton	Tracer survey	Determines injection profile in steam well per DOGGR requirement.	As needed	10100 (millicuries)
NH4Cl	Neutral fluid to displace HCl-HF	Wellbore clean-out	As needed	11192 (lbs)
NP-9 Surfactant	Multi-purpose surfactant	Wellbore clean-out	As needed	155
Xenon	Tracer survey	Determines injection profile in steam well per DOGGR requirement.	As needed	2250 (millicuries)

Quarter 2 – 2014 Kern Front Well Workover, Completion, and Testing Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
12-3% HCl-HF	Dissolve clay	Wellbore clean-out	As needed	11,600
15% HCl	Dissolve carbonate/prep for mud acid	Wellbore clean-out	As needed	10,100
Aromatic 100 Exxon	Solvent for oil coating	Wellbore clean-out	As needed	100
Citric Acid	Iron control	Wellbore clean-out	As needed	496 (lbs)
Cronox Inhibitor	Corrosion inhibitor	Wellbore clean-out	As needed	110
KCl	Prevent clay swelling	Wellbore clean-out	As needed	2,202
Glycol Ether EB Mutual Solvent	Control surface wettability and prevent detrimental emulsions	Wellbore clean-out	As needed	18
Iodine	Tracer survey	Determines injection profile in water injection well per DOGGR requirement.	As needed	33 (millicuries)
Krypton	Tracer survey	Determines injection profile in steam well per DOGGR requirement.	As needed	2700 (millicuries)
NH4Cl	Neutral fluid to displace HCl-HF	Wellbore clean-out	As needed	10437 (lbs)
NP-9 Surfactant	Multi-purpose surfactant	Wellbore clean-out	As needed	56
Restore PEP2	Paraffin solvent	Wellbore clean-out	As needed	495
Tretolite DMW8900X	Steam additive	Wellbore clean-out	As needed	110
Xenon	Tracer survey	Determines injection profile in steam well per DOGGR requirement.	As needed	6900 (millicuries)

Quarter 3 – 2014 Kern Front Well Workover, Completion, and Testing Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
12-3% HCl-HF	Dissolve clay	Wellbore clean-out	As needed	2,300
15% HCl	Dissolve carbonate/prep for mud acid	Wellbore clean-out	As needed	1,600
Citric Acid	Iron control	Wellbore clean-out	As needed	110 (lbs)
Cronox Inhibitor	Corrosion inhibitor	Wellbore clean-out	As needed	26
Glycol Ether EB Mutual Solvent	Control surface wettability and prevent detrimental emulsions	Wellbore clean-out	As needed	51
Iodine	Tracer survey	Determines injection profile in water injection well per DOGGR requirement.	As needed	44.6 (millicuries)
Krypton	Tracer survey	Determines injection profile in steam well per DOGGR requirement.	As needed	650 (millicuries)
NH4Cl	Neutral fluid to displace HCl-HF	Wellbore clean-out	As needed	1832 (lbs)
NP-9 Surfactant	Multi-purpose surfactant	Wellbore clean-out	As needed	103
Tretolite DMW8900X	Steam additive	Wellbore clean-out	As needed	110
PAO 3047	Asphaltene dispersant	Wellbore clean-out	As needed	330
Xenon	Tracer survey	Determines injection profile in steam well per DOGGR requirement.	As needed	2650 (millicuries)

Quarter 4 – 2014 Kern Front Well Workover, Completion, and Testing Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
12-3% HCl-HF	Dissolve clay	Wellbore clean-out	As needed	5,400
15% HCl	Dissolve carbonate/prep for mud acid	Wellbore clean-out	As needed	3,900
Aromatic 100 Exxon	Solvent for oil coating	Wellbore clean-out	As needed	100
Citric Acid	Iron control	Wellbore clean-out	As needed	478 (lbs)
Cronox Inhibitor	Corrosion inhibitor	Wellbore clean-out	As needed	86
Iodine	Tracer survey	Determines injection profile in water injection well per DOGGR requirement.	As needed	12 (millicuries)
Krypton	Tracer survey	Determines injection profile in steam well per DOGGR requirement.	As needed	650 (millicuries)
NH4Cl	Neutral fluid to displace HCl-HF	Wellbore clean-out	As needed	2540 (lbs)
NP-9 Surfactant	Multi-purpose surfactant	Wellbore clean-out	As needed	54
Xenon	Tracer survey	Determines injection profile in steam well per DOGGR requirement.	As needed	2650 (millicuries)

Quarter 1 – 2015 Kern Front Well Workover, Completion, and Testing Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
12-3% HCl-HF	Dissolve clay	Wellbore clean-out	As needed	16,850
13.5-1.5% HCl-HF	Dissolve clay	Wellbore clean-out	As needed	5,460
15% HCl	Dissolve carbonate/prep for mud acid	Wellbore clean-out	As needed	17,210
Aromatic 100 Exxon	Solvent for oil coating	Wellbore clean-out	As needed	250
Citric Acid	Iron control	Wellbore clean-out	As needed	1562 (lbs)
Cronox Inhibitor	Corrosion inhibitor	Wellbore clean-out	As needed	321
Glycol Ether EB Mutual Solvent	Control surface wettability and prevent detrimental emulsions	Wellbore clean-out	As needed	292
Iodine	Tracer survey	Determines injection profile in water injection well per DOGGR requirement.	As needed	44 (millicuries)
Krypton	Tracer survey	Determines injection profile in steam well per DOGGR requirement.	As needed	3650 (millicuries)
NH4Cl	Neutral fluid to displace HCl-HF	Wellbore clean-out	As needed	8646 (lbs)
NP-9 Surfactant	Multi-purpose surfactant	Wellbore clean-out	As needed	213
Xenon	Tracer survey	Determines injection profile in steam well per DOGGR requirement.	As needed	7200 (millicuries)

Quarter 2 – 2015 Kern Front Well Workover, Completion, and Testing Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
12-3% HCl-HF	Dissolve clay	Wellbore clean-out	As needed	19,280
15% HCl	Dissolve carbonate/prep for mud acid	Wellbore clean-out	As needed	14,780
Aromatic 100 Exxon	Solvent for oil coating	Wellbore clean-out	As needed	1,028
Citric Acid	Iron control	Wellbore clean-out	As needed	1387 (lbs)
Cronox Inhibitor	Corrosion inhibitor	Wellbore clean-out	As needed	239
Glycol Ether EB Mutual Solvent	Control surface wettability and prevent detrimental emulsions	Wellbore clean-out	As needed	183
Iodine	Tracer survey	Determines injection profile in water injection well per DOGGR requirement.	As needed	41.9 (millicuries)
Krypton	Tracer survey	Determines injection profile in steam well per DOGGR requirement.	As needed	4450 (millicuries)
NH4Cl	Neutral fluid to displace HCl-HF	Wellbore clean-out	As needed	8063 (lbs)
NP-9 Surfactant	Multi-purpose surfactant	Wellbore clean-out	As needed	199
5% NH4Cl	Neutral fluid to displace HCl-HF	Wellbore clean-out	As needed	1,500
Enviro-OG+.5%Msolve	Dissolve carbonate/prep for mud acid	Wellbore clean-out	As needed	1,250
12/3 Enviro Mud+.5%Msolve	Dissolve clay	Wellbore clean-out	As needed	1,250
Xenon	Tracer survey	Determines injection profile in steam well per DOGGR requirement.	As needed	4050 (millicuries)

Quarter 3 – 2015 Kern Front Well Workover, Completion, and Testing Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
12-3% HCl-HF	Dissolve clay	Wellbore clean-out	As needed	8,400
15% HCl	Dissolve carbonate/prep for mud acid	Wellbore clean-out	As needed	4,200
Citric Acid	Iron control	Wellbore clean-out	As needed	411 (lbs)
Cronox Inhibitor	Corrosion inhibitor	Wellbore clean-out	As needed	91
Glycol Ether EB Mutual Solvent	Control surface wettability and prevent detrimental emulsions	Wellbore clean-out	As needed	165
Iodine	Tracer survey	Determines injection profile in water injection well per DOGGR requirement.	As needed	81.6 (millicuries)
Krypton	Tracer survey	Determines injection profile in steam well per DOGGR requirement.	As needed	8700 (millicuries)
NH4Cl	Neutral fluid to displace HCl-HF	Wellbore clean-out	As needed	3235 (lbs)
NP-9 Surfactant	Multi-purpose surfactant	Wellbore clean-out	As needed	47
9-1% HCl-HF	Dissolve clay	Wellbore clean-out	As needed	4,000
15% HCl	Dissolve carbonate/prep for mud acid	Wellbore clean-out	As needed	5,000
5% NH4Cl	Neutral fluid to displace HCl-HF	Wellbore clean-out	As needed	6,500
MISOL	Solvent	Wellbore clean-out	As needed	145
SS-26	Non-emulsifiing agent	Wellbore clean-out	As needed	93
Xylene	Solvent for oil coating	Wellbore clean-out	As needed	500
SSD-921	Disperses solvent in liquid	Wellbore clean-out	As needed	50
ISA-100	Iron control	Wellbore clean-out	As needed	90
AI-205	Corrosion inhibitor	Wellbore clean-out	As needed	63
SSM-50	Mutually solve oil in water, water in oil	Wellbore clean-out	As needed	25
SW-211	Clay stabilizer	Wellbore clean-out	As needed	15
Xenon	Tracer survey	Determines injection profile in steam well per DOGGR requirement.	As needed	8600 (millicuries)

Quarter 4 – 2015 Kern Front Well Workover, Completion, and Testing Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
12-3% HCl-HF	Dissolve clay	Wellbore clean-out	As needed	5,100
15% HCl	Dissolve carbonate/prep for mud acid	Wellbore clean-out	As needed	3,000
Citric Acid	Iron control	Wellbore clean-out	As needed	366 (lbs)
Cronox Inhibitor	Corrosion inhibitor	Wellbore clean-out	As needed	81
Glycol Ether EB Mutual Solvent	Control surface wettability and prevent detrimental emulsions	Wellbore clean-out	As needed	153
Iodine	Tracer survey	Determines injection profile in water injection well per DOGGR requirement.	As needed	10 (millicuries)
Krypton	Tracer survey	Determines injection profile in steam well per DOGGR requirement.	As needed	1950 (millicuries)
NH4Cl	Neutral fluid to displace HCl-HF	Wellbore clean-out	As needed	1141 (lbs)
NP-9 Surfactant	Multi-purpose surfactant	Wellbore clean-out	As needed	42
Flotron M-154	Asphaltene dispersant	Wellbore clean-out	As needed	220
Surfatron DQ-88	Multi-purpose surfactant	Wellbore clean-out	As needed	20
EC6818A-Renew IQ	Oxydizer	Wellbore clean-out	As needed	60
EC6746A	Mineral Acid	Wellbore clean-out	As needed	165

Quarter 1 – 2016 Kern Front Well Workover, Completion, and Testing Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons, unless otherwise specified)
Flotron M-154	Asphaltene dispersant	Wellbore clean-out	As needed	530
Surfatron DQ-88	Multi-purpose surfactant	Wellbore clean-out	As needed	40
Iodine	Tracer survey	Determines injection profile in water injection well per DOGGR requirement.	As needed	22.5 (millicuries)
Krypton	Tracer survey	Determines injection profile in steam well per DOGGR requirement.	As needed	550 (millicuries)
EC6818A-Renew IQ	Oxydizer	Wellbore clean-out	As needed	105
EC6746A	Mineral Acid	Wellbore clean-out	As needed	220
Xenon	Tracer survey	Determines injection profile in steam well per DOGGR requirement.	As needed	3400 (millicuries)

Quarter 2 – 2016 Kern Front Well Workover, Completion, and Testing Products

Product Name/ SDS Name	Primary Purpose	Activity the Product is Used for/in	Frequency of Use	Total Volume of Product Used During the Quarter (gallons)
Iodine	Tracer survey	Determines injection profile in water injection well per DOGGR requirement.	As needed	1.5 (millicuries)

ATTACHMENT E

Safety Data Sheets

SDS for Products Identified

in

Attachment A

SAFETY DATA SHEET

CALIFORNIA RESOURCES CORPORATION

Revision date: 29-May-15

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name:	PRODUCED WATER, RECLAIMED
Product Code:	CRC-026
Intended use:	Non-potable water intended for various beneficial uses.
Company Identification:	CRC Services, LLC 9600 Ming Ave. Suite 300 Bakersfield, CA 93311
Emergency Telephone Number:	CHEMTREC: 1-800-424-9300

2. HAZARDS IDENTIFICATION

CLASSIFICATION	Not Hazardous
Hazards not Otherwise Classified	None
Label Elements	None Required

3. COMPOSITION/INFORMATION ON INGREDIENTS

* PPH=Percent (%)

Components - Units	CAS-No	Concentration
Water – PPH*	7732-18-5	99.9 - <100%

4. FIRST AID MEASURES

Inhalation:	No first aid required.
Skin Contact:	No first aid required.
Eye Contact:	No first aid required.
Ingestion:	Not potable but first aid would not normally be required. If large amounts are swallowed, get medical advice.
Most important symptoms and effects:	

Acute:	No adverse effects expected.
Delayed:	None.
Indication of immediate medical attention and special treatment, if necessary:	None required.
Notes to Physician:	None
Other Comments:	None

5. FIRE-FIGHTING MEASURES

Specific hazards arising from the chemical:	None expected.
Suitable extinguishing media:	Water is an extinguishing media and will not burn.
Special protective equipment and precautions for fire-fighters:	None required.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:	None required.
Environmental Precautions:	None required.
Methods and materials for containment and cleaning up:	None required.

7. HANDLING AND STORAGE

Precautions for safe handling:	Non-potable; not intended for drinking or ingestion.

Conditions for safe storage, including any incompatibilities: No special storage conditions required.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines:

Component	ACGIH	OSHA	Other
Water	None established	None established	None established

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Appropriate engineering controls: None required.

Personal Protective Equipment:

Eye/Face Protection: None required under normal use conditions.

Skin/Hand Protection: None required under normal use conditions.

Respiratory Protection: None required under normal use conditions.

Other Protective Equipment: None required under normal use conditions.

Hygiene Measures: Do not swallow.

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety or engineering professionals.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear liquid
Physical Form:	Liquid
Odor:	None to slight hydrocarbon.
Odor Threshold:	Not determined
Relative Density (water=1):	1
Molecular Weight:	Not determined
Critical Temperature:	Not applicable
Decomposition temperature:	Not determined
Melting/Freezing Point:	32 °F (0 °C)
Initial Boiling Point/Range:	212 °F (100 °C)
Flash Point:	Not applicable
Auto-ignition Temperature:	Not applicable
Flammability (solid, gas):	Not applicable
Upper Explosive Limits (vol % in air):	Not applicable
Lower Explosive Limits (vol % in air):	Not applicable

Evaporation Rate (nBuAc=1):	Not determined
Volatility:	Not determined
Vapor Density (air=1):	Not determined
Vapor Pressure:	17.51 mm Hg @ 20 °C (water)
Partition Coefficient (n-octanol/water) (Kow):	No data available
Solubility in Water:	Complete
Test Method:	Not applicable
pH:	Essentially neutral.
Viscosity:	Water like.

10. STABILITY AND REACTIVITY

Reactivity:	Non-reactive
Chemical stability:	Stable
Possibility of hazardous reactions:	None known
Conditions to avoid:	None known
Incompatible materials:	None known.
Hazardous decomposition products:	None known.

11. TOXICOLOGICAL INFORMATION

Health Hazards:

Acute Toxicity	**Hazard**
Inhalation:	None expected.
Skin Contact:	None expected.
Eye Contact:	None expected.
Ingestion:	Not potable but no adverse effects would normally be expected.
Chronic Effects:	None expected.
Carcinogenicity:	None of the listed components are listed as a carcinogen by IARC, NTP or OSHA.
Germ Cell Mutagenicity:	No effects expected.
Reproductive Toxicity:	No effects expected.
Acute Toxicity Values:	Water: Not acutely toxic.

12. ECOLOGICAL INFORMATION

Ecotoxicity:	No data are available on the product itself.
Bioaccumulative potential:	Does not bioaccumulate.
Persistence and degradability:	No data for product.
Mobility in soil:	No data for product.

Other adverse effects:	None.

13. DISPOSAL CONSIDERATIONS

Waste from Residues/ Unused Product:	Not applicable.
Contaminated Packaging:	Not applicable.

14. TRANSPORT INFORMATION

U.S. Department of Transportation (DOT)

Proper Shipping Name:	Not regulated for transport
UN/Id No:	None
Hazard Class or Division:	None
Packing Group:	None
Labeling Requirements:	None
Additional Shipping Description:	None

15. REGULATORY INFORMATION

U.S. Regulations:

CERCLA/SARA

Section 302 Extremely Hazardous Substances and TPQs (in pounds):	This material contains the following chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372: None
Section 311/312 (Title III Hazard Categories):	**Acute Health:** No **Chronic Health:** No **Fire Hazard:** No **Pressure Hazard:** No **Reactive Hazard:** No
Section 313 and 40 CFR 372:	This material contains the following chemicals subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR 372: None

EPA (CERCLA)

Reportable Quantity (in pounds):	This material does not contain chemicals subject to CERCLA reporting requirements. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

California Proposition 65:

This product contains the following regulated chemicals:

Toluene (108-88-3) at < 0.004 ppm.
Ethylbenzene (100-41-4) < 0.006 ppm
Polyaromatic hydrocarbons < 0.092 ppm
Arsenic <0.170 ppm

International Hazard Classification:

Canada: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the Regulations.

National Chemical Inventories

All components are either listed under TSCA or are exempt.
All components are listed on the Canadian DSL.

16. OTHER INFORMATION

NFPA 704 Hazard Class:	**Health: 0 Flammability: 0 Instability: 0**
HMIS: (Rated using National Paint & Coatings Association HMIS: Rating Instructions, 2nd Edition)	**Health: 0 Flammability: 0 Physical Hazard: 0**
	(0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)
Date of Issue:	**22 May 2015**
Status:	**Revision 1**
Reason for Revision:	New SDS: GHS / OSHA HazCom 2012.
Previous Issue Date:	N/A
Additional Advice:	Before using any product, read all warnings and directions on the label.

Guide to Abbreviations:
ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

Disclaimer of Expressed and implied Warranties:
The information provided in this safety data sheet is accurate to the best of our knowledge, or is obtained from sources believed to be accurate at the time of its publication. NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTY OR GUARANTY OF ANY OTHER KIND, EXPRESS OR IMPLIED, IS MADE REGARDING PERFORMANCE, SUITABILITY, STABILITY OR OTHERWISE. The information included herein is not intended to be all-inclusive as to the appropriate manner and/or conditions of use, handling and/or storage. Factors pertaining to certain conditions of storage, handling, or use of this product may involve other or additional safety or performance considerations. While our technical personnel will be happy to respond to questions regarding safe handling and use procedures, safe handling and use remains the responsibility of the customer. No suggestions for use are intended to, and nothing herein shall be construed as a recommendation to, infringe any existing patents or violate any laws, regulations or ordinances of any governmental entity.

SDS for Products Identified

in

Attachment B

SAFETY DATA SHEET

Section 1. Identification

Product name : CRW9070 CORROSION INHIBITOR
Product code : CRW9070

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Corrosion inhibitor.

Print date : 10/14/2014.
Validation date : 10/14/2014.
Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/SDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
ACUTE TOXICITY: ORAL - Category 4
ACUTE TOXICITY: SKIN - Category 4
ACUTE TOXICITY: INHALATION - Category 4
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE): ORAL [optic nerve] - Category 1
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Highly flammable liquid and vapor.
Harmful if swallowed, in contact with skin or if inhaled.
Causes serious eye damage.
Causes skin irritation.
Causes damage to organs if swallowed. (optic nerve)
Toxic to aquatic life with long lasting effects.

Section 2. Hazards identification

Precautionary statements

Prevention : Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

Response : Collect spillage. IF exposed: Call a POISON CENTER or physician. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or physician if you feel unwell. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Avoid contact with skin and clothing. Wash thoroughly after handling.

Hazards not otherwise classified : Prolonged or repeated contact may dry skin and cause irritation.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Methanol	20 - 30	67-56-1
Amine derivative	10 - 20	Trade secret.
Quaternary ammonium compound	10 - 20	Trade secret.
Isopropanol	5 - 10	67-63-0
Oxyalkylated alkylphenol	1 - 5	Trade secret.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Section 4. First aid measures

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Wash skin thoroughly with soap and water or use recognized skin cleanser. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Harmful if inhaled. May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Harmful in contact with skin. Causes skin irritation. Defatting to the skin.

Ingestion : Harmful if swallowed. Causes damage to organs following a single exposure if swallowed. May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,dryness,cracking,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Section 5. Fire-fighting measures

Specific hazards arising from the chemical : Highly flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Methanol	US ACGIH	200	262	-	250	328	-	-	-	-	[1]
	OSHA PEL	200	260	-	-	-	-	-	-	-	
	OSHA PEL 1989	200	260	-	250	325	-	-	-	-	[1]
Isopropanol	US ACGIH	200	-	-	400	-	-	-	-	-	
	OSHA PEL	400	980	-	-	-	-	-	-	-	
	OSHA PEL 1989	400	980	-	500	1225	-	-	-	-	

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Section 8. Exposure controls/personal protection

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Additional information

An eyewash station should be available. When concentrations exceed the exposure limits specified, use of a NIOSH approved supplied air respirator with full facepiece, organic vapor cartridge is recommended. Where the protection factor may be exceeded, use of a Self Contained Breathing Apparatus (SCBA) may be necessary.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Amber.

Odor : Alcohol-like.

Odor threshold : Not available.

pH : 10 to 12

: 5% of product

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 17°C (62.6°F) [TCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Highly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 0.92 (15.6°C)

Density : 7.68 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Dynamic: 2000 cP

Section 9. Physical and chemical properties

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, reducing materials and acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Methanol	LC50 Inhalation Gas.	Rat	145000 ppm	1 hours
	LC50 Inhalation Gas.	Rat	64000 ppm	4 hours
	LD50 Dermal	Rabbit	15800 mg/kg	-
	LD50 Oral	Rat	5600 mg/kg	-
Amine derivative	LD50 Oral	Rat	1000 mg/kg	-
Isopropanol	LC50 Inhalation Vapor	Rat	>10000 ppm	6 hours
	LD50 Dermal	Rabbit	6.29 g/kg	-
	LD50 Oral	Rat	5000 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
Isopropanol	-	3	-

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Section 11. Toxicological information

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Methanol	Category 1	Oral	optic nerve
Isopropanol	Category 3	Not applicable.	Narcotic effects

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	316.6 mg/kg
Dermal	1094.9 mg/kg
Inhalation (vapors)	10.95 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Methanol	Acute EC50 16.912 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 10000000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2500000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 100 mg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 9.96 mg/l Marine water	Algae - Ulva pertusa	96 hours
Amine derivative	Acute EC50 4300 µg/l Fresh water	Daphnia - Daphnia magna - Larvae	48 hours
	Acute EC50 2400 µg/l Fresh water	Fish - Poecilia reticulata	96 hours
Isopropanol	Acute LC50 1400000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours

Section 12. Ecological information

	Acute LC50 1400000 µg/l	Fish - Gambusia affinis	96 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1993	UN1993	UN1993	UN1993
UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Contains: Methanol, Isopropanol)	FLAMMABLE LIQUID, N.O.S. (Contains: Methanol, Isopropanol)	FLAMMABLE LIQUID, N.O.S. (Contains: Methanol, Isopropanol)	FLAMMABLE LIQUID, N.O.S. (Contains: Methanol, Isopropanol)
Transport hazard class(es)	3 	3 	3 	3 
Packing group	II	II	II	II
Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-E S-D	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 14. Transport information

DOT Reportable Quantity Methanol, 2376 gal of this product.

Marine pollutant Quaternary ammonium compound

North-America NAERG : 128

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Methyl chloride
Clean Water Act (CWA) 311: Potassium hydroxide

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard

SARA 313

	Product name	CAS number	%
Supplier notification	Methanol	67-56-1	20 - 30

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

Flammability
Health
Instability/Reactivity
Special

History

Date of printing : 10/14/2014.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this SDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This SDS was prepared and is to be used for this product. If the product is used as a component in another product, this SDS information may not be applicable.

MATERIAL SAFETY DATA SHEETS

MSDS NUMBER. MC WC-7835
PART NUMBER: MC WC-7835
PRODUCT NUMBER: MC WC-7835
CAS NUMBER: Blend
TRADE NAMES:
CHEMICAL NAME: MC WC-7835 Reverse Demulsifier

SECTION I

MANUFACTURER: / VENDOR: Multi-Chem Group, LLC	NFPA HAZARD SCALE	NFPA RATINGS:	
ADDRESS: P. O. Box 2770	4 - Extreme	HEALTH:	2
4285 Crooked Palm Rd.	3- High	FIRE:	1
Ventura, CA. 93002	2 - Moderate	REACTIVITY:	1
EMERGENCY TELEPHONE NUMBER: (800) 535-5053	1 - Slight	Special:	0
INFORMATION TELEPHONE NUMBER: (805) 648-1195	0 - Insignificant		

DATE PREPARED: 01/19/06

SECTION II - HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

CAS NUMBER	HAZARDOUS COMPONENT	Vol %	ACGIH TWA	ACGIH STEL
7647-01-0	Hydrochloric Acid	2.5		2 ppm
7647-85-7	Zinc Chloride	1	1 ppm	2 ppm
67-56-1	Methyl Alcohol	2.5	200 ppm	250 ppm

* Denotes a chemical subject to the reporting requirements of SARA Title 111 section 313 of 1986 and 40 CFR part 132

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT	N/DA	SPECIFIC GRAVITY (H20 = 1)	1.0240
VAPOR PRESSURE (mm Hg.)	N/DA	MELTING POINT	N/DA
VAPOR DENSITY (AIR = 1)	N/DA	EVAPORATION RATE (Butyl Acetate = 1)	N/DA

SOLUBILITY IN WATER: Complete

APPEARANCE AND ODOR: Dark Liquid, Mild Odor

OTHER INFORMATION:

Viscosity Units = N/DA pH = 1.482

Freezing Point = N/DA Dry Point = N/DA

Density (Lb./Gal.) = 8.53

DANGER

Physical Hazards: -

Corrosive Liquid

Generic Name: - Reverse Demulsifier

UN/NA Number: - UN 1760

North American Emergency Response Guide Number: - 154

DOT Proper Shipping Name: - Corrosive N.O.S
(Contains Hydrochloric Acid)

DOT Hazard Class:- 8

DOT Packing Group:- III

DOT/CERCLA RQ:- 5000 lbs - Hydrochloric Acid (max 5% in blend)

MSDS NUMBER: MC WC-7835

CHEMICAL NAME: MC WC-7835 Reverse Demulsifier

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: >205 F | FLAMMABLE LIMITS: LEL: N/DA UEL: N/DA

EXTINGUISHING MEDIA: Dry Chemical CO2 Foam Use Water Spray or Water Fog for Cooling

SPECIAL FIRE FIGHTING PROCEDURES:

Do not enter fire area without proper protection - see section V - decomposition products possible.

Wear self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode when fighting fires.

Fight fire from safe distance / protected location.

Heat may build pressure / rupture closed containers, spreading fire, increasing risk of burns / injuries.

Use water spray / fog for cooling.

Notify authorities if liquid enters sewer / public waters.

UNUSUAL FIRE FIGHTING PROCEDURES:

None

SECTION V - REACTIVITY DATA

STABILITY:

Stable under normal conditions.

INCOMPATIBILITY (MATERIALS TO AVOID):

Strong Oxidizing agents, heat, sparks, opene flames

HAZARDOUS DECOMPOSITION OF BYPRODUCTS:

Incomplete combustion may release poisonous oxides of carbon, sulfur, and nitrogen

HAZARDOUS POLYMERIZATION:

Will not occur.

SECTION VI - HEALTH HAZARD DATA

ROUTE(S) OF ENTRY:

Inhalation: X Absorption: X Ingestion: X Injection: N/A

Inhalation:

Although no appropriate human or animal health effects data are known to exist, this material is expected to be an inhalation hazard. Excessive inhalation of vapors can cause headache, irritation to nose, throat, respiratory tract and Central Nervous System effects.

Eye contact:

Although no appropriate human or animal health effects are known to exist, this material is expected to cause severe irritaion, redness, tearing and blurred vision.

Skin irritation:

Although no appropriate human or animal health effects data are known to exist, this material is expected to cause irritation, defatting of skin and dermatitis

Ingestion:

Although no appropriate human or animal health effects data are known to exist, this material is expected to be an ingestion hazard. Harmful if swallowed

Carcinogenicity? NO NTP? NO IARC Monograph? NO OSHA Regulated? NO

SECTION VI - HEALTH HAZARD DATA (Continued)

HEALTH HAZARDS (ACUTE AND CHRONIC):

Acute Health Effects:- (Short Term)

Suspected inhalation hazard. Eye irritation, skin irritation, skin absorption, ingestion hazard

Chronic Health Effects:-(Long Term)

May aggravate existing skin, eyes, and lung conditions. Dermatitis

MEDICAL CONDITION GENERALLY AGGRAVATED BY EXPOSURE:

Pre-existing eye and skin disorders

EMERGENCY AND FIRST AID PROCEDURES:

Inhalation:-

If overcome by exposure , remove victim to fresh air immediately. Give oxygen or artificial respiration as needed. Obtain emergency medical attention. Prompt action is essential.

Eye Contact:-

In case of eye contact, immediately (within 1 minute) rinse with clean water for 20 to 30 minutes. Retract eyelids often. Obtain immediate emergency medical attention.

Skin Contact:-

Immediately remove contaminated clothing. Wash skin thoroughly with mild soap and water. Flush with lukewarm water for 15 minutes. Obtain immediate medical attention.

Ingestion:-

If large quantity swallowed, Induce vomiting. Obtain immediate medical attention

Emergency Medical Treatment Procedures:-

Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. Continue to rinse eyes with clean water for 20 to 30 minutes, retracting eyelids often. Contact ophthalmologist immediately. Treat burns or allergen reactions conventionally after decontamination. Induce vomiting

OTHER HEALTH WARNINGS:

None

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

IMPORTANT: Equip responders with proper protection (see section VIII).

Small Spill: Absorb liquid on paper, vermiculite, floor absorbent, or other absorbent material, and transfer to hood.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE continued

LARGE SPILL: CORROSIVE LIQUID.

Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area of spill to prevent spreading, pump liquid to salvage tank. Remaining liquid may be taken or other absorbent material and shoveled into containers.
Prevent run-off into sewers, streams or other bodies of water. If run-off occurs, notify proper authorities as required, that a spill has occurred.

WASTE DISPOSAL METHOD:

Comply with Federal / State / Local regulations for disposal. Contact state and federal regulators to determine whether the material should be classified as a hazardous waste or industrial waste and handled accordingly. Used licensed transporter and disposal facility.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

For transport, handling, and storage, use polyethylene, plastic, lined steel or stainless steel.

Store in tightly closed containers in cool, dry, isolated and well ventilated area away from heat, sources of ignition and incompatible materials.

Use non-sparking tools and explosion proof equipment.

Ground line, containers, and other equipment used during product transfer to reduce the possibility of a static induced spark.

Do not "switch" load (load into containers which previously contained gasoline or other low flash material) because of possible accumulation of a static charge resulting in a source of ignition.

Use good personal hygiene practices.

Containers of this material may be hazardous when emptied, since emptied containers retain residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed.

Store drums with bungs in up position.

OTHER PRECAUTIONS:

Wash thoroughly after handling.
Do not get it in eyes, on skin or on clothing.
Do not breathe dust, vapor, mist or gas.
Keep container closed when not in use.
Empty container may contain hazardous residues.
For industrial use only.
Keep out of reach of children.
Failure to use caution may cause serious injury or illness.
Never siphon by mouth.

SECTION VIII - CONTROL MEASURES

VENTILATION REQUIREMENTS:

Either local exhaust or general room ventilation is usually required.

PERSONAL PROTECTIVE EQUIPMENT:

Respiratory Protection:-

If exposure can exceed the PEL/TLV, use only NIOSH/MSHA approved air-purifying or supplied air respirator operated in a positive pressure mode per the NIOSH/OSHA 1981 Occupational Health Guidelines for chemical hazard.

Eye Protection:-

Eye protection such as safety glasses or goggles must be worn when possibility exits for eye contact due to spraying liquid or airborne particles.

Skin Protection:-

When skin contact is possible, protective clothing including gloves, apron, sleeves, boots, safety glasses or goggles should be worn and must be cleaned thoroughly after each use.

SECTION VIII - CONTROL MEASURES continued

Other Hygienic Practices:-

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet facilities. Shower after work using plenty of soap and water.

Other Work Practices:-

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Promptly remove clothing and wash thoroughly before reuse.

SECTION IX - REGULATORY INFORMATION

STATUS OF SUBSTANCE LISTS:

The concentrations shown are maximum or ceiling levels (weight%) to be used for calculations for regulations. Trade secrets are indicated by "TS".

FEDERAL EPA:

Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of the release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQ's) in the 40 CFR 302.4. Components present in this product which could require reporting under the statute are:

NONE

Superfund Amendments and Reauthorization Act of 1989 (SARA) Title III requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA Section 313). This information must be included in all MSDS's that are copied and distributed for this material. Submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA Section 313).
Components present in this product at a level which could require reporting under the statute are:

COMPONENT	CAS NO.	MAXIMUM %
None		

SECTION X - SUPPLEMENT

Note: Qualifiers and codes used in this MSDS

EQ = Equal	AP = Approximately
< = Less Than	> = Greater Than
UK = Unknown	N/P = No Applicable Information Found
N/AP = Not Applicable	N/DA = No Data Available

SECTION XI - DISCLAIMER

Some of the information presented and conclusions drawn herein are from sources other than direct test data on the product itself.

The information in the MSDS was obtained from sources which we believe are reliable. However, the information is provided without warranty, express or implied, regarding its correctness.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of, or in any way connected with the handling, storage, use or disposal of this product.

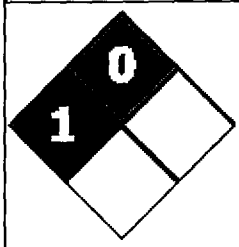
This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

This MSDS has been prepared in accordance with the requirements of the OSHA Communication Standard (29 CFR 1200).

multi-chem®

INDUSTRY PROVEN...
VALUES DRIVEN

Material Safety Data Sheet

NFPA	HMIS
	Health Hazard 1 Flammability 0 Reactivity 0

Issuing Date	11-Feb-2005	Revision Date	20-Jun-2011	Revision Number	2

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name **MC WC-7820**

Product Code MC WC-7820

Recommended Use Water clarifier.

Manufactured by:
Multi-Chem Group LLC
2905 Southwest Blvd
San Angelo, TX 76904
Phone: 1 325 223 6200

Emergency Telephone Number
1 800 535 5053
+1 352 323 3500 (Outside United States)

2. HAZARDS IDENTIFICATION

Emergency Overview

May cause skin, eye, and respiratory tract irritation
May be harmful if swallowed, inhaled, or absorbed through skin

Appearance	Hazy, White	Physical State	Liquid	Odor	No data available

Potential Health Effects

Principle Routes of Exposure Eye contact, Skin contact, Inhalation, Ingestion.

Acute Toxicity

Eyes May cause irritation.

Skin May cause irritation.

Inhalation Vapor from heated material or mist may cause respiratory irritation.

Ingestion May be harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Chronic Effects
No known effect based on information supplied

Aggravated Medical Conditions Skin disorders. Preexisting eye disorders. Respiratory disorders.

Environmental Hazard See Section 12 for additional Ecological Information

3. COMPOSITION/INFORMATION ON INGREDIENTS

The product contains no substances which at their given concentration, are considered to be hazardous to health.

4. FIRST AID MEASURES

General Advice Get medical attention immediately if symptoms occur.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention immediately if symptoms occur.

Skin Contact Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists.

Inhalation None under normal use. Get medical attention immediately if symptoms occur.

Ingestion None under normal use. Get medical attention immediately if symptoms occur.

Notes to Physician Treat symptomatically

5. FIRE-FIGHTING MEASURES

Flammable Properties Not flammable

Flash Point No data available

Suitable Extinguishing Media Water spray. Carbon dioxide (CO_2). Foam. Dry powder.

Hazardous Combustion Products Carbon oxides, Hydrogen chloride, Nitrogen, Phosphorus.

Explosion Data

Sensitivity to Mechanical Impact Not sensitive
Sensitivity to Static Discharge Not sensitive

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

NFPA	Health Hazard	1	Flammability	0	Stability	0	Physical and Chemical Hazards	-

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions Use personal protective equipment. Avoid contact with the skin and the eyes. Ensure adequate ventilation. If spilled, take caution, as material can cause surfaces to become very slippery.

Methods for Containment Dike far ahead of liquid spill for later disposal.

Methods for Cleaning Up Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Handling Wear personal protective equipment. Avoid contact with skin and eyes. Ensure adequate ventilation.

Storage Keep containers tightly closed in a cool, well-ventilated place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Engineering Measures Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/Face Protection Safety glasses with side-shields. If splashes are likely to occur, wear:. Goggles. Face-shield.

Skin and Body Protection Wear protective gloves/clothing.

Respiratory Protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations

Hygiene Measures Remove and wash contaminated clothing before re-use. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Hazy White	**Odor**	No data available
Physical State	Liquid	**pH**	2.8-4.3
Flash Point	No data available	**Autoignition Temperature**	No data available
Boiling Point/Range	No data available		
		Flammability Limits in Air	No data available
Explosion Limits	No data available		
Specific Gravity	1.0255-1.0505	**Solubility**	Soluble in water
Evaporation Rate	No data available	**Vapor Pressure**	No data available
Vapor Density	No data available	**Density**	8.55-8.76 lbs/gal

10. STABILITY AND REACTIVITY

Stability Stable under recommended storage conditions

Incompatible Products Strong oxidizing agents. Organic material. Reactive metals.

Conditions to Avoid Excessive heat.

Hazardous Decomposition Products Carbon oxides. Hydrogen chloride. Nitrogen. Phosphorus.

Hazardous Polymerization None under normal processing.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Product Information The product itself has not been tested.

Irritation May cause skin and eye irritation. May cause irritation of respiratory tract.

Chronic Toxicity

Carcinogenicity Contains no ingredient listed as a carcinogen.

Target Organ Effects Eyes, Skin, Respiratory system.

12. ECOLOGICAL INFORMATION

Ecotoxicity
The environmental impact of this product has not been fully investigated

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method Dispose of in accordance with local regulations.

Contaminated Packaging Dispose of in accordance with local regulations

14. TRANSPORT INFORMATION

DOT Not regulated

IATA Not regulated

IMDG/IMO Not regulated

TDG Not approved for transport in Canada

15. REGULATORY INFORMATION

International Inventories

U.S. Federal Regulations
SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
This product does not contain any substances regulated as hazardous air pollutants (HAPS) under Section 112 of the Clean Air Act Amendments of 1990.

CERCLA

U.S. State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals

International Regulations

Mexico - Grade No information available.

Canada

WHMIS Hazard Class
Not determined

16. OTHER INFORMATION

Prepared By	Amanda Burwell
Issuing Date	2/11/05
Revision Date	20-Jun-2011
Reason for Revision	(M)SDS sections updated.

Disclaimer
The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS

SAFETY DATA SHEET

Section 1. Identification

Product name : WCW3003 COMBINATION INHIBITOR
Product code : WCW3003

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Emulsifier. Corrosion inhibitor.

Print date : 2/2/2015.
Validation date : 2/2/2015.
Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

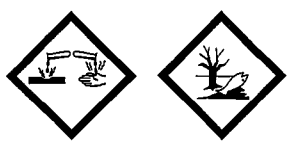
Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
AQUATIC HAZARD (ACUTE) - Category 2
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : Causes severe skin burns and eye damage.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention : Wear protective gloves. Wear eye or face protection. Wear protective clothing. Avoid release to the environment. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : Collect spillage. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Quaternary ammonium compound	5 - 10	Trade secret.
Phosphate ester salt	1 - 5	Trade secret.
Ethanol	1 - 5	64-17-5
Alkyl amine	0.1 - 1	Trade secret.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Section 4. First aid measures

Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes severe burns.

Ingestion : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,phosphorus oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ethanol	US ACGIH	-	-	-	1000	-	-	-	-	-	
	OSHA PEL	1000	1900	-	-	-	-	-	-	-	
	OSHA PEL 1989	1000	1900	-	-	-	-	-	-	-	

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Yellow.

Odor : Mercaptan.

Odor threshold : Not available.

pH : 5 to 7

: Neat - without dilution.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 94°C (201.2°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Section 9. Physical and chemical properties

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 1.0399 (15.6°C)

Density : 8.66 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : -5°C (23°F)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, metals, acids and alkalis.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Quaternary ammonium compound	LD50 Oral	Rat	426 mg/kg	-
Ethanol	LC50 Inhalation Vapor	Rat	20000 ppm	10 hours
	LC50 Inhalation Vapor	Rat	124700 mg/m³	4 hours
	LD50 Oral	Rat	7 g/kg	-
Alkyl amine	LD50 Oral	Rat	1000 to 1250 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Section 11. Toxicological information

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	6010.6 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Quaternary ammonium compound	Acute EC50 37 ppb Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 64 ppb Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 4.15 ppb Marine water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 32.2 ppb	Fish - Pimephales promelas	34 days
Ethanol	Acute EC50 17.921 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 2000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 25500 µg/l Marine water	Crustaceans - Artemia franciscana - Larvae	48 hours
	Acute LC50 42000 µg/l Fresh water	Fish - Oncorhynchus mykiss	4 days
	Chronic NOEC 4.995 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Chronic NOEC 0.375 ul/L Fresh water	Fish - Gambusia holbrooki - Larvae	12 weeks

Persistence and degradability

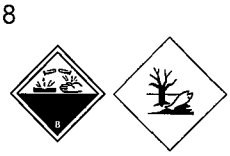
Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1760	UN1760	UN1760	UN1760
UN proper shipping name	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)	CORROSIVE LIQUID, N.O.S. (Contains: Quaternary ammonium compound)
Transport hazard class(es)	8 	8 	8 	8 
Packing group	III	III	III	III

Section 14. Transport information

Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-A S-B	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Not applicable.

Marine pollutant Quaternary ammonium compound

North-America NAERG : 154

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard

SARA 313

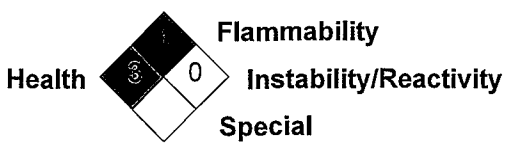
Supplier notification : No products were found.

Canada

Canada (CEPA DSL): : At least one component is not listed in DSL but all such components are listed in NDSL.

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 2/2/2015.

Indicates information that has changed from previously issued version.

Section 16. Other information

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : WAW4000 WETTING AGENT
Product code : WAW4000

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Wetting agent.

Print date : 2/3/2015.
Validation date : 2/3/2015.
Version : 2

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : ACUTE TOXICITY: ORAL - Category 4
SKIN CORROSION/IRRITATION - Category 1C
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
AQUATIC HAZARD (ACUTE) - Category 2
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Harmful if swallowed.
Causes severe skin burns and eye damage.
Toxic to aquatic life.
Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention : Wear protective gloves. Wear eye or face protection. Wear protective clothing. Avoid release to the environment. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Polyoxyalkylene	20 - 30	Trade secret.
Acetic acid	20 - 30	64-19-7

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Section 4. First aid measures

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system.

Skin contact : Causes severe burns.

Ingestion : Harmful if swallowed. May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is toxic to aquatic life. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Acetic acid	US ACGIH	10	25	-	15	37	-	-	-	-	
	OSHA PEL	10	25	-	-	-	-	-	-	-	
	OSHA PEL 1989	10	25	-	-	-	-	-	-	-	

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Colorless.

Odor : Vinegar-like. [Slight]

Odor threshold : Not available.

pH : 2 to 3

: 5% in water

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: >93.4°C (>200.1°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Section 9. Physical and chemical properties

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 1.04 (15.6°C)

Density : 8.67 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : -16.11°C (3°F)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, organic materials and alkalis.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Polyoxyalkylene	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	2140 mg/kg	-
Acetic acid	LC50 Inhalation Vapor	Rat	11000 mg/m³	4 hours
	LD50 Dermal	Rabbit	1060 mg/kg	-
	LD50 Oral	Rat	3310 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

Section 11. Toxicological information

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	1480.3 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Acetic acid	Acute EC50 73400 µg/l Fresh water Acute EC50 65000 µg/l Fresh water Acute LC50 50.1 ul/L Marine water Acute LC50 75000 µg/l Fresh water	Algae - Navicula seminulum Daphnia - Daphnia magna Crustaceans - Artemia sp. Fish - Lepomis macrochirus	96 hours 48 hours 48 hours 96 hours

Section 12. Ecological information

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3265	UN3265	UN3265	UN3265
UN proper shipping name	CORROSIVE LIQUID, ACIDIC, ORGANIC, N. O.S. (Contains: Acetic acid)	CORROSIVE LIQUID, ACIDIC, ORGANIC, N. O.S. (Contains: Acetic acid)	CORROSIVE LIQUID, ACIDIC, ORGANIC, N. O.S. (Contains: Acetic acid)	CORROSIVE LIQUID, ACIDIC, ORGANIC, N. O.S. (Contains: Acetic acid)
Transport hazard class(es)	8 	8 	8 	8 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-A S-B	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Acetic acid, 2307 gal of this product.

Section 14. Transport information

Marine pollutant Polyoxyalkylene

North-America NAERG : 153

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: Acetic acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard

SARA 313

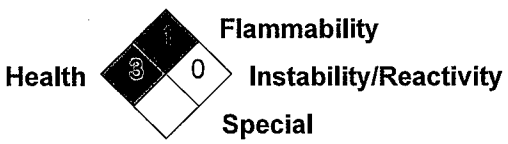
Supplier notification : No products were found.

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 2/3/2015.

Indicates information that has changed from previously issued version.

Notice to reader

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This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : MONOETHANOLAMINE 99%
Product code : PFR170

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Not available.

Print date : 2/27/2015.
Validation date : 2/23/2015.
Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

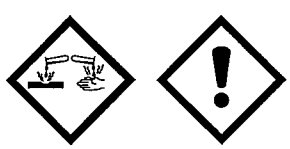
Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 4
ACUTE TOXICITY: ORAL - Category 4
ACUTE TOXICITY: SKIN - Category 4
ACUTE TOXICITY: INHALATION - Category 4
SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation] - Category 3
AQUATIC HAZARD (ACUTE) - Category 3
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : Combustible liquid.
Harmful if swallowed, in contact with skin or if inhaled.
Causes severe skin burns and eye damage.
May cause respiratory irritation.
Harmful to aquatic life with long lasting effects.

Section 2. Hazards identification

Precautionary statements

Prevention : Wear protective gloves: > 8 hours (breakthrough time): Nitrile or Neoprene gloves. 4H gloves.. Wear eye or face protection. Wear protective clothing. Keep away from flames and hot surfaces. - No smoking. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

Response : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or physician if you feel unwell. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Ingredient name	%	CAS number
Monoethanolamine	90 - 100	141-43-5

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Harmful if inhaled. May cause respiratory irritation. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes severe burns. Harmful in contact with skin.

Ingestion : Harmful if swallowed. May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : respiratory tract irritation,coughing

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Combustible liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Section 5. Fire-fighting measures

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Keep away from acids. Empty containers retain product residue and can be

Section 7. Handling and storage

hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from acids. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Monoethanolamine	US ACGIH	3	7.5	-	6	15	-	-	-	-	
	OSHA PEL	3	6	-	-	-	-	-	-	-	
	OSHA PEL 1989	3	8	-	6	15	-	-	-	-	

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves: Nitrile or Neoprene gloves. 4H gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state	:	Liquid. [Clear.]
Color	:	Colorless.
Odor	:	Ammoniacal. [Slight]
Odor threshold	:	Not available.
pH	:	11.5 to 12.5
	:	Neat-without dilution.
Melting/freezing point	:	10.2°C (50.4°F)
Boiling point	:	170.4°C (338.7°F)
Initial Boiling Point	:	Not available.
Flash point	:	Closed cup: 85°C (185°F) [TCC]
Burning time	:	Not applicable.
Burning rate	:	Not applicable.
Evaporation rate	:	<0.1 (Butyl acetate = 1)
Flammability (solid, gas)	:	Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.
Lower and upper explosive (flammable) limits	:	Lower: 3% Upper: 23.5%
Vapor pressure	:	<0.13 kPa (<1 mm Hg) @ 20°C
Vapor density	:	2.11 [Air = 1]
Relative density	:	1.018 (15.6°C)
Density	:	8.48 (lbs/gal)
Solubility in water	:	Soluble
Partition coefficient: n-octanol/water	:	Not available.
Auto-ignition temperature	:	410°C (770°F)
Decomposition temperature	:	Not available.
Viscosity	:	Dynamic (25°C): 19 cP
VOC	:	Not available.
Pour Point	:	Not available.

Section 10. Stability and reactivity

Reactivity	:	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	:	The product is stable.
Possibility of hazardous reactions	:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	:	Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
Incompatible materials	:	Reactive or incompatible with the following materials: oxidizing materials and acids. Halogenated compounds. Contact with some metals may produce hydrogen gas which is explosive and flammable. Incompatible with aluminum, copper, copper alloys, and zinc.

Section 10. Stability and reactivity

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Monoethanolamine	LD50 Oral	Rat	1720 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Monoethanolamine	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Section 11. Toxicological information

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	1720 mg/kg
Dermal	1100 mg/kg
Inhalation (vapors)	11 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Monoethanolamine	Acute EC50 80000 µg/l Fresh water	Algae - Isochrysis galbana	96 hours
	Acute LC50 >100000 µg/l Marine water	Crustaceans - Crangon crangon - Adult	48 hours
	Acute LC50 170000 µg/l Fresh water	Fish - Carassius auratus	96 hours
MONOETHANOLAMINE 99%	Acute LC50 170 mg/l	Fish	96 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN2491	UN2491	UN2491	UN2491
UN proper shipping name	ETHANOLAMINE	ETHANOLAMINE	ETHANOLAMINE	ETHANOLAMINE
Transport hazard class(es)	8 	8 	8 	8 
Packing group	III	III	III	III
Environmental hazards	No.	No.	No.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-A S-B	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Not applicable.

Marine pollutant Not available.

North-America NAERG : 153

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard

SARA 313

Supplier notification : No products were found.

Section 15. Regulatory information

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 2/27/2015.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : MAGNACIDE™ B MICROBIOCIDE
Product code : XCB

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Microbiocide

Print date : 3/20/2015.
Validation date : 3/20/2015.
Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/SDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
ACUTE TOXICITY: ORAL - Category 2
ACUTE TOXICITY: SKIN - Category 3
ACUTE TOXICITY: INHALATION - Category 1
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
SKIN SENSITIZATION - Category 1
AQUATIC HAZARD (ACUTE) - Category 1
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Danger

Section 2. Hazards identification

Hazard statements : Highly flammable liquid and vapor.
Fatal if swallowed or if inhaled.
Toxic in contact with skin.
Causes serious eye irritation.
Causes skin irritation.
May cause an allergic skin reaction.
Very toxic to aquatic life.
Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention : Wear protective gloves. Wear eye or face protection. Wear respiratory protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

Response : Collect spillage. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or physician if you feel unwell. Take off contaminated clothing. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Additional information

Overexposure to vapors may be fatal. Inhalation exposure studies have determined the rat LC50 to be 26 ppm at one hour exposure and at four hour exposure to be 8.3 ppm. The NIOSH IDLH (Immediately Dangerous to Life and Health) value is 2 ppm. The primary route of exposure is inhalation; acute exposure may result in lacrimation, tracheobronchitis, pneumonia, and lung injury (at 20 ppm). The low odor detection (0.03 – 0.21 ppm) and irritation threshold (0.25 - 0.5 ppm) and acutely irritating effects of acrolein usually prevent chronic toxicity effects. Splashes to the eye may result in blepharoconjunctivitis (bloodshot eyes), lid edema, fibrinous or pustular discharge, and deep or long-lasting corneal injury. See Section 11 for additional information.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Acrolein	95	107-02-8
Hydroquinone	0.1 - 1	123-31-9

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 15-20 minutes while holding the eyelid(s) open. Remove contact lenses. Get medical attention immediately.

Inhalation : Remove to fresh air. Oxygen may be administered if breathing is difficult. If not breathing, administer artificial respiration and seek medical attention immediately.

Skin contact : Remove contaminated clothing and shoes immediately. Wash affected area with soap and mild detergent and large amounts of lukewarm, gently flowing water until no evidence of chemical remains (for atleast15-20 minutes). Get medical attention.

Ingestion : Get medical attention immediately. If swallowed, do not induce vomiting unless directed to do so by medical personnel. Wash out mouth with water if person is conscious. If fully conscious promptly drink one to two glasses water. Never induce vomiting or give anything by mouth to a victim who is unconscious or having convulsions.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Fatal if inhaled.

Skin contact : Toxic in contact with skin. Causes skin irritation. May cause an allergic skin reaction.

Ingestion : Fatal if swallowed. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain or irritation,watering,redness

Inhalation : No specific data.

Skin contact : irritation,redness

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treatment of the irritative effects of acrolein should be symptomatic and supportive. Following inhalation of acrolein, signs of respiratory dysfunction should be sought and hypoxia corrected. Specific treatment for bronchospasm and non-cardiogenic pulmonary edema may be necessary. Hypoxia may also occur following the ingestion of acrolein if there is pulmonary aspiration and/or laryngeal edema. The extent and severity of the corrosive effects on the upper gastrointestinal mucosa should be determined, for example, by endoscopy, and advice should be sought regarding the need for surgical intervention. Probable mucosal damage may contraindicate the use of gastric lavage.

Specific treatments : Treat exposed area as chemical burn.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Additional information

Persons exposed to vapors may have a delayed reaction and experience severe irritation of the respiratory tract and delayed pulmonary edema. Therefore, it is advisable to keep person exposed to high concentrations of vapor under observation for 24 hours following exposure If fully conscious promptly drink one to two glasses of water. Get immediate medical attention. Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression, and convulsion may be needed.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : In case of fire, use alcohol-resistant foam, dry chemicals, or CO2 fire extinguishers. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and public waterways. Note that flammable vapors may form an ignitable mixture with air. Vapors may travel considerable distances and flash back if ignited.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Highly flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is very toxic to aquatic life. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide, peroxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Remark : Toxic gases and vapors (such as carbon monoxide and peroxides) may be released in a fire involving acrolein. In the presence of sufficient oxygen and complete combustion, the combustion products further breakdown to carbon dioxide and water.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Evacuate all personnel to an upwind area and determine medical treatment needs. If qualified to do so through appropriate training contain or mitigate the spill as outlined below. Put on appropriate personal protective equipment. See Section 8 for information on use of respiratory protection appropriate for dealing with small spills. For large spills, wear fully encapsulating, vapor protective clothing (Level A Suit) and seek assistance from local fire department hazardous materials response team. Keep personnel removed and upwind of spill. Shut off all ignition sources; no flares, smoking, or flames in spill area. Approach release from upwind. Ventilate the release area.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Section 6. Accidental release measures

Small spill : Cover release with sodium carbonate (soda ash) and mix into spill with water. The soda ash and acrolein will form a solid by-product after addition of water. Alternately, absorb with paper towel, dry sand or other absorbent. For ground or surface contamination, remove contaminated media and dispose of properly. Contain all water for proper disposal. Waste must be disposed of in accordance with federal, provincial and local environmental control regulations.

Large spill : Vapor suppression: if available, blanket spill area with alcohol-resistant foam at 6% to reduce the vapor concentration. Reapply foam as needed to counteract the rapid breakdown of the foam blanket. Pump bulk fluid to appropriate storage containers for proper disposal. After recovery of the bulk fluid, neutralization of any remaining material can be accomplished by covering with sodium carbonate (soda ash) and mixing with water. Ratio is 20 pounds of soda ash to each gallon of acrolein followed by 5 gallons of water per gallon of acrolein. The soda ash and acrolein will form a solid by-product after addition of water. When reactivation is ccomplete scoop the solid material into properly marked containers for disposal. Contain all water for proper disposal. Prevent runoff from entering drains, sewers or waterways.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment. Avoid contact with eyes, skin and clothing. Avoid breathing vapors or spray mists. Use only with adequate ventilation. Store in a secure and well ventilated area. Keep away from heat, sparks and flame. Keep away from incompatible materials. Keep container tightly closed when not in use. To avoid fire or explosion, ensure containers and equipment are properly bonded and grounded prior to transferring product. This is normally accomplished through the use of Baker Petrolite-specified standard application procedures. When using product under non-routine conditions (e.g., laboratory samples), ensure material and container are properly bonded and grounded.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Additional information

Do not reuse empty container. Return empty containers to Taft Manufacturing Company 19815 South Lake Road, Taft, CA 93268.

Section 8. Exposure controls/personal protection

Control parameters

Section 8. Exposure controls/personal protection

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Acrolein	US ACGIH	-	-	-	-	-	-	0.1	-	-	[1]
	OSHA PEL	0.1	0.25	-	-	-	-	-	-	-	
	OSHA PEL 1989	0.1	0.25	-	0.3	0.8	-	-	-	-	
Hydroquinone	US ACGIH	-	1	-	-	-	-	-	-	-	[3]
	OSHA PEL	-	2	-	-	-	-	-	-	-	
	OSHA PEL 1989	-	2	-	-	-	-	-	-	-	

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Chemical safety goggles.

Hand protection : Chemical-resistant gloves.Butyl rubber gloves.Replace as needed.

Skin protection : Long sleeved shirts and work pants.

Respiratory protection : Full-face respirator use is required when connecting or disconnecting containers to application equipment, or any situations where the permissible exposure limit may be exceeded. As per NIOSH, full-face air-purifying respirators may be worn to protect personnel up to 2 ppm (IDLH) acrolein. The air purifying respirators should have organic vapor cartridge(s) or canister and a protection factor of 50. Exposure levels of unknown concentrations or greater than 2 ppm acrolein require the use of full-face positive pressure supplied-air breathing apparatus with a protection factor of 10,000.

Additional information

Persons exposed to vapors may have a delayed reaction and experience severe irritation of the respiratory tract and delayed pulmonary edema. Therefore, it is advisable to keep person exposed to high concentrations of vapor under observation for 24 hours following exposure.

The STEL of 0.3 ppm for acrolein was vacated by Court order, but it is still in effect in AK, CA, MI, MN, NC, TN and WA.. The OSHA permissible exposure levels shown above are the OSHA 1989 levels or from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Petrolite recommends that these lower exposure levels be observed as reasonable worker protection.

Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid.
Color	: Colorless to light yellow.
Odor	: Aldehyde like.
Odor threshold	: Not available.
pH	: Not available.
Melting/freezing point	: -87°C (-124.6°F)
Boiling point	: 53°C (127.4°F)
Initial Boiling Point	: Not available.
Flash point	: Closed cup: -25°C (-13°F) [TCC]
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: >1 (Ether (anhydrous) = 1)
Flammability (solid, gas)	: Highly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat. Toxic gases and vapors (such as carbon monoxide and peroxides) may be released in a fire involving acrolein. In the presence of sufficient oxygen and complete combustion, the combustion products further breakdown to carbon dioxide and water.
Lower and upper explosive (flammable) limits	: Lower: 2.8% Upper: 31%
Vapor pressure	: 31.3 kPa (234.9 mm Hg) @ 22°C
Vapor density	: 1.93 [Air = 1]
Relative density	: 0.85 (15.6°C)
Density	: 7.1 (lbs/gal)
Solubility in water	: Soluble (22% by weight @ 20°C)
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: 220°C (428°F)
Decomposition temperature	: Not available.
Viscosity	: Dynamic (20°C): 0.329 cP
VOC	: Not available.
Pour Point	: -86.7°C (-124.1°F)

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: This product is stable unless there is loss of inhibitor.
Possibility of hazardous reactions	: Hazardous reactions or instability may occur under certain conditions of storage or use. Hazardous polymerization may occur.Loss of hydroquinone stabilizer may result in polymerization under certain conditions. Air introduced into closed containers may cause a slow polymerization, resulting in loss of product quality.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Section 10. Stability and reactivity

Incompatible materials : Reactive or incompatible with the following materials: .Alkalies, amines, light, and oxidizing materials. Alkaline or strong acid contamination can cause a reaction which can be rapid and violent. Prevent water contamination of acrolein storage containers.

Hazardous decomposition products : carbon oxides (CO, CO2) Peroxides.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Acrolein	LC50 Inhalation Gas.	Rat	8 ppm	4 hours
	LC50 Inhalation Vapor	Rat	26 ppm	1 hours
	LC50 Inhalation Vapor	Rat	18 mg/m³	4 hours
	LC50 Inhalation Vapor	Rat	8.3 ppm	4 hours
	LD50 Dermal	Rabbit	160 mg/kg	-
	LD50 Dermal	Rabbit	231.4 mg/kg	-
	LD50 Oral	Rat	26 mg/kg	-
	LD50 Oral	Rat	29 mg/kg	-
Hydroquinone	LD50 Oral	Rat	302 mg/kg	-
XCB	LC50 Inhalation Vapor	Rat	26 ppm	1 hours
	LC50 Inhalation Vapor	Rat	8.3 ppm	4 hours
	LD50 Dermal	Rabbit	231.4 mg/kg	-
	LD50 Oral	Rat	29 mg/kg	-

Irritation/Corrosion

See additional information

Sensitization

No applicable toxicity data

Mutagenicity

See additional information

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
Acrolein	-	3	-
Hydroquinone	-	3	-

Section 11. Toxicological information

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Inhalation (gases) Inhalation (vapors)	8.421 ppm 0.01895 mg/l

Additional information

Irritation - Draize Test (Rabbit)
Skin - 2 mg/24H: Severe
Eye - 50 ug/24H: Severe
Skin - 15 ppm solution: Not irritating

A potential human health effect resulting from overexposure is the development of permanent lung damage in the form of decreased pulmonary (lung) function, and delayed pulmonary edema (fluid in the lungs) which can lead to chronic respiratory disease. As a highly reactive aldehyde, prolonged or repeated overexposures can produce long-term respiratory effects by significantly reducing ciliary action in the upper airways (i.e., interfering with the body's ability to clear mucous and foreign substances from the respiratory tract) and causing tissue damage throughout the lungs manifested as emphysema.

Acrolein levels of 0.4 to 4.9 ppm caused eye and nose irritation and structural changes in the respiratory system of hamsters, rats and rabbits (Ref. 1). Acrolein produced greater susceptibility to respiratory infections in mice (Ref. 2) and rats (Ref. 3).

Developmental/Reproduction studies
Acrolein has been tested for developmental and reproductive health effects. Results from developmental studies (Ref. 4, 5) indicated this material did not cause teratogenic effects in rats or rabbits at doses that caused maternal toxicity. A twogeneration rat reproductive study (Ref. 6) did not reveal any evidence of reproductive toxicity in either sex from any treatment group (maximum dose = 7.2 mg/kg). A second two-generation reproductive study in rats did not reveal any evidence of reproductive toxicity in either sex from any treatment group (maximum dose = 6 mg/kg) (Ref. 6).

Dermal Testing
In a 21 day dermal toxicity test in rabbits dosed at 7, 21 and 63 mg/kg of acrolein, toxicity was evidenced by slight to significant reduction in body weight gain, nasal mucous discharge, lethargy, slight to moderately lowered food consumption and increased frequency of lesions of the skin and lungs. Slight mortality in female rabbits dosed at 21 and 63 mg/kg was observed. No notable effects in hematology, blood chemistry, organ weights or organ weight ratios were observed (Ref. 7).

Section 11. Toxicological information

Chronic toxicity/Oncogenicity studies
In a 12-month chronic toxicity test in dogs (Ref. 9), the highest dose (2 mg/kg) tested resulted in changes in blood chemistry, but no compound-related tumors or lesions were observed. An 18-month oncogenicity study in mice (Ref. 10) did not reveal any compound-related tumors or lesions; the highest dose tested (4.5 mg/kg) resulted in increased mortality in the test group. A 24-month chronic toxicity/oncogenicity study in rats (Ref. 11) also did not reveal any compound related tumors or lesions. The high dose, 2.5 mg/kg, caused an increased mortality in the test group. No indications of cancer were found in the tests.

Other Studies

Mutagenicity studies
Effects of Acrolein on the In Vitro Induction of Chromosomal Aberrations in CHO Cells: No significant increase in the number of chromosomal aberrations above the background (Ref. 12). Effects of Acrolein on the In Vivo Induction of Chromosomal Aberrations in Rat Bone Marrow Cells: No significant increase in the number of chromosomal aberrations above the background (Ref. 13). Salmonella Liquid Suspension Mutant Fraction Assay: Acrolein did not induce concentration-dependent mutagencity in any of the 5 Salmonella strains, either in the presence or absence of metabolic activation (Ref. 14). Metabolism Data
Metabolism studies in freshwater fish, shellfish, goats, hens, rats and leaf lettuce indicate that acrolein is metabolized and does not accumulate in the tissue (Ref. 15-19).

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Acrolein	Acute EC50 30 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 0.018 mg/l Marine water	Crustaceans - Americamysis bahia - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
	Acute LC50 0.67 mg/l	Daphnia	96 hours
	Acute LC50 0.5 ppm	Daphnia	96 hours
	Acute LC50 0.016 mg/l	Fish	96 hours
	Acute LC50 0.02 mg/l	Fish	96 hours
	Acute LC50 0.57 ppm	Fish	96 hours
	Acute LC50 0.18 ppm	Fish	96 hours
	Acute LC50 14 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 9.1 µg/l Fresh water	Fish - Pimephales promelas	32 days
Hydroquinone	Acute LC50 162 µg/l Fresh water	Daphnia - Daphnia pulicaria	48 hours
	Acute LC50 44 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
XCB	Acute LC50 24 mg/l	Fish	96 hours

Persistence and degradability

Conclusion/Summary : In an aerobic aquatic metabolism study, the water phase revealed the rapid degradation of acrolein with all metabolites further mineralized to carbon dioxide. Results indicate hydration was an early step in acrolein degradation. The first-order kinetic half-life of acrolein was determined to be 33.7 hours in the water phase under laboratory conditions. Under field conditions, the halflife of acrolein in freshwater ranged from six to ten hours. In an aerobic soil metabolism study the half-life of acrolein was found to be 4. 2 hours in soil-water mixtures and was ultimately transformed into carbon dioxide.

Other adverse effects : No known significant effects or critical hazards.

Additional information

Section 12. Ecological information

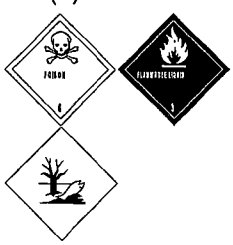
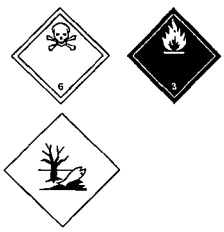
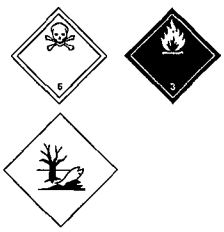
This product is very toxic to aquatic organisms:
Bluegill sunfish (Lepomis macrochirus), 96 hour LC50, 24 ppb
Rainbow trout (Oncorhynchus mykiss), 6 hour LC50, 24 ppb
Water flea (Daphnia magna), 48 hour LC50, 22 ppb
Eastern oysters (Crassostrea virginica), 96 hour EC50, 180 ppb
Mysid shrimp (Mysidopsis bahia), 96 hour LC50, 500 ppb
Mysid shrimp (Holmesimysis costata), 96 hour LC50, 790 ppb
Sheepshead minnows (Cyprinodon variegatus), 96 hour LC50, 570 ppb
Marine copepod (Acartia tonsa), 48 hour LC50, 55 ppb
Saltwater diatom (Skeletonema costatum), 120 hour EC50, 27 ppb

Section 13. Disposal considerations

Disposal methods : Responsibility for proper waste disposal rests with the generator of the waste. Dispose of any waste material in accordance with all applicable federal, state and local regulations. Note that these regulations may also apply to empty containers, liners and rinsate. Processing, use, dilution or contamination of this product may cause its physical and chemical properties to change.

Do not clean or reuse empty container. Return empty containers to Taft Manufacturing Company,
19815 South Lake Road, Taft, CA 93268
EPA Waste Code for acrolein is:
Waste Acrolein, stabilized
Waste Code - P003

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1092	UN1092	UN1092	
UN proper shipping name	Acrolein, stabilized	ACROLEIN, STABILIZED	Acrolein, stabilized	Forbidden
Transport hazard class(es)	6.1 (3) 	6.1 (3) 	6.1 (3) 	
Packing group	I	I	I	
Environmental hazards	Yes.	Yes.	Yes.	
Additional information	**Special provisions** Toxic-Inhalation Hazard, Zone A **Remarks** DOT SP 10705 (DOT SP 10705 applies only to mixed loads) DOT SP-14341 (DOT: SP-14341 applies only	**Special provisions** toxic by inhalation **Remarks** ERAP #: ERP2-0132 24 Hour Number: 1-866-334-1290 Equivalency Certificate No. SU 10922 Dangerous goods	**Emergency schedules (EmS)** F-E S-D	

	to 4BW welded cylinders.)	may be marked in accordance with 49 CFR		

Section 14. Transport information

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Acrolein, 0.15 gal of this product.
Hydroquinone, 4401 gal of this product.

Marine pollutant Acrolein

North-America NAERG : 131P

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 4(a) final test rules**: Acetaldehyde

TSCA 12(b) one-time export: No products were found.

TSCA 12(b) annual export notification: No products were found.

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Water Act (CWA) 307: Acrylaldehyde; Benzene

Clean Water Act (CWA) 311: Acrylaldehyde; Benzene; Acetaldehyde

Clean Air Act (CAA) 112 regulated toxic substances: Acrylaldehyde

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304

Name	%	EHS	SARA 302 TPQ (lbs)	SARA 302 TPQ (gallons)	SARA 304 RQ (lbs)	SARA 304 RQ (gallons)
Acrolein	95	Yes.	500	71.4	1	0.14
Hydroquinone	0.1 - 1	Yes.	500 / 10000	-	100	-

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard

SARA 313

	Product name	CAS number	%
Supplier notification	Acrolein	107-02-8	95

Canada

Canada (CEPA DSL): : All components are listed or exempted.

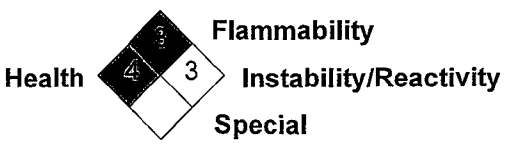
Additional information

Section 15. Regulatory information

References:
1. Feron, J.V. et al.; Toxicology 9 (1-2): 47-58 (1978).
2. Jakab, G.J.; Am Rev Resp Dis 1977 155:33-38.
3. Bouley, G.: Eur J Toxicol Eur Environ Hyg 1975: 8:291-297.
4. Parent, R.A., Caravello, H.E., Christian, M.S., and Hoberman, A.M.. Developmental Toxicity of Acrolein in New Zealand White Rabbits. Fundamental and Applied Toxicology. 20, 248-256 (1993).
5. Teratolgy Study of Acrolein in Rats, Bioassay Systems Corporation, Woburn, MA (1982) (Unpublished Study).
6. Parent, R.A., Caravello. H.E., and Hoberman, A.M.. Reproductive Study of Acrolein on Two Generations of Rats. Fundamental and Applied Toxicology. 19:228-237 (1992).
7. 21 Day Dermal Test of Acrolein in Rabbits, Bioassay Systems Corporation, Woburn, MA, 1982 (Unpublished Study).
8. A Sub-Chronic Inhalation Study of Fischer 344 Rats Exposed to 0, 0.4, 1.4, or 4.0 ppm Acrolein. Brookhaven National Laboratory, Upton, NY, 1981.
9. Parent, R.A., Caravello, H.E., Balmer, M.F., Shellenberger, T.E., and J.E. Long, One Year Chronic Toxicity of Orally Administered Acrolein to Beagle Dogs. J. Appl. Tox. 12(0): 1-9 (1992).
10. Parent, R.A., Caravello, H.E., and Long, J.E.. Oncogenicity Study of Acrolein in Mice. Journal of the American College of Toxicology. 10(6), 647-659 (1991).
11. Parent, R.A., Caravello, H.E. and Long, J.E.. Two-year Toxicity and Carcinogenicity Study of Acrolein in Rats. Journal of Applied Toxicology, Vol. 12(2), 131-139 (1992).
12. Effects of Acrolein on the In Vitro Induction of Chromosomal Aberrations in CHO Cells, Bioassay Systems, Woburn, MA, 1982 (Unpublished Study).
13. Effects of Acrolein on the In Vivo Induction of Chromosomal Aberrations in Rat Bone Marrow Cells, Bioassay Systems, Woburn, MA, 1982 (Unpublished Study).
14. Salmonella Liquid Suspension Mutant Fraction Assay, Bioassay Systems, Woburn, MA, 1980 (Unpublished Study).
15. Nordone, A.J., Dotson, T.A., Kovacs, M.F., Doane, R.A., and Biever, R.C.. Metabolism of [14C] Acrolein (MAGNACIDE® H Herbicide): Nature and Magnitude of Residues Using Freshwater Fish and Shellfish. Environ. Toxicol. And Chemistry. 17(2): 276-281 (1998).
16. Nordone, A.J., Dotson, T.A., Kovacs, and Doane, R.A.. [14C] Acrolein: Accumulation and Metabolism in Leaf Lettuce. Bull. Environ. Contam. Toxicol. (58):787-792 (1997).
17. Sharp, D.E., Berge, M.A., Paust, D.E., Talaat, R.E., Wilkes, L.C., Servatius, L.J., Loftus, M.L., Caravello, H.E., and Parent, R.A.. Metabolism and Distribution of [2,3-14C]Acrolein in Lactating Goats. J. of Agric. and Food Chem. 49(3): 1630-1638 (2001).
18. Sharp, D.E., Berge, M.A., Hennes, M.G., Wilkes, L.C., Servatius, L.J., Loftus, M.L., Caravello, H.E., and Parent, R.A.. Metabolism and Distribution of [2,3-14C]Acrolein in Laying Hens. J. of Agric. and Food Chem. 49(3): 1639-1647 (2001).
19. Parent, R.A., Caravello, H.E., and Sharp, D.E.. Metabolism and Distribution of [2,3-14C]Acrolein in Sprague-Dawley rats. Journal of Applied Toxicology, Vol 16(5), 449-457 (1994).
20. Smith, A.M., Mao, J., Doane, R.A., and Kovacs, M.F.. Metabolic Fate of [14C]Acrolein Under Aerobic and Anaerobic Aquatic Conditions. J. of Agric. and Food Chem. 43(9): 2497-2503 (1995).
21. Estimation of the Aerobic Biotransformation Rates of Acrolein (MAGNACIDE® H Herbicide, MAGNACIDE® B Biocide) in Soil, SRI International, Menlo Park, CA, (1990) (Unpublished Study).

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 3/20/2015.

Indicates information that has changed from previously issued version.

Notice to reader

Section 16. Other information

NOTE: The information on this SDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This SDS was prepared and is to be used for this product. If the product is used as a component in another product, this SDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : CRW9058A CORROSION INHIBITOR
Product code : CRW9058A

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Corrosion Inhibitor

Print date : 2/2/2015.
Validation date : 2/2/2015.
Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
ACUTE TOXICITY: ORAL - Category 4
SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE): ORAL [optic nerve] - Category 1
AQUATIC HAZARD (ACUTE) - Category 2
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Flammable liquid and vapor.
Harmful if swallowed.
Causes severe skin burns and eye damage.
Causes damage to organs if swallowed. (optic nerve)
Toxic to aquatic life with long lasting effects.

Precautionary statements

Section 2. Hazards identification

Prevention : Wear protective gloves: > 8 hours (breakthrough time): Nitrile or Neoprene gloves.. Wear eye or face protection. Wear protective clothing. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Avoid release to the environment. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

Response : Collect spillage. IF exposed: Call a POISON CENTER or physician. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Avoid contact with skin and clothing. Wash thoroughly after handling.

Hazards not otherwise classified : Prolonged or repeated contact may dry skin and cause irritation.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Methanol	10 - 20	67-56-1
Salt of fatty acid polyamine	5 - 10	Trade secret.
Quaternary ammonium compound	5 - 10	Trade secret.
Alkyl amine	0.1 - 1	Trade secret.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Section 4. First aid measures

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Wash skin thoroughly with soap and water or use recognized skin cleanser. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes severe burns. Defatting to the skin.

Ingestion : Harmful if swallowed. Causes damage to organs following a single exposure if swallowed. May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,dryness,cracking,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Section 5. Fire-fighting measures

Specific hazards arising from the chemical : Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Methanol	US ACGIH	200	262	-	250	328	-	-	-	-	[1]
	OSHA PEL	200	260	-	-	-	-	-	-	-	
	OSHA PEL 1989	200	260	-	250	325	-	-	-	-	[1]

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 8. Exposure controls/personal protection

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves: Nitrile or Neoprene gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Yellow to amber.

Odor : Sweet. [Strong]

Odor threshold : Not available.

pH : 4.5 to 5.5

: Neat - without dilution

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 43°C (109.4°F) [TCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : 40 kPa (299.9 mm Hg, 5.8 psig) @ 54.4°C, 130 F (Reid)

Vapor density : >1 [Air = 1]

Relative density : 0.975 (15.6°C)

Density : 8.12 (lbs/gal)

Solubility in water : Partial

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials and reducing materials.
Methanol is incompatible and may react with acetyl bromide, alkyl aluminum solutions, beryllium hydride, boron trichloride, nitric acid, cyanuric chloride, dichloromethane, diethylzinc, metals (granulated forms of aluminum and magnesium – including aluminum and zinc salts), phosphorus III oxide, and potassium tert-butoxide.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Methanol	LC50 Inhalation Gas.	Rat	145000 ppm	1 hours
	LC50 Inhalation Gas.	Rat	64000 ppm	4 hours
	LD50 Dermal	Rabbit	15800 mg/kg	-
	LD50 Oral	Rat	5600 mg/kg	-
Quaternary ammonium compound	LD50 Oral	Rat	426 mg/kg	-
Alkyl amine	LD50 Oral	Rat	1000 to 1250 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Section 11. Toxicological information

Name	Category	Route of exposure	Target organs
Methanol	Category 1	Oral	optic nerve

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	641.6 mg/kg
Dermal	2090.6 mg/kg
Inhalation (vapors)	20.91 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Methanol	Acute EC50 16.912 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 10000000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2500000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 100 mg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 9.96 mg/l Marine water	Algae - Ulva pertusa	96 hours
Quaternary ammonium compound	Acute EC50 37 ppb Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 64 ppb Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 4.15 ppb Marine water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 32.2 ppb	Fish - Pimephales promelas	34 days

Section 12. Ecological information

Persistence and degradability

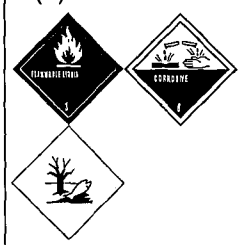
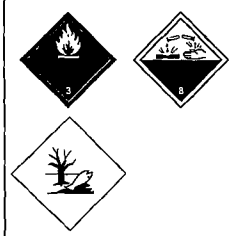
Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN2924	UN2924	UN2924	UN2924
UN proper shipping name	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Contains: Methanol, Quaternary ammonium compound)	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Contains: Methanol, Quaternary ammonium compound)	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Contains: Methanol, Quaternary ammonium compound)	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Contains: Methanol, Quaternary ammonium compound)
Transport hazard class(es)	3 (8) 	3 (8) 	3 (8) 	3 (8) 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-E S-C	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 14. Transport information

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Methanol, 4291 gal of this product.

Marine pollutant Quaternary ammonium compound

North-America NAERG : 132

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: Acetic acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard

SARA 313

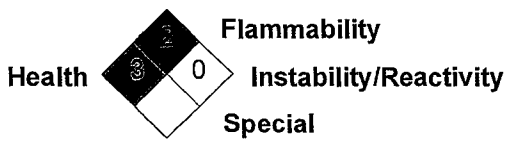
	Product name	CAS number	%
Supplier notification	Methanol	67-56-1	10 - 20

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 2/2/2015.

Indicates information that has changed from previously issued version.

Notice to reader

Section 16. Other information

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

Material Safety Data Sheet

1. Product and company identification

Product name : RE8869DMO

Supplier : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Material Uses : Special: Demulsifier.

Code : RE8869DMO

Validation date : 3/5/2010.

Print date : 3/5/2010.

Version : 2

Responsible name : Global Regulatory Affairs - Telephone 281-276-5400 or 800-231-3606

In case of emergency : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

2. Hazards identification

Physical state : Liquid. [Clear to hazy.]

Odor : Aromatic hydrocarbon.

Color : Amber.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview : WARNING!

FLAMMABLE LIQUID AND VAPOR. INHALATION CAUSES HEADACHES, DIZZINESS, DROWSINESS AND NAUSEA AND MAY LEAD TO UNCONSCIOUSNESS. CAUSES RESPIRATORY TRACT AND EYE IRRITATION. MAY BE HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. HARMFUL OR FATAL IF SWALLOWED. CAN ENTER LUNGS AND CAUSE DAMAGE. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. POSSIBLE CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER, BASED ON ANIMAL DATA. ASPIRATION HAZARD.

Keep away from heat, sparks and flame. Do not breathe vapor or mist. Do not ingest. Do not get in eyes. Avoid contact with skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flashback. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material.

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Inhalation : Can cause central nervous system (CNS) depression. Irritating to respiratory system.

Ingestion : Can cause central nervous system (CNS) depression. Aspiration hazard if swallowed. Can enter lungs and cause damage.

Skin : Harmful in contact with skin. Moderately irritating to the skin.

2 . Hazards identification

Eyes : Irritating to eyes.

Potential chronic health effects

Chronic effects : Contains material that may cause target organ damage, based on animal data. Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Carcinogenicity : Contains material which may cause cancer, based on animal data. Risk of cancer depends on duration and level of exposure.

Target organs : Contains material which may cause damage to the following organs: blood, kidneys, lungs, the nervous system, liver, mucous membranes, gastrointestinal tract, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

Over-exposure signs/symptoms

Inhalation : respiratory tract irritation, nausea or vomiting, coughing, headache, drowsiness/fatigue, dizziness/vertigo, unconsciousness

Ingestion : nausea or vomiting

Skin : irritation, redness, dryness, cracking

Eyes : pain or irritation, watering, redness

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (section 11)

3 . Composition/information on ingredients

Name	CAS number	%
Xylene	1330-20-7	10 - 30
Light aromatic naphtha	64742-95-6	10 - 30
1,2,4-Trimethylbenzene	95-63-6	5 - 10
Ethylbenzene	100-41-4	1 - 5
1,3,5-Trimethylbenzene	108-67-8	1 - 5
1,2,3-Trimethylbenzene	526-73-8	1 - 5

4 . First aid measures

Eye contact : Get medical attention immediately. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wear suitable protective clothing and gloves. Remove contaminated clothing and shoes.

5 . Fire-fighting measures

Flammability of the product : Flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

Extinguishing media

Suitable : Use dry chemical, CO_2, water spray (fog) or foam.

Not suitable : Do not use water jet.

Special exposure hazards : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Absorb with an inert material. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

7 . Handling and storage

Handling : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

7 . Handling and storage

Storage : Store in accordance with local regulations. Store in a segregated and approved area. Store in a dry, cool and well-ventilated area, away from incompatible materials (see section 10). Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	**List name**	**ppm**	**mg/m³**	**Other**	**ppm**	**mg/m³**	**Other**	**ppm**	**mg/m³**	**Other**	**Notations**
Xylene	US ACGIH	100	434	-	150	651	-	-	-	-	
	OSHA PEL	100	435	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	435	-	150	655	-	-	-	-	
1,2,4-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
Ethylbenzene	US ACGIH	100	-	-	125	-	-	-	-	-	
	OSHA PEL	100	435	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	435	-	125	545	-	-	-	-	
1,3,5-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
1,2,3-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. Use explosion-proof ventilation equipment.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location. Take off contaminated clothing and wash before re-use.

Personal protection

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Chemical-resistant gloves: PVC gloves. Viton gloves. 4H gloves.

Eyes : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Skin : Wear long sleeves and other protective clothing to prevent repeated or prolonged skin contact.

9 . Physical and chemical properties

Physical state	: Liquid. [Clear to hazy.]
Flash point	: Closed cup: 35°C (95°F) [SFCC]
Auto-ignition temperature	: Not available.
Flammable limits	: Not available.
Color	: Amber.
Odor	: Aromatic hydrocarbon.
pH	: 11.2 [Conc. (% w/w): 5%]
	: 5% of product in 75% water / 25% isopropanol solution
Boiling/condensation point	: Not available.
Initial Boiling Point	: Not available.
Melting/freezing point	: Not available.
Relative density	: 0.9257 (15.6°C)
Density	: 7.7111 (lbs/gal)
Vapor density	: >1 [Air = 1]
Odor threshold	: Not available.
Evaporation rate	: Not available.
VOC	: Not available.
Viscosity	: Dynamic (15.6°C): 29.3 cP
Solubility (Water)	: Insoluble
Vapor pressure	: Not available.
Pour Point	: <-42.78°C (<-45°F)
Partition coefficient (LogKow)	: Not available.

10 . Stability and Reactivity

Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas. Do not swallow.
Materials to avoid	: Reactive or incompatible with the following materials: oxidizing materials and acids.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Conditions of reactivity	: Highly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

11 . Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Xylene	LD50 Dermal	Rabbit	>1700 mg/kg	-
	LD50 Oral	Rat	4300 mg/kg	-
	LD50 Oral	Male rat	3523 mg/kg	-
	LC50 Inhalation Gas.	Rat	5000 ppm	4 hours
1,2,4-Trimethylbenzene	LD50 Oral	Rat	5 gm/kg	-
	LC50 Inhalation Vapor	Rat	18000 mg/m3	4 hours

11 . Toxicological information

Light aromatic naphtha	LD50 Oral	Rat	8400 mg/kg	-
	LD50 Oral	Rat	2900 mg/kg	-
Ethylbenzene	LD50 Dermal	Rabbit	15400 mg/kg	-
	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LD50 Dermal	Rabbit	17800 uL/kg	-
	LD50 Oral	Rat	3500 mg/kg	-
	LC50 Inhalation Vapor	Rat	55000 mg/m3	2 hours
1,3,5-Trimethylbenzene	LD50 Oral	Rat	5000 mg/kg	-
	LC50 Inhalation Vapor	Rat	24000 mg/m3	4 hours

Carcinogenicity Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Xylene	A4	3	-	-	-	-
Ethylbenzene	A3	2B	-	-	-	-

Chronic toxicity Remarks

1) Xylene

Xylene (mixed isomers) is a component of this product. Effects of chronic exposure to xylene are similar to those of acute exposure, but may be more severe. Chronic inhalation reportedly was associated with headache, tremors, apprehension, memory loss, weakness, dizziness, loss of appetite, nausea, ringing in the ears, irritability, thirst, anemia, mucosal bleeding, enlarged liver, and hyperplasia, but not destruction of the bone marrow (Clayton & Clayton, 1994; ILO, 1983). Some earlier reports of effects of chronic exposure to xylene have been questioned, as exposures were not limited to xylene alone.

Effects on the blood have been reported from chronic exposure to as little as 50 mg/m3 (Pap & Varga, 1987). Repeated exposure can damage bone marrow, causing low blood cell count and can damage the liver and kidneys (NJ Department of Health, Hazardous Substance Fact Sheet). Chronic xylene exposure (usually mixed with other solvents) has produced irreversible damage to the CNS (ILO, 1983). CNS effects may be exacerbated by ethanol abuse (Savolainen, 1980). Xylene may damage hearing or enhance sensitivity to noise in chronic occupational exposures (Morata et al, 1994), probably from neurotoxic mechanism. Tolerance to xylene can occur over the work week and disappear over the weekend. (ACGIH, 1992).

Inhalation exposure has produced fetotoxicity and postnatal developmental toxicity in laboratory animals. (API, 1978, Kensington, MD, EPA/OTS Document No. 878210350 and Hass, U., et al, 1995, Neurotoxicology and Teratology 17: 341-349 and 1997, Neurotoxicology 18: 547-552)

Inhalation of hexane has synergistically enhanced the hearing loss caused by inhalation exposure to xylene in laboratory animals. (Nylén, P., 1996, Food and Chemical Toxicology, 34: 1121-1123 and Nylén, P. and Hagman, M., 1994, Pharmacology & Toxicology, 74: 124-129)

Xylene has tested positive as a dermal sensitizer. [Altman, A.T. (1977) Archives of Dermatology 113: 1460 and Palmer, K.T. and Rycroft, R.J. F. (1993) Contact Dermatitis 28: 44]

2) Light aromatic naphtha

Solvent naphtha (petroleum), light aromatic is a component of this product. Solvent naphtha (petroleum), light aromatic may cause damage to the peripheral nerves, resulting in numbness or tingling of the extremities with chronic (long term) exposure to high concentrations. (Micromedex) Rats exposed for 4 months to 1700 ppm of a solvent similar to this product showed evidence of mild damage to the liver, lungs and kidneys. These effects were not seen in rats exposed for one year to 350 ppm of another similar solvent. Rats exposed to vapors of a similar solvent during pregnancy showed embryo/fetotoxicity at concentrations producing maternal toxicity.

In response to a TSCA test rule, several studies of a solvent similar to this product were completed. Mutagenicity studies and a rat inhalation neurotoxicity study were negative. In a mouse developmental effects study, reduced fetal body weight was seen but no teratogenicity. A rat reproductive effects study demonstrated toxicity but little effect on reproductive parameters. (Vendor MSDS)

11 . Toxicological information

Ingestion has produced Central Nervous System effects in laboratory animals. (EPA/OTS 87-8214199 and 88-920000348)

3) 1,2,4-Trimethylbenzene

1,2,4-Trimethylbenzene, also know as pseudocumene, is a component of this product. Chronic pseudocumene exposure may provoke bronchospasm with cough and wheezing (Plunkett, 1976; ACGIH, 1991; Battig et al, 1956). Respiratory distress was noted in experimental animals following sub acute inhalation exposure (Gage, 1970). Nervousness and anxiety were noted with chronic occupational exposure (Battig et al, 1956; ACGIH, 1991).

At the time of this review, no studies were found on the potential adverse reproductive effects of pseudocumene in humans, but trimethylbenzenes (including pseudocumene) can cross the placental barrier (Clayton & Clayton, 1994; Doroty et al, 1976). In an experimental animal study, offspring born to pregnant rats exposed to pseudocumene were healthy at birth and grew normally (Cameron et al, 1938).

Blood effects such as anemia and delayed clotting time have been noticed in workers chronically exposed to a solvent containing trimethylbenzene. The blood effects, however, may have been due to a contaminant in the solvent such as benzene (a known blood toxin).

4) Ethylbenzene

Ethylbenzene is a component of this product. Prolonged exposure may result in CNS, upper respiratory tract, blood, and liver disorders (ILO, 1983). Chronic exposures higher than 100 ppm produced fatigue, headache, drowsiness, and mild eye and respiratory irritation (Hathaway et al, 1991). Benzene and some alkylbenzene compounds can suppress the bone marrow, but no original studies were found showing this effect with ethylbenzene (Reprotext).

Slight liver and kidney changes occurred in rats exposed to 600 ppm for up to 16 weeks (Elovaara et al, 1985; Heinonen et al, 1983). The level of exposure, not the duration, affected the metabolism of ethylbenzene in rats (Engstrom et al, 1985). (Reprotext)

Ethylbenzene was weakly positive for inducing sister chromatid exchanges in human white blood cells in culture (Norppa & Vainio, 1983) and produced mutations in mouse lymphocytes. (RTECS)

Ethylbenzene caused retarded skeletal development, extra ribs, tail misplacement, and decreased weight gain in fetal rats exposed to a high dose of 2,400 mg/m(3) which was also toxic to the mothers (Tatrai et al, 1982). However, much lower doses of less than 100 ppm produced skeletal abnormalities, affected female fertility, were fetotoxic, and caused smaller litter sizes in rats. (RTECS) It has been detected in human umbilical cord (fetal) blood (Clayton & Clayton, 1982), and would thus be available to the fetus. (Reprotext)

Ethylbenzene is classified by the International Agency for Research (IARC) as a Group 2B carcinogen (possibly carcinogenic to humans). This classification was based on sufficient evidence in animals, but inadequate evidence for cancer in exposed humans.

The National Toxicology Program (NTP) concluded there is clear evidence to support the carcinogenicity of ethylbenzene in male rats and some evidence in female rats and male and female mice. These observations were based on 2 year inhalation studies in which the test animals were exposed to 0-750 ppm ethylbenzene. The carcinogenic activity was observed primarily in the groups exposed to 250 and 750 ppm. The OSHA and ACGIH 8 hour TWA exposure for ethylbenzene is 100 ppm (NTP TR-466).

In two studies of workers potentially exposed to ethylbenzene, no cancer incidence or mortality was observed (IARC Monograph 77).

5) 1,3,5-Trimethylbenzene

1,3,5-Trimethylbenzene (Mysitylene) is a component of this product. Chronic asthmatic-like bronchitis may be a delayed chronic hazard (EPA, 1985; Laham, 1987; HSDB, 1997). Nervousness, tension, and anxiety have been noted in chronically exposed workers with exposure to a mixture of solvents including mesitylene (HSDB, 1997). Elevated alkaline phosphates and SGOT(liver enzymes) levels have been noted in chronic animal inhalation studies (Clayton & Clayton, 1994). These effects have not been reported in exposed humans. (Reprotext)

Thrombocytopenia (a lack of platelets in the blood) with bleeding from the gums and nose and mild anemia may occur with chronic exposure to mesitylene as a component of the commercial solvent mixture, "Fleet-X-DV-99" (Plunkett, 1976;

11 . Toxicological information

Finkel, 1983; HSDB, 1997). Coagulation (clotting of the blood) times were delayed by about 40% in a group of workers chronically exposed to a mixture of solvents containing about 30% mesitylene (Laham, 1987). These hematological disorders may have been due to a contaminant, such as benzene (Hathaway et al, 1996). Thrombocytosis (an increase of platelets in the blood) and thrombocytopenia have been noted in rabbits (Clayton & Clayton, 1994). (Reprotext)

1,3,5-Trimethylbenzene has been positive in a mutagenicity assay (Lewis, 1992). (Reprotext)

6) 1,2,3-Trimethylbenzene

Not available.

12 . Ecological information

Aquatic ecotoxicity

Conclusion/Summary : Not available.

Biodegradability

Conclusion/Summary : Not available.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	UN1993	FLAMMABLE LIQUID, N.O.S. (Contains: Xylene, Ethylbenzene)	3	III		-
TDG Classification	UN1993	FLAMMABLE LIQUID, N.O.S. (Contains: Xylene, Ethylbenzene)	3	III		-
IMDG Class	UN1993	FLAMMABLE LIQUID, N.O.S. (Contains: Xylene, Ethylbenzene)	3	III		-

PG* : Packing group

DOT Reportable Quantity Xylene, 49 gal of this product.
Ethylbenzene, 2869 gal of this product.

14 . Transport information

Marine pollutant Not applicable.

North-America NAERG : 128

15 . Regulatory information

HCS Classification : Flammable liquid
Irritating material
Carcinogen
Target organ effects

U.S. Federal regulations : **United States inventory (TSCA 8b)**: All components are listed or exempted.
TSCA 12(b) one-time export: xylene

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: xylene; ethylbenzene; 1,2,4-trimethylbenzene; 1,2,3-trimethylbenzene; mesitylene
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: RE8869DMO: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard

CERCLA: Hazardous substances.: xylene: 100 lbs. (45.4 kg); ethylbenzene: 1000 lbs. (454 kg); potassium hydroxide: 1000 lbs. (454 kg); cumene: 5000 lbs. (2270 kg); naphthalene: 100 lbs. (45.4 kg);

Clean Water Act (CWA) 307: ethylbenzene; naphthalene

Clean Water Act (CWA) 311: xylene; ethylbenzene; potassium hydroxide; naphthalene

Clean Air Act (CAA) 112 accidental release prevention: No products were found.

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 313

Supplier notification :

Product name	CAS number	Concentration
Xylene	1330-20-7	10 - 30
1,2,4-Trimethylbenzene	95-63-6	5 - 10
Ethylbenzene	100-41-4	1 - 5

United States inventory (TSCA 8b) : All components are listed or exempted.

Canada

WHMIS (Canada) : Class B-2: Flammable liquid
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

Canada (CEPA DSL): : All components are listed or exempted.

16 . Other information

Label requirements : FLAMMABLE LIQUID AND VAPOR. INHALATION CAUSES HEADACHES, DIZZINESS, DROWSINESS AND NAUSEA AND MAY LEAD TO UNCONSCIOUSNESS. CAUSES RESPIRATORY TRACT AND EYE IRRITATION. MAY BE HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. HARMFUL OR FATAL IF SWALLOWED. CAN ENTER LUNGS AND CAUSE DAMAGE. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. POSSIBLE CANCER HAZARD - CONTAINS

16 . Other information

MATERIAL WHICH MAY CAUSE CANCER, BASED ON ANIMAL DATA. ASPIRATION HAZARD.

National Fire Protection Association (U.S.A.) :

Date of printing : **3/5/2010.**

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : RE30472DMO DEMULSIFIER
Product code : RE30472DMO

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Demulsifier.

Print date : 12/18/2014.
Validation date : 11/6/2014.
Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation and Narcotic effects] - Category 3
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Flammable liquid and vapor.
Causes serious eye irritation.
Causes skin irritation.
Suspected of causing cancer.
May cause respiratory irritation.
May cause drowsiness and dizziness.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Section 2. Hazards identification

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves: > 8 hours (breakthrough time): Nitrile or Neoprene gloves. 4H gloves.. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing vapor. Wash hands thoroughly after handling.

Response : Collect spillage. IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Light aromatic naphtha	30 - 40	64742-95-6
1,2,4-Trimethylbenzene	20 - 30	95-63-6
1,3,5-Trimethylbenzene	5 - 10	108-67-8
1,2,3-Trimethylbenzene	1 - 5	526-73-8
Xylene	1 - 5	1330-20-7
Cumene	0.1 - 1	98-82-8

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. May cause respiratory irritation.

Skin contact : Causes skin irritation.

Ingestion : Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain or irritation,watering,redness

Inhalation : respiratory tract irritation,coughing,nausea or vomiting,headache,drowsiness/fatigue, dizziness/vertigo,unconsciousness

Skin contact : irritation,redness

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Additional information

If product is ingested and vomiting occurs naturally, have person lean forward to reduce the risk of aspiration into the lungs.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Section 5. Fire-fighting measures

Specific hazards arising from the chemical : Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
1,2,4-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
1,3,5-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
1,2,3-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
Xylene	US ACGIH	100	434	-	150	651	-	-	-	-	
	OSHA PEL	100	435	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	435	-	150	655	-	-	-	-	
Cumene	US ACGIH	50	-	-	-	-	-	-	-	-	
	OSHA PEL	50	245	-	-	-	-	-	-	-	[1]
	OSHA PEL 1989	50	245	-	-	-	-	-	-	-	[1]

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Section 8. Exposure controls/personal protection

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves: Nitrile or Neoprene gloves. 4H gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Amber.

Odor : Aromatic hydrocarbon.

Odor threshold : Not available.

pH : 8.8

: 5% of product in 75% isopropanol / 25% water solution

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 47°C (116.6°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 0.9284 (15.6°C)

Density : 7.73 (lbs/gal)

Solubility in water : Dispersible

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Section 9. Physical and chemical properties

Viscosity : Dynamic (15.6°C): 9.4 cP

VOC : Not available.

Pour Point : <-42.78°C (<-45°F)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials and acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Light aromatic naphtha	LD50 Oral	Rat	2900 mg/kg	-
1,2,4-Trimethylbenzene	LC50 Inhalation Vapor	Rat	18000 mg/m³	4 hours
	LD50 Oral	Rat	5 g/kg	-
1,3,5-Trimethylbenzene	LC50 Inhalation Vapor	Rat	24000 mg/m³	4 hours
	LD50 Oral	Rat	5000 mg/kg	-
Xylene	LC50 Inhalation Gas.	Rat	5000 ppm	4 hours
	LD50 Dermal	Rabbit	>1700 mg/kg	-
	LD50 Oral	Male rat	3523 mg/kg	-
	LD50 Oral	Rat	4300 mg/kg	-
Cumene	LC50 Inhalation Vapor	Mouse	10000 mg/m³	7 hours
	LC50 Inhalation Vapor	Rat	39000 mg/m³	4 hours
	LD50 Dermal	Rabbit	10600 mg/kg	-
	LD50 Oral	Rat	2.9 g/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
Xylene	-	3	-
Cumene	-	2B	Reasonably anticipated to be a human carcinogen.

Section 11. Toxicological information

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Light aromatic naphtha	Category 3	Not applicable.	Narcotic effects
1,2,4-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
1,3,5-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
1,2,3-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Xylene	Category 3	Not applicable.	Narcotic effects
Cumene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Name	Result
Light aromatic naphtha	ASPIRATION HAZARD - Category 1
1,2,3-Trimethylbenzene	ASPIRATION HAZARD - Category 1
Xylene	ASPIRATION HAZARD - Category 1
Cumene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Section 11. Toxicological information

Route	ATE value
Oral	5454.2 mg/kg
Dermal	62393.3 mg/kg
Inhalation (gases)	283605.9 ppm
Inhalation (vapors)	79.76 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
1,2,4-Trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - Elasmopus pectenicrus	48 hours
	Acute LC50 22.4 mg/l Fresh water	Fish - Tilapia zillii	96 hours
1,3,5-Trimethylbenzene	Acute LC50 12520 to 15050 µg/l Fresh water	Fish - Carassius auratus	96 hours
	Chronic NOEC 400 µg/l Fresh water	Daphnia - Daphnia magna	21 days
Xylene	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Cumene	Acute EC50 2600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute LC50 7400 to 11290 µg/l Fresh water	Crustaceans - Artemia sp.	48 hours
	Acute LC50 30500 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2700 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1993	UN1993	UN1993	UN1993
UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)
Transport hazard class(es)	3 	3 	3 	3 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-E S-E	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Xylene, 734 gal of this product.

Marine pollutant Light aromatic naphtha
1,2,4-Trimethylbenzene

North-America NAERG : 128

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Naphthalene
Clean Water Act (CWA) 311: Xylene; Naphthalene; Potassium hydroxide

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312
Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

Section 15. Regulatory information

SARA 313

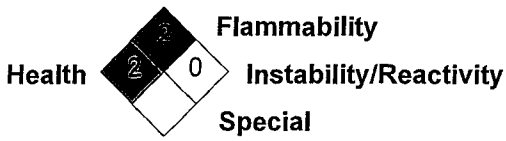
	Product name	CAS number	%
Supplier notification	1,2,4-Trimethylbenzene Xylene	95-63-6 1330-20-7	20 - 30 1 - 5

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 12/18/2014.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

Material Safety Data Sheet

1. Product and company identification

Product name : TRETOLITE™ RBW6508X WATER CLARIFIER
™ a trademark of Baker Hughes, Inc.

Supplier : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Material Uses : Special: Water clarifier.

Code : RBW6508X

Validation date : 2/11/2010.

Print date : 2/11/2010.

Version : 2

Responsible name : Global Regulatory Affairs - Telephone 281-276-5400 or 800-231-3606

In case of emergency : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

2. Hazards identification

Physical state : Liquid. [Clear to hazy.]

Odor : Amine like. [Slight]

Color : Brown.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview : CAUTION!

MAY BE HARMFUL IF SWALLOWED. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

Do not ingest. Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Inhalation : Slightly irritating to the respiratory system.

Ingestion : Harmful if swallowed.

Skin : Moderately irritating to the skin.

Eyes : Moderately irritating to eyes.

Potential chronic health effects

Chronic effects : Contains material that may cause target organ damage, based on animal data.

Target organs : Contains material which may cause damage to the following organs: kidneys, the nervous system, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

Over-exposure signs/symptoms

Inhalation : respiratory tract irritation, coughing

Ingestion : None known.

2 . Hazards identification

Skin : irritation, redness

Eyes : irritation, watering, redness

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (section 11)

3 . Composition/information on ingredients

Name	CAS number	%
Ethylene Glycol	107-21-1	5 - 10
Condensed alkanolamine	Trade secret.	5 - 10

4 . First aid measures

Eye contact : Get medical attention immediately. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

5 . Fire-fighting measures

Flammability of the product : In a fire or if heated, a pressure increase will occur and the container may burst.

Extinguishing media

Suitable : Use an extinguishing agent suitable for the surrounding fire.

Not suitable : None known.

Special exposure hazards : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,halogenated compounds

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up

6 . Accidental release measures

Small spill : Stop leak if without risk. Move containers from spill area. Absorb with an inert material. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

7 . Handling and storage

Handling : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage : Store in accordance with local regulations. Store in a dry, cool and well-ventilated area, away from incompatible materials (see section 10). Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ethylene Glycol	US ACGIH OSHA PEL 1989	- -	- -	- -	- -	- -	- -	- 50	100 125	- -	[a]

Form: [a]Aerosol

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location. Take off contaminated clothing and wash before re-use.

Personal protection

8 . Exposure controls/personal protection

Respiratory	: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Hands	: Chemical-resistant gloves: Neoprene gloves.
Eyes	: Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.
Skin	: Wear long sleeves and other protective clothing to prevent repeated or prolonged skin contact.

9 . Physical and chemical properties

Physical state	: Liquid. [Clear to hazy.]
Flash point	: Closed cup: >93.4°C (>200.1°F) [SFCC]
Auto-ignition temperature	: Not available.
Flammable limits	: Not available.
Color	: Brown.
Odor	: Amine like. [Slight]
pH	: 7.4
	: Neat - without dilution.
Boiling/condensation point	: Not available.
Initial Boiling Point	: Not available.
Melting/freezing point	: Not available.
Relative density	: 1.062 (15.6°C)
Density	: 8.85 (lbs/gal)
Vapor density	: >1 [Air = 1]
Odor threshold	: Not available.
Evaporation rate	: Not available.
VOC	: Not available.
Viscosity	: Not available.
Solubility (Water)	: Soluble
Vapor pressure	: Not available.
Pour Point	: Not available.
Partition coefficient (LogKow)	: Not available.

10 . Stability and Reactivity

Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to avoid	: No specific data.
Materials to avoid	: Reactive or incompatible with the following materials: oxidizing materials. Slightly reactive or incompatible with the following materials: acids.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Conditions of reactivity	: Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

11 . Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ethylene Glycol	LD50 Dermal	Rabbit	9530 uL/kg	-
	LD50 Oral	Rat	4700 mg/kg	-
	LD50 Oral	Female rat	4000 mg/kg	-

Carcinogenicity

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Ethylene Glycol	A4	-	-	-	-	-

Chronic toxicity Remarks

1) Ethylene Glycol

Ethylene glycol (EG) is a component of this product. Chronic ingestion has shown to cause adverse kidney, liver, bladder, and blood effects in laboratory animals (NTP Technical Report, 1993; Fund. Appl. Toxicol. 7:547-65; FD Cosmet Toxicol. Vol. 3:229-34; Drug and Chem Toxicol 13(1):43-70). Also, chronic ingestion has caused adverse effect on the sperm (decreased motility and increased percentage of abnormal sperm) in laboratory animals. [Morrissey, R.E. et al, 1988, Fund Appl Toxicol, 11(2), pp 359-71]

Ingestion of ethylene glycol has produced Central Nervous System depression, effects on the cardiopulmonary system, and neurological impairment. [Gosselin, R.E., Smith, R.P., and Hodge, H.C., 1984, Clinical Toxicology of Commercial Products; NTP Techical Report 413, 1993; CCOHS CHEMINFO, 2003, Record No. 41 for ethylene glycol; Mallya, K.B. et al, 1986, J Neurol Sce, 13(4) pp 340-41; Anderson, B. , 1990, Am J. Med, 88, pp 87-88]

EG is an animal teratogen at doses which produced mild toxicity to the mother. EG given at doses up to 5,000 mg/kg/day to pregnant rats or up to 3,000 mg/kg/day to mice induced a wide variety of fetal malformations, including those of the musculoskeletal, bone marrow, and spleen (RTECS, 1996). It was also a teratogen and an embryotoxin at doses producing no toxicity to the mother in laboratory animals. (Lamb, J.C. et al, 1985, Toxicol Appl Pharmacol, 81, p 100 and Price, C.J. et al, 1985, Appl Pharmacol, 81, pp113-27)

Ethylene glycol is used to cryopreserve embryos of many mammalian species, including pigs, goats, cows and horses (Otoi et al, 1995; Fieni et al, 1995; Hochi et al, 1994). This makes it unlikely that ethylene glycol itself is the active teratogen in whole animal studies. The EG metabolite, glycolic acid, was active in contrast to EG itself for inducing developmental defects in whole rat embryos in culture (Carney et al, 1996). EG inhibited metabolic cooperation of Chinese hamster cells in vitro, a finding which may have implications for its mechanism of teratogenicity (Loch-Caruso et al, 1984).

2) Condensed alkanolamine

Not available.

12 . Ecological information

Aquatic ecotoxicity

Conclusion/Summary : Not available.

Biodegradability

Conclusion/Summary : Not available.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and

13 . Disposal considerations

sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (Contains: Ethylene Glycol)	9	III		This material is Not Regulated if transported in a package that does not meet or exceed the Reportable Quantity (RQ).
TDG Classification	Not regulated.	-	-	-		-
IMDG Class	Not regulated.	-	-	-		-

PG* : Packing group

DOT Reportable Quantity Ethylene Glycol, 8324 gal of this product.

Marine pollutant Not applicable.

North-America NAERG : 171

15 . Regulatory information

HCS Classification : Irritating material
Target organ effects

U.S. Federal regulations : **United States inventory (TSCA 8b):** All components are listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: ethanediol
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: TRETOLITE™ RBW6508X WATER CLARIFIER: Immediate (acute) health hazard, Delayed (chronic) health hazard

CERCLA: Hazardous substances.: zinc chloride: 1000 lbs. (454 kg); ethanediol: 5000 lbs. (2270 kg);

Clean Water Act (CWA) 307: zinc chloride

Clean Water Act (CWA) 311: zinc chloride

Clean Air Act (CAA) 112 accidental release prevention: No products were found.

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 313

Product name	CAS number	Concentration

15 . Regulatory information

Supplier notification	: Ethylene Glycol	107-21-1	5 - 10
United States inventory (TSCA 8b)	: All components are listed or exempted.		

Canada

WHMIS (Canada)	: Class D-2A: Material causing other toxic effects (Very toxic). Class D-2B: Material causing other toxic effects (Toxic).
Canada (CEPA DSL):	: All components are listed or exempted.

16 . Other information

Label requirements	: MAY BE HARMFUL IF SWALLOWED. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
National Fire Protection Association (U.S.A.)	:

Date of printing : **2/11/2010.**

✓ Indicates information that has changed from previously issued version.

Notice to reader

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This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ RBW611 WATER CLARIFIER
™ a trademark of Baker Hughes Incorporated.

Product code : RBW611

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Water clarifier.

Print date : 1/16/2015.

Validation date : 1/15/2015.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) [kidneys] - Category 2
AQUATIC HAZARD (ACUTE) - Category 3
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : May cause damage to organs through prolonged or repeated exposure. (kidneys)
Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention : Avoid release to the environment. Do not breathe vapor.

Response : Get medical attention if you feel unwell.

Storage : Not applicable.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 2. Hazards identification

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Ethylene glycol	10 - 20	107-21-1
Aluminum chloride hydroxide	5 - 10	12042-91-0
Zinc chloride	0.1 - 1	7646-85-7

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention following exposure or if feeling unwell.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention following exposure or if feeling unwell. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention following exposure or if feeling unwell. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention following exposure or if feeling unwell. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Section 4. First aid measures

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,halogenated compounds,metal oxide/ oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ethylene glycol	US ACGIH	-	-	-	-	-	-	-	100	-	[a]
	OSHA PEL 1989	-	-	-	-	-	-	50	125	-	
Aluminum chloride hydroxide, as Al	OSHA PEL 1989	-	2	-	-	-	-	-	-	-	[A]
Zinc chloride	US ACGIH	-	1	-	-	2	-	-	-	-	[b]
	OSHA PEL	-	1	-	-	-	-	-	-	-	[b]
	OSHA PEL 1989	-	1	-	-	2	-	-	-	-	[b]

Form: [a]Aerosol [b]Fume
Notes: [A]as Al

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Section 8. Exposure controls/personal protection

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Amber. [Dark]

Odor : Sweet. [Slight]

Odor threshold : Not available.

pH : 4.3 [Conc. (% w/w): 1%]

: Neat - without dilution.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: >93.4°C (>200.1°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 1.1336 (15.6°C)

Density : 9.44 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Dynamic (15.6°C): 13 cP

VOC : Not available.

Pour Point : -31.1°C (-24°F)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.
Slightly reactive or incompatible with the following materials: acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ethylene glycol	LD50 Oral	Rat	4700 mg/kg	-
Aluminum chloride hydroxide	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	9187 mg/kg	-
Zinc chloride	LD50 Oral	Rat	350 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Ethylene glycol	Category 2	Not determined	kidneys

Aspiration hazard

Not available.

Section 11. Toxicological information

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	4783.8 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Ethylene glycol	Acute LC50 100000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 10000000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 8050000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Aluminum chloride hydroxide	Acute LC50 100 to 500 mg/l	Fish	48 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues.

Section 13. Disposal considerations

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3082	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (Contains: Ethylene glycol)	-	-	-
Transport hazard class(es)	9 	-	-	-
Packing group	III	-	-	-
Environmental hazards	Yes.	No.	No.	No.
Additional information	**Remarks** This material is Not Regulated if transported in a package that does not meet or exceed the Reportable Quantity (RQ).	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Ethylene glycol, 5068 gal of this product.

Marine pollutant Not available.

North-America NAERG : 171

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: zinc chloride
Clean Water Act (CWA) 311: zinc chloride; Acetic acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Delayed (chronic) health hazard

SARA 313

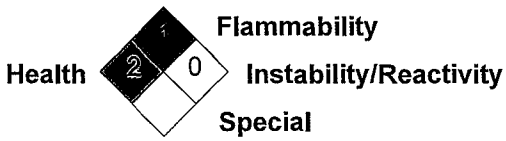
	Product name	CAS number	%
Supplier notification	Ethylene glycol	107-21-1	10 - 20

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 1/16/2015.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ RBW6006X WATER CLARIFIER
™ a trademark of Baker Hughes Incorporated.

Product code : RBW6006X

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Water clarifier.

Print date : 1/8/2015.

Validation date : 12/22/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

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(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) [kidneys] - Category 2
AQUATIC HAZARD (ACUTE) - Category 2
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : May cause damage to organs through prolonged or repeated exposure. (kidneys)
Toxic to aquatic life.
Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention : Avoid release to the environment. Do not breathe vapor.

Response : Get medical attention if you feel unwell.

Storage : Not applicable.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 2. Hazards identification

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Ethylene glycol	5 - 10	107-21-1
Condensed alkanolamine	5 - 10	Trade secret.
Zinc chloride	0.1 - 1	7646-85-7

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention following exposure or if feeling unwell.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention following exposure or if feeling unwell. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention following exposure or if feeling unwell. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention following exposure or if feeling unwell. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Section 4. First aid measures

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is toxic to aquatic life. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ethylene glycol	US ACGIH	-	-	-	-	-	-	-	100	-	[a]
	OSHA PEL 1989	-	-	-	-	-	-	50	125	-	
Zinc chloride	US ACGIH	-	1	-	-	2	-	-	-	-	[b]
	OSHA PEL	-	1	-	-	-	-	-	-	-	[b]
	OSHA PEL 1989	-	1	-	-	2	-	-	-	-	[b]

Form: [a]Aerosol [b]Fume

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Section 8. Exposure controls/personal protection

Hygiene measures	:	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
Eye/face protection	:	Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.
Hand protection	:	Chemical-resistant gloves.
Skin protection	:	Wear long sleeves to prevent repeated or prolonged skin contact.
Respiratory protection	:	If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state	:	Liquid. [Clear.]
Color	:	Brown.
Odor	:	Amine like. [Slight]
Odor threshold	:	Not available.
pH	:	7.3
	:	Neat - without dilution.
Melting/freezing point	:	Not available.
Boiling point	:	Not available.
Initial Boiling Point	:	Not available.
Flash point	:	Closed cup: >93.4°C (>200.1°F) [SFCC]
Burning time	:	Not applicable.
Burning rate	:	Not applicable.
Evaporation rate	:	Not available.
Flammability (solid, gas)	:	Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.
Lower and upper explosive (flammable) limits	:	Not available.
Vapor pressure	:	Not available.
Vapor density	:	>1 [Air = 1]
Relative density	:	1.0985 (15.6°C)
Density	:	9.15 (lbs/gal)
Solubility in water	:	Soluble
Partition coefficient: n-octanol/water	:	Not available.
Auto-ignition temperature	:	Not available.
Decomposition temperature	:	Not available.
Viscosity	:	Not available.
VOC	:	Not available.
Pour Point	:	Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.
Slightly reactive or incompatible with the following materials: acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ethylene glycol	LD50 Oral	Rat	4700 mg/kg	-
Zinc chloride	LD50 Oral	Rat	350 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Ethylene glycol	Category 2	Not determined	kidneys

Aspiration hazard

Not available.

Section 11. Toxicological information

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	5145 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Ethylene glycol	Acute LC50 100000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 10000000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 8050000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Zinc chloride	Acute EC50 26 µg/l	Algae - Navicula incerta	96 hours
	Acute EC50 34 µg/l Fresh water	Algae - Chlorella vulgaris - Exponential growth phase	72 hours
	Acute EC50 1.8 mg/l Fresh water	Aquatic plants - Lemna aequinoctialis	96 hours
	Acute EC50 100 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 49.99 µg/l Fresh water	Crustaceans - Moina irrasa - Neonate	48 hours
	Acute LC50 0.027 mg/l Marine water	Fish - Limanda punctatissima - Pre-larvae	96 hours
	Chronic NOEC 0.02 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Chronic NOEC 1000 µg/l Fresh water	Crustaceans - Procambarus clarkii - Intermolt	21 days
	Chronic NOEC 80 µg/l Fresh water	Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling)	21 days
	Chronic NOEC 31.5 µg/l Fresh water	Fish - Oncorhynchus mykiss	30 days

Persistence and degradability

Not available.

Section 12. Ecological information

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3082	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (Contains: Ethylene glycol)	-	-	-
Transport hazard class(es)	9 	-	-	-
Packing group	III	-	-	-
Environmental hazards	Yes.	No.	No.	No.
Additional information	This material is Not Regulated if transported in a package that does not meet or exceed the Reportable Quantity (RQ).	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 14. Transport information

DOT Reportable Quantity Ethylene glycol, 5623 gal of this product.

Marine pollutant Not available.

North-America NAERG : 171

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: zinc chloride
Clean Water Act (CWA) 311: zinc chloride

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Delayed (chronic) health hazard

SARA 313

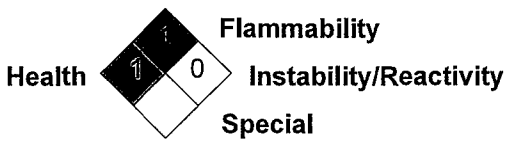
	Product name	CAS number	%
Supplier notification	Ethylene glycol	107-21-1	5 - 10

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 1/8/2015.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ RBW520 WATER CLARIFIER
™ a trademark of Baker Hughes Incorporated.

Product code : RBW520

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Water clarifier.

Print date : 12/5/2014.

Validation date : 12/5/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) [kidneys] - Category 2
AQUATIC HAZARD (ACUTE) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : May cause damage to organs through prolonged or repeated exposure. (kidneys)
Harmful to aquatic life.

Precautionary statements

Prevention : Avoid release to the environment. Do not breathe vapor.

Response : Get medical attention if you feel unwell.

Storage : Not applicable.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Ethylene glycol	5 - 10	107-21-1
Amine salt	5 - 10	Trade secret.
Zinc chloride	0.1 - 1	7646-85-7

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention following exposure or if feeling unwell.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention following exposure or if feeling unwell. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention following exposure or if feeling unwell. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention following exposure or if feeling unwell. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Section 4. First aid measures

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ethylene glycol	US ACGIH	-	-	-	-	-	-	-	100	-	[a]
	OSHA PEL 1989	-	-	-	-	-	-	50	125	-	
Zinc chloride	US ACGIH	-	1	-	-	2	-	-	-	-	[b]
	OSHA PEL	-	1	-	-	-	-	-	-	-	[b]
	OSHA PEL 1989	-	1	-	-	2	-	-	-	-	[b]

Form: [a]Aerosol [b]Fume

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Section 8. Exposure controls/personal protection

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear to hazy.]

Color : Amber to dark brown.

Odor : Sweet. [Slight]

Odor threshold : Not available.

pH : 4.2

: Neat - without dilution.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: >93.4°C (>200.1°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 1.06 (15.6°C)

Density : 8.83 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.
Slightly reactive or incompatible with the following materials: acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ethylene glycol	LD50 Oral	Rat	4700 mg/kg	-
Zinc chloride	LD50 Oral	Rat	350 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Ethylene glycol	Category 2	Not determined	kidneys

Aspiration hazard

Not available.

Section 11. Toxicological information

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	8845.2 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Ethylene glycol	Acute LC50 100000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 10000000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 8050000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Zinc chloride	Acute EC50 26 µg/l	Algae - Navicula incerta	96 hours
	Acute EC50 34 µg/l Fresh water	Algae - Chlorella vulgaris - Exponential growth phase	72 hours
	Acute EC50 1.8 mg/l Fresh water	Aquatic plants - Lemna aequinoctialis	96 hours
	Acute EC50 100 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 49.99 µg/l Fresh water	Crustaceans - Moina irrasa - Neonate	48 hours
	Acute LC50 0.027 mg/l Marine water	Fish - Limanda punctatissima - Pre-larvae	96 hours
	Chronic NOEC 0.02 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Chronic NOEC 1000 µg/l Fresh water	Crustaceans - Procambarus clarkii - Intermolt	21 days
	Chronic NOEC 80 µg/l Fresh water	Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling)	21 days
	Chronic NOEC 31.5 µg/l Fresh water	Fish - Oncorhynchus mykiss	30 days

Persistence and degradability

Not available.

Section 12. Ecological information

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3082	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (Contains: Ethylene glycol)	-	-	-
Transport hazard class(es)	9 	-	-	-
Packing group	III	-	-	-
Environmental hazards	Yes.	No.	No.	No.
Additional information	This material is Not Regulated if transported in a package that does not meet or exceed the Reportable Quantity (RQ).	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 14. Transport information

DOT Reportable Quantity Ethylene glycol, 10017 gal of this product.

Marine pollutant Not available.

North-America NAERG : 171

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: zinc chloride
Clean Water Act (CWA) 311: zinc chloride

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Delayed (chronic) health hazard

SARA 313

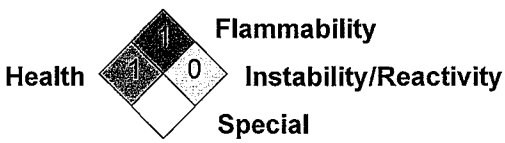
	Product name	CAS number	%
Supplier notification	Ethylene glycol	107-21-1	5 - 10

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 12/5/2014.

Indicates information that has changed from previously issued version.

Notice to reader

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This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

Material Safety Data Sheet

1. Product and company identification

Product name : TRETOLITE™ RBW503X WATER CLARIFIER
™ a trademark of Baker Hughes, Inc.

Supplier : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Material Uses : Special: Water clarifier.

Code : RBW503X

Validation date : 2/10/2010.

Print date : 2/10/2010.

Version : 3

Responsible name : Global Regulatory Affairs - Telephone 281-276-5400 or 800-231-3606

In case of emergency : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

2. Hazards identification

Physical state : Liquid. [Clear.]

Odor : Acrid. [Slight]

Color : Brown. to Black.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview : CAUTION!

MAY BE HARMFUL IF SWALLOWED. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

Do not ingest. Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Inhalation : Slightly irritating to the respiratory system.

Ingestion : Harmful if swallowed.

Skin : Moderately irritating to the skin.

Eyes : Moderately irritating to eyes.

Potential chronic health effects

Chronic effects : Contains material that may cause target organ damage, based on animal data.

Target organs : Contains material which may cause damage to the following organs: kidneys, the nervous system, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

Over-exposure signs/symptoms

Inhalation : respiratory tract irritation, coughing

Ingestion : None known.

2. Hazards identification

Skin : irritation, redness

Eyes : irritation, watering, redness

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (section 11)

3. Composition/information on ingredients

Name	CAS number	%
Ethylene Glycol	107-21-1	5 - 10
Aluminum chloride hydroxide	12042-91-0	5 - 10

4. First aid measures

Eye contact : Get medical attention immediately. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

5. Fire-fighting measures

Flammability of the product : In a fire or if heated, a pressure increase will occur and the container may burst.

Extinguishing media

Suitable : Use an extinguishing agent suitable for the surrounding fire.

Not suitable : None known.

Special exposure hazards : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,halogenated compounds,metal oxide/oxides

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up

6 . Accidental release measures

Small spill : Stop leak if without risk. Move containers from spill area. Absorb with an inert material. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

7 . Handling and storage

Handling : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage : Store in accordance with local regulations. Store in a dry, cool and well-ventilated area, away from incompatible materials (see section 10). Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Aluminum chloride hydroxide, as Al	OSHA PEL 1989	-	2	-	-	-	-	-	-	-	[A]
Ethylene Glycol	US ACGIH	-	-	-	-	-	-	-	100	-	[a]
	OSHA PEL 1989	-	-	-	-	-	-	50	125	-	

Form: [a]Aerosol
Notes: [A]as Al

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location. Take off contaminated clothing and wash before re-use.

Personal protection

8 . Exposure controls/personal protection

Respiratory	: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Hands	: Chemical-resistant gloves: Neoprene gloves.
Eyes	: Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.
Skin	: Wear long sleeves and other protective clothing to prevent repeated or prolonged skin contact.

9 . Physical and chemical properties

Physical state	: Liquid. [Clear.]
Flash point	: Closed cup: >93.4°C (>200.1°F) [SFCC]
Auto-ignition temperature	: Not available.
Flammable limits	: Not available.
Color	: Brown. to Black.
Odor	: Acrid. [Slight]
pH	: 4.2 [Conc. (% w/w): 100%]
	: Neat - without dilution.
Boiling/condensation point	: Not available.
Initial Boiling Point	: Not available.
Melting/freezing point	: Not available.
Relative density	: 1.074 to 1.115 (15.6°C)
Density	: 8.95 to 9.29 (lbs/gal)
Vapor density	: >1 [Air = 1]
Odor threshold	: Not available.
Evaporation rate	: Not available.
VOC	: Not available.
Viscosity	: Not available.
Solubility (Water)	: Soluble
Vapor pressure	: Not available.
Pour Point	: Not available.
Partition coefficient (LogKow)	: Not available.

10 . Stability and Reactivity

Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to avoid	: No specific data.
Materials to avoid	: Reactive or incompatible with the following materials: oxidizing materials. Slightly reactive or incompatible with the following materials: acids.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Conditions of reactivity	: Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

11 . Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Aluminum chloride hydroxide	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	9187 mg/kg	-
Ethylene Glycol	LD50 Dermal	Rabbit	9530 uL/kg	-
	LD50 Oral	Rat	4700 mg/kg	-
	LD50 Oral	Female rat	4000 mg/kg	-

Carcinogenicity

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Ethylene Glycol	A4	-	-	-	-	-

Chronic toxicity Remarks

1) Ethylene Glycol

Ethylene glycol (EG) is a component of this product. Chronic ingestion has shown to cause adverse kidney, liver, bladder, and blood effects in laboratory animals (NTP Technical Report, 1993; Fund. Appl. Toxicol. 7:547-65; FD Cosmet Toxicol. Vol. 3:229-34; Drug and Chem Toxicol 13(1):43-70). Also, chronic ingestion has caused adverse effect on the sperm (decreased motility and increased percentage of abnormal sperm) in laboratory animals. [Morrissey, R.E. et al, 1988, Fund Appl Toxicol, 11(2), pp 359-71]

Ingestion of ethylene glycol has produced Central Nervous System depression, effects on the cardiopulmonary system, and neurological impairment. [Gosselin, R.E., Smith, R.P., and Hodge, H.C., 1984, Clinical Toxicology of Commercial Products; NTP Techical Report 413, 1993; CCOHS CHEMINFO, 2003, Record No. 41 for ethylene glycol; Mallya, K.B. et al, 1986, J Neurol Sce, 13(4) pp 340-41; Anderson, B. , 1990, Am J. Med, 88, pp 87-88]

EG is an animal teratogen at doses which produced mild toxicity to the mother. EG given at doses up to 5,000 mg/kg/day to pregnant rats or up to 3,000 mg/kg/day to mice induced a wide variety of fetal malformations, including those of the musculoskeletal, bone marrow, and spleen (RTECS, 1996). It was also a teratogen and an embryotoxin at doses producing no toxicity to the mother in laboratory animals. (Lamb, J.C. et al, 1985, Toxicol Appl Pharmacol, 81, p 100 and Price, C.J. et al, 1985, Appl Pharmacol, 81, pp113-27)

Ethylene glycol is used to cryopreserve embryos of many mammalian species, including pigs, goats, cows and horses (Otoi et al, 1995; Fieni et al, 1995; Hochi et al, 1994). This makes it unlikely that ethylene glycol itself is the active teratogen in whole animal studies. The EG metabolite, glycolic acid, was active in contrast to EG itself for inducing developmental defects in whole rat embryos in culture (Carney et al, 1996). EG inhibited metabolic cooperation of Chinese hamster cells in vitro, a finding which may have implications for its mechanism of teratogenicity (Loch-Caruso et al, 1984).

2) Aluminum chloride hydroxide

Aluminum chloride hydroxide is a component of this product. In rats, an inhalation dose of 25 mg/m3/6H/26W intermittent resulted in fibrosis of the lungs, and changes in lung weight. Weight loss was also exhibited. In guinea pigs, an inhalation dose of 25 mg/m3/6H/26W intermittent exhibited fibrosis of the lungs, and changes in lung weight (RTECS).

12 . Ecological information

Aquatic ecotoxicity

Conclusion/Summary : Not available.

Biodegradability

Conclusion/Summary : Not available.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (Contains: Ethylene Glycol)	9	III		**Remarks** This material is Not Regulated if transported in a package that does not meet or exceed the Reportable Quantity (RQ).
TDG Classification	Not regulated.	-	-	-		-
IMDG Class	Not regulated.	-	-	-		-

PG* : Packing group

DOT Reportable Quantity Ethylene Glycol, 7458 gal of this product.

Marine pollutant Not applicable.

North-America NAERG : 171

15 . Regulatory information

HCS Classification : Irritating material
Target organ effects

U.S. Federal regulations : **United States Inventory (TSCA 8b)**: All components are listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: ethanediol
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: TRETOLITE™ RBW503X WATER CLARIFIER: Immediate (acute) health hazard, Delayed (chronic) health hazard

CERCLA: Hazardous substances.: zinc chloride: 1000 lbs. (454 kg); ethanediol: 5000 lbs. (2270 kg);

Clean Water Act (CWA) 307: zinc chloride

Clean Water Act (CWA) 311: zinc chloride

Clean Air Act (CAA) 112 accidental release prevention: No products were found.

15 . Regulatory information

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 313

	Product name	CAS number	Concentration
Supplier notification :	Ethylene Glycol	107-21-1	5 - 10

United States Inventory (TSCA 8b) : All components are listed or exempted.

Canada

WHMIS (Canada) : Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

Canada (CEPA DSL): : All components are listed or exempted.

16 . Other information

Label requirements : MAY BE HARMFUL IF SWALLOWED. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

National Fire Protection Association (U.S.A.) :

Date of printing : **2/10/2010.**

☑ Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

Material Safety Data Sheet

1. Product and company identification

Product name : TRETOLITE™ RBW301X WATER CLARIFIER
™ a trademark of Baker Hughes, Inc.

Supplier : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Material Uses : Special: Water clarifier.

Code : RBW301X

Validation date : 11/12/2009.

Print date : 11/12/2009.

Version : 3

Responsible name : Global Regulatory Affairs - Telephone 281-276-5400 or 800-231-3606

In case of emergency : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

2. Hazards identification

Physical state : Liquid. [Clear to hazy.]

Odor : Sweet. [Slight]

Color : Amber to dark brown.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview : CAUTION!

MAY BE HARMFUL IF SWALLOWED. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

Do not ingest. Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Inhalation : Moderately irritating to the respiratory system.

Ingestion : Harmful if swallowed.

Skin : Moderately irritating to the skin.

Eyes : Moderately irritating to eyes.

Potential chronic health effects

Chronic effects : Contains material that may cause target organ damage, based on animal data.

Target organs : Contains material which may cause damage to the following organs: kidneys, the nervous system, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

Over-exposure signs/symptoms

Inhalation : respiratory tract irritation, coughing

Ingestion : None known.

Skin : irritation, redness

2 . Hazards identification

Eyes : irritation, watering, redness

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (section 11)

3 . Composition/information on ingredients

Name	CAS number	%
Ethylene Glycol	107-21-1	10 - 30
Amine salt	Trade secret.	5 - 10

4 . First aid measures

Eye contact : Get medical attention immediately. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

5 . Fire-fighting measures

Flammability of the product : In a fire or if heated, a pressure increase will occur and the container may burst.

Extinguishing media

Suitable : Use an extinguishing agent suitable for the surrounding fire.

Not suitable : None known.

Special exposure hazards : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,halogenated compounds

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Absorb with an inert material. Dispose of via a licensed waste disposal contractor.

6 . Accidental release measures

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

7 . Handling and storage

Handling : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage : Store in accordance with local regulations. Store in a dry, cool and well-ventilated area, away from incompatible materials (see section 10). Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ethylene Glycol	US ACGIH OSHA PEL 1989	- -	- -	- -	- -	- -	- -	- 50	100 125	- -	[a]

Form: [a]Aerosol

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location. Take off contaminated clothing and wash before re-use.

Personal protection

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Chemical-resistant gloves: Neoprene gloves.

Eyes : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

8 . Exposure controls/personal protection

Skin : Wear long sleeves and other protective clothing to prevent repeated or prolonged skin contact.

9 . Physical and chemical properties

Physical state	: Liquid. [Clear to hazy.]
Flash point	: Closed cup: >93.4°C (>200.1°F) [SFCC]
Auto-ignition temperature	: Not available.
Flammable limits	: Not available.
Color	: Amber to dark brown.
Odor	: Sweet. [Slight]
pH	: 3.6
	: Neat - without dilution.
Boiling/condensation point	: Not available.
Initial Boiling Point	: Not available.
Melting/freezing point	: Not available.
Relative density	: 1.12 (15.6°C)
Density	: 9.33 (lbs/gal)
Vapor density	: >1 [Air = 1]
Odor threshold	: Not available.
Evaporation rate	: Not available.
VOC	: 140 g/l
Viscosity	: Not available.
Solubility (Water)	: Soluble
Vapor pressure	: Not available.
Pour Point	: Not available.
Partition coefficient (LogKow)	: Not available.

10 . Stability and Reactivity

Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to avoid	: No specific data.
Materials to avoid	: Reactive or incompatible with the following materials: oxidizing materials. Slightly reactive or incompatible with the following materials: acids.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Conditions of reactivity	: Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

11 . Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ethylene Glycol	LD50 Dermal	Rabbit	9530 uL/kg	-
	LD50 Oral	Rat	4700 mg/kg	-
	LD50 Oral	Female rat	4000 mg/kg	-

Carcinogenicity Classification

11 . Toxicological information

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Ethylene Glycol	A4	-	-	-	-	-

Chronic toxicity Remarks

1) Ethylene Glycol

Ethylene glycol (EG) is a component of this product. Chronic ingestion has shown to cause adverse kidney, liver, bladder, and blood effects in laboratory animals (NTP Technical Report, 1993; Fund. Appl. Toxicol. 7:547-65; FD Cosmet Toxicol. Vol. 3:229-34; Drug and Chem Toxicol 13(1):43-70). Also, chronic ingestion has caused adverse effect on the sperm (decreased motility and increased percentage of abnormal sperm) in laboratory animals. [Morrissey, R.E. et al, 1988, Fund Appl Toxicol, 11(2), pp 359-71]

Ingestion of ethylene glycol has produced Central Nervous System depression, effects on the cardiopulmonary system, and neurological impairment. [Gosselin, R.E., Smith, R.P., and Hodge, H.C., 1984, Clinical Toxicology of Commercial Products; NTP Techical Report 413, 1993; CCOHS CHEMINFO, 2003, Record No. 41 for ethylene glycol; Mallya, K.B. et al, 1986, J Neurol Sce, 13(4) pp 340-41; Anderson, B. , 1990, Am J. Med, 88, pp 87-88]

EG is an animal teratogen at doses which produced mild toxicity to the mother. EG given at doses up to 5,000 mg/kg/day to pregnant rats or up to 3,000 mg/kg/day to mice induced a wide variety of fetal malformations, including those of the musculoskeletal, bone marrow, and spleen (RTECS, 1996). It was also a teratogen and an embryotoxin at doses producing no toxicity to the mother in laboratory animals. (Lamb, J.C. et al, 1985, Toxicol Appl Pharmacol, 81, p 100 and Price, C.J. et al, 1985, Appl Pharmacol, 81, pp113-27)

Ethylene glycol is used to cryopreserve embryos of many mammalian species, including pigs, goats, cows and horses (Otoi et al, 1995; Fieni et al, 1995; Hochi et al, 1994). This makes it unlikely that ethylene glycol itself is the active teratogen in whole animal studies. The EG metabolite, glycolic acid, was active in contrast to EG itself for inducing developmental defects in whole rat embryos in culture (Carney et al, 1996). EG inhibited metabolic cooperation of Chinese hamster cells in vitro, a finding which may have implications for its mechanism of teratogenicity (Loch-Caruso et al, 1984).

2) Amine salt

Not available.

12 . Ecological information

Aquatic ecotoxicity

Conclusion/Summary : Not available.

Biodegradability

Conclusion/Summary : Not available.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	UN3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (Contains: Ethylene Glycol)	9	III		This material is Not Regulated if transported in a package that does not meet or exceed the Reportable Quantity (RQ).
TDG Classification	Not regulated.	-	-	-		-
IMDG Class	Not regulated.	-	-	-		-

PG* : Packing group

DOT Reportable Quantity Ethylene Glycol, 5333 gal of this product.

Marine pollutant Not applicable.

North-America NAERG : 171

15 . Regulatory information

HCS Classification : Irritating material
Target organ effects

U.S. Federal regulations : **United States inventory (TSCA 8b)**: All components are listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: ethanediol
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: TRETOLITE™ RBW301X WATER CLARIFIER: Immediate (acute) health hazard, Delayed (chronic) health hazard

CERCLA: Hazardous substances.: zinc chloride: 1000 lbs. (454 kg); ethanediol: 5000 lbs. (2270 kg);

Clean Water Act (CWA) 307: zinc chloride

Clean Water Act (CWA) 311: zinc chloride

Clean Air Act (CAA) 112 accidental release prevention: No products were found.

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 313

	Product name	CAS number	Concentration
Supplier notification :	Ethylene Glycol	107-21-1	10 - 30

United States inventory (TSCA 8b) : All components are listed or exempted.

Canada

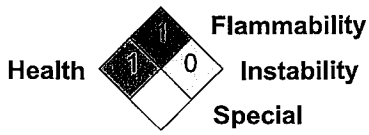
WHMIS (Canada) : Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

Canada (CEPA DSL): : All components are listed or exempted.

16 . Other information

Label requirements : MAY BE HARMFUL IF SWALLOWED. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

National Fire Protection Association (U.S.A.) :



Date of printing : **11/12/2009.**

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Notice to reader

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This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ RBW255 WATER CLARIFIER
™ a trademark of Baker Hughes, Inc.

Product code : RBW255

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Reverse demulsifier.

Print date : 10/29/2014.

Validation date : 10/29/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/SDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : CORROSIVE TO METALS - Category 1
SKIN CORROSION/IRRITATION - Category 1B
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE): INHALATION [lungs] - Category 1
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE): ORAL [central nervous system (CNS)] - Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : May be corrosive to metals.
Causes severe skin burns and eye damage.
Causes damage to organs through prolonged or repeated exposure if inhaled. (lungs)
May cause damage to organs through prolonged or repeated exposure if swallowed. (central nervous system (CNS))

Precautionary statements

Section 2. Hazards identification

Prevention : Wear protective gloves: > 8 hours (breakthrough time): Nitrile or Neoprene gloves.. Wear eye or face protection. Wear protective clothing. Keep only in original container. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

Response : Absorb spillage to prevent material damage. Get medical attention if you feel unwell. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up. Store in corrosive resistant container with a resistant inner liner.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Additional information

Corrosive to aluminum and steel.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Aluminum chloride	10 - 20	7446-70-0
Propargyl alcohol	1 - 5	107-19-7

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes severe burns.

Ingestion : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,halogenated compounds,metal oxide/ oxides

Section 5. Fire-fighting measures

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Absorb spillage to prevent material damage. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Absorb spillage to prevent material damage. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. Absorb spillage to prevent material damage.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store in corrosive resistant container with a resistant inner liner. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Aluminum chloride, as Al	OSHA PEL 1989	-	2	-	-	-	-	-	-	-	[A]
Propargyl alcohol	US ACGIH	1	2.3	-	-	-	-	-	-	-	[1]
	OSHA PEL 1989	1	2	-	-	-	-	-	-	-	[1]

[1]Absorbed through skin.
Notes: [A]as Al

Consult local authorities for acceptable exposure limits.
Only components of this product with established exposure limits appear in the box above.
If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves: Nitrile or Neoprene gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Amber.

Odor : Pungent.

Odor threshold : Not available.

pH : 2.6

Section 9. Physical and chemical properties

	:	5% of product in 75% isopropanol / 25% water solution
Melting/freezing point	:	Not available.
Boiling point	:	Not available.
Initial Boiling Point	:	Not available.
Flash point	:	Closed cup: >93.4°C (>200.1°F) [SFCC]
Burning time	:	Not applicable.
Burning rate	:	Not applicable.
Evaporation rate	:	Not available.
Flammability (solid, gas)	:	Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.
Lower and upper explosive (flammable) limits	:	Not available.
Vapor pressure	:	6.1 kPa (45.7 mm Hg) @ 22°C
Vapor density	:	>1 [Air = 1]
Relative density	:	1.259 (15.6°C)
Density	:	10.49 (lbs/gal)
Solubility in water	:	Soluble
Partition coefficient: n-octanol/water	:	Not available.
Auto-ignition temperature	:	Not available.
Decomposition temperature	:	Not available.
Viscosity	:	Dynamic (25°C): 47.4 cP
VOC	:	Not available.
Pour Point	:	-40°C (-40°F)

Section 10. Stability and reactivity

Reactivity	:	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	:	The product is stable.
Possibility of hazardous reactions	:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	:	No specific data.
Incompatible materials	:	Reactive or incompatible with the following materials: oxidizing materials and metals.
Hazardous decomposition products	:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Aluminum chloride	LD50 Oral	Rat	3450 mg/kg	-
Propargyl alcohol	LD50 Oral	Rat	55 mg/kg	-

Irritation/Corrosion

Section 11. Toxicological information

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Aluminum chloride	Category 1 Category 2	Inhalation Oral	lungs central nervous system (CNS)

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : Causes damage to organs through prolonged or repeated exposure if inhaled. May cause damage to organs through prolonged or repeated exposure if swallowed.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Section 11. Toxicological information

Route	ATE value
Oral	3095.7 mg/kg
Dermal	3401.4 mg/kg
Inhalation (vapors)	34.01 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Aluminum chloride	Acute EC50 460 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute EC50 1500 µg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Neonate	48 hours
	Acute LC50 3.65 mg/l Fresh water	Daphnia - Daphnia pulex - Adult	48 hours
	Acute LC50 610 µg/l Fresh water	Fish - Oncorhynchus mykiss - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
Propargyl alcohol	EC50 98.1 mg/l	Algae	72 hours
	Acute EC50 3.36 mg/l	Daphnia	48 hours
	Acute LC50 4.64 mg/l	Fish	96 hours

Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Propargyl alcohol	-	-	Readily

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3264	UN3264	UN3264	UN3264
UN proper shipping name	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Contains: Aluminum chloride)	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Contains: Aluminum chloride)	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Contains: Aluminum chloride)	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Contains: Aluminum chloride)
Transport hazard class(es)	8 	8 	8 	8 
Packing group	III	III	III	III
Environmental hazards	No.	No.	No.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-A S-B	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Propargyl alcohol, 6485 gal of this product.

Marine pollutant Not available.

North-America NAERG : 154

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: Formaldehyde

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304

Name	%	EHS	SARA 302 TPQ (lbs)	SARA 302 TPQ (gallons)	SARA 304 RQ (lbs)	SARA 304 RQ (gallons)
Formaldehyde	0 - 0.1	Yes.	500	6.7	100	1.3

Section 15. Regulatory information

SARA 311/312

Classification : Reactive
Immediate (acute) health hazard
Delayed (chronic) health hazard

SARA 313

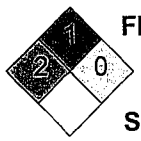
	Product name	CAS number	%
Supplier notification	Propargyl alcohol	107-19-7	1 - 5

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



Flammability
Health
Instability/Reactivity
Special

History

Date of printing : 10/29/2014.

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This SDS was prepared and is to be used for this product. If the product is used as a component in another product, this SDS information may not be applicable.

Section 9. Physical and chemical properties

Flammability (solid, gas)	: Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: 5.1 kPa (38.6 mm Hg) @ 38°C
Vapor density	: Not available.
Relative density	: 1.162 (15.6°C)
Density	: 9.68 (lbs/gal)
Solubility in water	: Soluble
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Not available.
VOC	: Not available.
Pour Point	: Not available.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: Reactive or incompatible with the following materials: oxidizing materials. Slightly reactive or incompatible with the following materials: acids.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ethylene glycol	LD50 Oral	Rat	4700 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Section 11. Toxicological information

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Ethylene glycol	Category 2	Not determined	kidneys

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	2870 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Ethylene glycol	Acute LC50 100000 µg/l Marine water Acute LC50 10000000 µg/l Fresh water Acute LC50 8050000 µg/l Fresh water	Crustaceans - Crangon crangon Daphnia - Daphnia magna Fish - Pimephales promelas	48 hours 48 hours 96 hours

Persistence and degradability

Section 12. Ecological information

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3267	UN3267	UN3267	UN3267
UN proper shipping name	CORROSIVE LIQUID, BASIC, ORGANIC, N.O. S. (Contains: Salt of an organic sulfur compound)	CORROSIVE LIQUID, BASIC, ORGANIC, N.O. S. (Contains: Salt of an organic sulfur compound)	CORROSIVE LIQUID, BASIC, ORGANIC, N.O. S. (Contains: Salt of an organic sulfur compound)	CORROSIVE LIQUID, BASIC, ORGANIC, N.O. S. (Contains: Salt of an organic sulfur compound)
Transport hazard class(es)	8 	8 	8 	8 
Packing group	III	III	III	III
Environmental hazards	No.	No.	No.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-A S-B	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Ethylene glycol, 2965 gal of this product.

Section 14. Transport information

Marine pollutant Not available.

North-America NAERG : 153

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: Potassium hydroxide

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard
Delayed (chronic) health hazard

SARA 313

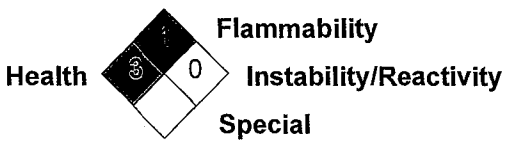
	Product name	CAS number	%
Supplier notification	Ethylene glycol	107-21-1	10 - 20

Canada

Canada (CEPA DSL): : At least one component is not listed in DSL but all such components are listed in NDSL.

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 1/5/2015.

Indicates information that has changed from previously issued version.

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The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ RBW213 WATER CLARIFIER
™ a trademark of Baker Hughes Incorporated.

Product code : RBW213

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Water clarifier.

Print date : 1/5/2015.

Validation date : 1/5/2015.

Version : 1.01

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) [kidneys] - Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Causes severe skin burns and eye damage.
May cause damage to organs through prolonged or repeated exposure. (kidneys)

Precautionary statements

Prevention : Wear protective gloves. Wear eye or face protection. Wear protective clothing. Do not breathe vapor. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : Get medical attention if you feel unwell. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Salt of an organic sulfur compound	30 - 40	Trade secret.
Ethylene glycol	10 - 20	107-21-1

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Section 4. First aid measures

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes severe burns.

Ingestion : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : No specific data.

Skin contact : pain or irritation,redness,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,sulfur oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from acids. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Separate from acids. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ethylene glycol	US ACGIH OSHA PEL 1989	- -	- -	- -	- -	- -	- -	- 50	100 125	- -	[a]

Form: [a]Aerosol

Consult local authorities for acceptable exposure limits.
Only components of this product with established exposure limits appear in the box above.
If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Yellow. to Green.

Odor : Pungent.

Odor threshold : Not available.

pH : 11 to 12

: 5% in water

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: >93.4°C (>200.1°F) [PMCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ RBW118X REVERSE DEMULSIFIER
™ a trademark of Baker Hughes, Inc.

Product code : RBW118X

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Reverse Demulsifier.

Print date : 11/7/2014.

Validation date : 11/7/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) [kidneys] - Category 2
AQUATIC HAZARD (ACUTE) - Category 2
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : May cause damage to organs through prolonged or repeated exposure. (kidneys)
Toxic to aquatic life.
Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention : Avoid release to the environment. Do not breathe vapor.

Response : Get medical attention if you feel unwell.

Storage : Not applicable.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 2. Hazards identification

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Ethylene glycol	10 - 20	107-21-1
Zinc chloride	0.1 - 1	7646-85-7

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention following exposure or if feeling unwell.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention following exposure or if feeling unwell. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention following exposure or if feeling unwell. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention following exposure or if feeling unwell. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Section 4. First aid measures

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is toxic to aquatic life. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ethylene glycol	US ACGIH	-	-	-	-	-	-	-	100	-	[a]
	OSHA PEL 1989	-	-	-	-	-	-	50	125	-	
Zinc chloride	US ACGIH	-	1	-	-	2	-	-	-	-	[b]
	OSHA PEL	-	1	-	-	-	-	-	-	-	[b]
	OSHA PEL 1989	-	1	-	-	2	-	-	-	-	[b]

Form: [a]Aerosol [b]Fume

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Section 8. Exposure controls/personal protection

Individual protection measures

Hygiene measures	: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
Eye/face protection	: Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.
Hand protection	: Chemical-resistant gloves: Neoprene gloves.
Skin protection	: Wear long sleeves to prevent repeated or prolonged skin contact.
Respiratory protection	: If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid. [Clear.]
Color	: Amber. / Brown. [Dark]
Odor	: Sweet. [Slight]
Odor threshold	: Not available.
pH	: Not available.
Melting/freezing point	: Not available.
Boiling point	: Not available.
Initial Boiling Point	: Not available.
Flash point	: Closed cup: >93.4°C (>200.1°F) [SFCC]
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: >1 [Air = 1]
Relative density	: 1.137 (15.6°C)
Density	: 9.47 (lbs/gal)
Solubility in water	: Soluble
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Not available.
VOC	: Not available.
Pour Point	: Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.
Slightly reactive or incompatible with the following materials: acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ethylene glycol	LD50 Oral	Rat	4700 mg/kg	-
Zinc chloride	LD50 Oral	Rat	350 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Ethylene glycol	Category 2	Not determined	kidneys

Aspiration hazard

Not available.

Section 11. Toxicological information

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	3137.6 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Ethylene glycol	Acute LC50 100000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 10000000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 8050000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Zinc chloride	Acute EC50 26 µg/l	Algae - Navicula incerta	96 hours
	Acute EC50 34 µg/l Fresh water	Algae - Chlorella vulgaris	72 hours
	Acute EC50 1.8 mg/l Fresh water	Aquatic plants - Lemna aequinoctialis	96 hours
	Acute EC50 100 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 49.99 µg/l Fresh water	Crustaceans - Moina irrasa	48 hours
	Acute LC50 0.027 mg/l Marine water	Fish - Limanda punctatissima	96 hours
	Chronic NOEC 20 µg/l Marine water	Algae - Chlorella sp.	72 hours
	Chronic NOEC 1000 µg/l Fresh water	Crustaceans - Procambarus clarkii	21 days
	Chronic NOEC 80 µg/l Fresh water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 31.5 µg/l Fresh water	Fish - Oncorhynchus mykiss	30 days

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3082	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (Contains: Ethylene glycol)	-	-	-
Transport hazard class(es)	9 	-	-	-
Packing group	III	-	-	-
Environmental hazards	Yes.	No.	No.	No.
Additional information	This material is Not Regulated if transported in a package that does not meet or exceed the Reportable Quantity (RQ).	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Ethylene glycol, 3313 gal of this product.

Marine pollutant Not available.

Section 14. Transport information

North-America NAERG : 171

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: zinc chloride
Clean Water Act (CWA) 311: zinc chloride

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Delayed (chronic) health hazard

SARA 313

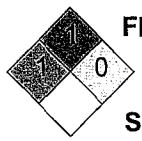
	Product name	CAS number	%
Supplier notification	Ethylene glycol	107-21-1	10 - 20

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



Flammability
Health
Instability/Reactivity
Special

History

Date of printing : 11/7/2014.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

BAKER HUGHES

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ DMO8298U DEMULSIFIER
™ a trademark of Baker Hughes, Inc.

Product code : DMO8298U

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Demulsifier.

Print date : 10/30/2014.

Validation date : 10/30/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/SDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation and Narcotic effects] - Category 3
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Flammable liquid and vapor.
Causes serious eye irritation.
Causes skin irritation.
Suspected of causing cancer.
May cause respiratory irritation.
May cause drowsiness and dizziness.
Toxic to aquatic life with long lasting effects.

Section 2. Hazards identification

Precautionary statements

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves: > 8 hours (breakthrough time): Nitrile or Neoprene gloves.. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing vapor. Wash hands thoroughly after handling.

Response : Collect spillage. IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Avoid contact with skin and clothing. Wash thoroughly after handling.

Hazards not otherwise classified : Prolonged or repeated contact may dry skin and cause irritation.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Light aromatic naphtha	30 - 40	64742-95-6
1,2,4-Trimethylbenzene	20 - 30	95-63-6
1,3,5-Trimethylbenzene	5 - 10	108-67-8
Xylene	1 - 5	1330-20-7
1,2,3-Trimethylbenzene	1 - 5	526-73-8
Cumene	0.1 - 1	98-82-8
Ethylbenzene	0.1 - 1	100-41-4

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Section 4. First aid measures

Skin contact : Wash skin thoroughly with soap and water or use recognized skin cleanser. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. May cause respiratory irritation.

Skin contact : Causes skin irritation. Defatting to the skin.

Ingestion : Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain or irritation,watering,redness

Inhalation : respiratory tract irritation,coughing,nausea or vomiting,headache,drowsiness/fatigue, dizziness/vertigo,unconsciousness

Skin contact : irritation,redness,dryness,cracking

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Additional information

If product is ingested and vomiting occurs naturally, have person lean forward to reduce the risk of aspiration into the lungs.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Section 5. Fire-fighting measures

Specific hazards arising from the chemical : Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
1,2,4-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
1,3,5-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
Xylene	US ACGIH	100	434	-	150	651	-	-	-	-	
	OSHA PEL	100	435	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	435	-	150	655	-	-	-	-	
1,2,3-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
Cumene	US ACGIH	50	-	-	-	-	-	-	-	-	
	OSHA PEL	50	245	-	-	-	-	-	-	-	[1]
	OSHA PEL 1989	50	245	-	-	-	-	-	-	-	[1]
Ethylbenzene	US ACGIH	20	-	-	-	-	-	-	-	-	
	OSHA PEL	100	435	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	435	-	125	545	-	-	-	-	

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Section 8. Exposure controls/personal protection

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves: Nitrile or Neoprene gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Brown.

Odor : Aromatic hydrocarbon.

Odor threshold : Not available.

pH : 8.5 to 9

: 5% of product in 75% water/25% IPA

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 40°C (104°F) [PMCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : 22.8 kPa (170.7 mm Hg, 3.3 psig) @ 54.4°C, 130 F (Reid)

Vapor density : >1 [Air = 1]

Relative density : 0.924 (15.6°C)

Density : 7.7 (lbs/gal)

Solubility in water : Negligible

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Section 9. Physical and chemical properties

Viscosity : Dynamic (26.7°C): 6 cP

VOC : Not available.

Pour Point : -43.3°C (-45.9°F)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials and acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Light aromatic naphtha	LD50 Oral	Rat	2900 mg/kg	-
1,2,4-Trimethylbenzene	LC50 Inhalation Vapor	Rat	18000 mg/m³	4 hours
	LD50 Oral	Rat	5 g/kg	-
1,3,5-Trimethylbenzene	LC50 Inhalation Vapor	Rat	24000 mg/m³	4 hours
	LD50 Oral	Rat	5000 mg/kg	-
Xylene	LC50 Inhalation Gas.	Rat	5000 ppm	4 hours
	LD50 Dermal	Rabbit	>1700 mg/kg	-
	LD50 Oral	Male rat	3523 mg/kg	-
	LD50 Oral	Rat	4300 mg/kg	-
Cumene	LC50 Inhalation Vapor	Mouse	10000 mg/m³	7 hours
	LC50 Inhalation Vapor	Rat	39000 mg/m³	4 hours
	LD50 Dermal	Rabbit	10600 mg/kg	-
	LD50 Oral	Rat	2.9 g/kg	-
Ethylbenzene	LD50 Dermal	Rabbit	15400 mg/kg	-
	LD50 Oral	Rat	3500 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Section 11. Toxicological information

Product/ingredient name	OSHA	IARC	NTP
Xylene	-	3	-
Cumene	-	2B	Reasonably anticipated to be a human carcinogen.
Ethylbenzene	-	2B	-

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Light aromatic naphtha	Category 3	Not applicable.	Narcotic effects
1,2,4-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
1,3,5-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Xylene	Category 3	Not applicable.	Narcotic effects
1,2,3-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Cumene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Name	Result
Light aromatic naphtha	ASPIRATION HAZARD - Category 1
Xylene	ASPIRATION HAZARD - Category 1
1,2,3-Trimethylbenzene	ASPIRATION HAZARD - Category 1
Cumene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Section 11. Toxicological information

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	5356.4 mg/kg
Dermal	29275.2 mg/kg
Inhalation (gases)	133069.1 ppm
Inhalation (vapors)	80.34 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
1,2,4-Trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - Elasmopus pectenicrus	48 hours
	Acute LC50 22.4 mg/l Fresh water	Fish - Tilapia zillii	96 hours
1,3,5-Trimethylbenzene	Acute LC50 12520 to 15050 µg/l Fresh water	Fish - Carassius auratus	96 hours
	Chronic NOEC 400 µg/l Fresh water	Daphnia - Daphnia magna	21 days
Xylene	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Cumene	Acute EC50 2600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute LC50 7400 to 11290 µg/l Fresh water	Crustaceans - Artemia sp.	48 hours
	Acute LC50 30500 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2700 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
Ethylbenzene	Acute EC50 4600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 2930 to 4400 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 5200 µg/l Marine water	Crustaceans - Americamysis bahia	48 hours
	Acute LC50 4200 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 1000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
TRETOLITE™ DMO8298U DEMULSIFIER	Acute LC50 14 mg/l	Fish - Fathead minnow	96 hours Water accomodated fraction

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1993	UN1993	UN1993	UN1993
UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)
Transport hazard class(es)	3 	3 	3 	3 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-E S-E	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Xylene, 346 gal of this product.

Marine pollutant Light aromatic naphtha
1,2,4-Trimethylbenzene

North-America NAERG : 128

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Naphthalene; Ethylbenzene
Clean Water Act (CWA) 311: Xylene; Naphthalene; Potassium hydroxide; Ethylbenzene

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

SARA 313

	Product name	CAS number	%
Supplier notification	1,2,4-Trimethylbenzene Xylene Ethylbenzene	95-63-6 1330-20-7 100-41-4	20 - 30 1 - 5 0.1 - 1

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 10/30/2014.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this SDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This SDS was prepared and is to be used for this product. If the product is used as a component in another product, this SDS information may not be applicable.

Material Safety Data Sheet

1. Product and company identification

Product name : TRETOLITE™ DMO8026U DEMULSIFIER
™ a trademark of Baker Hughes, Inc.

Supplier : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Material Uses : Special: Demulsifier.

Code : DMO8026U

Validation date : 7/18/2012.

Print date : 7/18/2012.

Version : 8

Responsible name : Global Regulatory Affairs - Telephone 281-276-5400 or 800-231-3606

In case of emergency : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

2. Hazards identification

Physical state : Liquid.

Odor : Aromatic.

Color : Orange. [Dark]

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview : WARNING!

FLAMMABLE LIQUID AND VAPOR. INHALATION CAUSES HEADACHES, DIZZINESS, DROWSINESS AND NAUSEA AND MAY LEAD TO UNCONSCIOUSNESS. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY BE HARMFUL IF ABSORBED THROUGH SKIN. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. HARMFUL OR FATAL IF SWALLOWED. CAN ENTER LUNGS AND CAUSE DAMAGE. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. SUSPECT CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER. ASPIRATION HAZARD.

Keep away from heat, sparks and flame. Do not breathe vapor or mist. Do not ingest. Do not get in eyes. Avoid contact with skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flashback. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material.

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Inhalation : Can cause central nervous system (CNS) depression. Irritating to respiratory system.

Ingestion : Can cause central nervous system (CNS) depression. Aspiration hazard if swallowed. Can enter lungs and cause damage.

Skin : Harmful in contact with skin. Irritating to skin.

2 . Hazards identification

Eyes : Irritating to eyes.

Potential chronic health effects

Chronic effects : Contains material that may cause target organ damage, based on animal data. Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Carcinogenicity : Contains material which may cause cancer. Risk of cancer depends on duration and level of exposure.

Target organs : Contains material which may cause damage to the following organs: blood, kidneys, lungs, the nervous system, liver, mucous membranes, gastrointestinal tract, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

Over-exposure signs/symptoms

Inhalation : respiratory tract irritation, nausea or vomiting, coughing, headache, drowsiness/fatigue, dizziness/vertigo, unconsciousness

Ingestion : nausea or vomiting

Skin : irritation, redness, dryness, cracking

Eyes : pain or irritation, watering, redness

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (Section 11)

Additional information

If product is ingested and vomiting occurs naturally, have person lean forward to reduce the risk of aspiration into the lungs.

3 . Composition/information on ingredients

Name	CAS number	%
Light aromatic naphtha	64742-95-6	10 - 30
1,2,4-Trimethylbenzene	95-63-6	10 - 30
Isopropanol	67-63-0	5 - 10
1,3,5-Trimethylbenzene	108-67-8	5 - 10
Heavy aromatic naphtha	64742-94-5	1 - 5
1,2,3-Trimethylbenzene	526-73-8	1 - 5
Xylene	1330-20-7	1 - 5
Cumene	98-82-8	0.1 - 1
Naphthalene	91-20-3	0.1 - 1

4 . First aid measures

Eye contact : Get medical attention immediately. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wear suitable protective clothing and gloves. Remove contaminated clothing and shoes.

5 . Fire-fighting measures

Flammability of the product : Flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

Extinguishing media

Suitable : Use dry chemical, CO_2, water spray (fog) or foam.

Not suitable : Do not use water jet.

Special exposure hazards : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Absorb with an inert material. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

7 . Handling and storage

Handling : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

7 . Handling and storage

Storage : Store in accordance with local regulations. Store in a segregated and approved area. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Cumene	US ACGIH	50	-	-	-	-	-	-	-	-	
	OSHA PEL	50	245	-	-	-	-	-	-	-	[1]
	OSHA PEL 1989	50	245	-	-	-	-	-	-	-	[1]
Xylene	US ACGIH	100	434	-	150	651	-	-	-	-	
	OSHA PEL	100	435	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	435	-	150	655	-	-	-	-	
1,3,5-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
1,2,3-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
1,2,4-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
Isopropanol	US ACGIH	200	-	-	400	-	-	-	-	-	
	OSHA PEL	400	980	-	-	-	-	-	-	-	
	OSHA PEL 1989	400	980	-	500	1225	-	-	-	-	
Naphthalene	US ACGIH	10	52	-	15	79	-	-	-	-	
	OSHA PEL	10	50	-	-	-	-	-	-	-	
	OSHA PEL 1989	10	50	-	15	75	-	-	-	-	

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. Use explosion-proof ventilation equipment.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location. Take off contaminated clothing and wash before reuse.

Personal protection

Respiratory : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Chemical-resistant gloves: Nitrile or Neoprene gloves.

Eyes : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Skin : Wear long sleeves and other protective clothing to prevent repeated or prolonged skin contact.

9 . Physical and chemical properties

Physical state	: Liquid.
Flash point	: Closed cup: 12°C (53.6°F) [PMCC]
Auto-ignition temperature	: Not available.
Flammable limits	: Not available.
Color	: Orange. [Dark]
Odor	: Aromatic.
pH	: 4.1
	: 5% of product in 75%IPA / 25% water mixture
Boiling/condensation point	: Not available.
Initial Boiling Point	: Not available.
Melting/freezing point	: Not available.
Relative density	: 0.91 (15.6°C)
Density	: 7.61 (lbs/gal)
Vapor density	: >1 [Air = 1]
Odor threshold	: Not available.
Evaporation rate	: Not available.
VOC	: Not available.
Viscosity	: Not available.
Solubility (Water)	: Insoluble
Vapor pressure	: Not available.
Pour Point	: Not available.
Partition coefficient (LogKow)	: Not available.

10 . Stability and Reactivity

Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
Materials to avoid	: Reactive or incompatible with the following materials: oxidizing materials and acids.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Conditions of reactivity	: Highly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

11 . Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Light aromatic naphtha	LD50 Oral	Rat	8400 mg/kg	-
	LD50 Oral	Rat	2900 mg/kg	-
Cumene	LD50 Dermal	Rabbit	10600 mg/kg	-
	LD50 Dermal	Rabbit	12300 uL/kg	-
	LD50 Oral	Rat	2.9 g/kg	-
	LD50 Oral	Rat	1400 mg/kg	-
	LC50 Inhalation Vapor	Rat	39000 mg/m3	4 hours
	LC50 Inhalation	Mouse	10000 mg/m³	7 hours

11 . Toxicological information

	Vapor			
Xylene	LD50 Dermal	Rabbit	>1700 mg/kg	-
	LD50 Oral	Rat	4300 mg/kg	-
	LD50 Oral	Male rat	3523 mg/kg	-
	LC50 Inhalation Gas.	Rat	5000 ppm	4 hours
1,3,5-Trimethylbenzene	LD50 Oral	Rat	5000 mg/kg	-
	LC50 Inhalation Vapor	Rat	24000 mg/m3	4 hours
1,2,4-Trimethylbenzene	LD50 Oral	Rat	5 g/kg	-
	LC50 Inhalation Vapor	Rat	18000 mg/m3	4 hours
Isopropanol	LD50 Dermal	Rabbit	6.29 g/kg	-
	LD50 Dermal	Rabbit	12800 mg/kg	-
	LD50 Oral	Rabbit	6410 mg/kg	-
	LD50 Oral	Rat	5045 mg/kg	-
	LD50 Oral	Rat	5000 mg/kg	-
	LD50 Oral	Male rat	4710 mg/kg	-
	LC50 Inhalation Vapor	Rat - Female	19000 ppm	8 hours
	LC50 Inhalation Gas.	Rat	16000 ppm	8 hours
	LC50 Inhalation Vapor	Rat	12000 ppm	8 hours
Heavy aromatic naphtha	LD50 Dermal	Rabbit	>2 mL/kg	-
	LD50 Oral	Rat	3200 mg/kg	-
	LD50 Oral	Rat	>2000 mg/kg	-
	LC50 Inhalation Vapor	Rat	>11.4 mg/L	6 hours
	LC50 Inhalation Vapor	Rat	>590 mg/m3	4 hours
Naphthalene	LD50 Dermal	Rabbit	>20 g/kg	-
	LD50 Dermal	Rat	>2500 mg/kg	-
	LD50 Oral	Rat	490 mg/kg	-

Carcinogenicity Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Isopropanol	A4	3	-	-	-	-
Xylene	A4	3	-	-	-	-
Cumene	-	2B	-	-	-	-
Naphthalene	A4	2B	-	-	Possible	-

Chronic toxicity Remarks

1) Light aromatic naphtha

Solvent naphtha (petroleum), light aromatic is a component of this product. Solvent naphtha (petroleum), light aromatic may cause damage to the peripheral nerves, resulting in numbness or tingling of the extremities with chronic (long term) exposure to high concentrations. (Micromedex) Rats exposed for 4 months to 1700 ppm of a solvent similar to this product showed evidence of mild damage to the liver, lungs and kidneys. These effects were not seen in rats exposed for one year to 350 ppm of another similar solvent. Rats exposed to vapors of a similar solvent during pregnancy showed embryo/fetotoxicity at concentrations producing maternal toxicity.

In response to a TSCA test rule, several studies of a solvent similar to this product were completed. Mutagenicity studies and a rat inhalation neurotoxicity study were negative. In a mouse developmental effects study, reduced fetal body weight was seen but no teratogenicity. A rat reproductive effects study demonstrated toxicity but little effect on reproductive parameters. (Vendor MSDS)

Ingestion has produced Central Nervous System effects in laboratory animals. (EPA/OTS 87-8214199 and 88-920000348)

11 . Toxicological information

2) 1,2,4-Trimethylbenzene

1,2,4-Trimethylbenzene, also know as pseudocumene, is a component of this product. Chronic pseudocumene exposure may provoke bronchospasm with cough and wheezing (Plunkett, 1976; ACGIH, 1991; Battig et al, 1956). Respiratory distress was noted in experimental animals following sub acute inhalation exposure (Gage, 1970). Nervousness and anxiety were noted with chronic occupational exposure (Battig et al, 1956; ACGIH, 1991).

At the time of this review, no studies were found on the potential adverse reproductive effects of pseudocumene in humans, but trimethylbenzenes (including pseudocumene) can cross the placental barrier (Clayton & Clayton, 1994; Doroty et al, 1976). In an experimental animal study, offspring born to pregnant rats exposed to pseudocumene were healthy at birth and grew normally (Cameron et al, 1938).

Blood effects such as anemia and delayed clotting time have been noticed in workers chronically exposed to a solvent containing trimethylbenzene. The blood effects, however, may have been due to a contaminant in the solvent such as benzene (a known blood toxin).

3) Isopropanol

Isopropanol is a component of this product. Ingestion has produced hyperglycemia (high blood sugar) in humans (Lacouture, P, et al, 1983, "American Journal of Medicine" and Chan K-M, et al, 1993, "Clinical Chemistry"). Also, ingestion can produce Central Nervous System effects and gastointestinal symptoms. [IPCS (1990) Environmental Health Criteria 103: 2-propanol. International Program on Chemical Safety, WHO Geneva.]

In a four month study, inhalation of isopropanol vapors for 20 hours per week by laboratory animals produced bronchitis, pneumonia, and blood effects (International Program of Chemical Safety, 1990, Environmental Health Criteria 103: 2-propanol, World Health Organization). Ataxia (a jerky or shaky movement that occurs during voluntary muscle movement) and microscopic hyaline droplets (fungal or branched structures) in the kidneys were seen in rats exposed to isopropanol at concentrations up to 5000 ppm for 6 hours per day, 5 days per week, for 13 weeks (Burleighflayer et al, 1994). Inhalation of high levels of isopropanol (4,000 and 8,000 ppm for 8 hours) has produced congestion in the liver, lungs, and spleen of laboratory animals (Laham S, et al, 1980, "Drug and Chemical Toxicology).

Oral and inhalation animal studies isopropanol has been shown to cause fetotoxic and reproductive effects at levels which did not show any maternal toxicity. These effects include reductions in fetal litter weight, reductions in live births and significant skeletal malformations in rats. [Nelson, BK et al (1988), Food and Chemical Toxicology, 26(3), pps 247-254], [Tyl, R.W. et al (1994), Fundamental and Applied Toxicoology, 22, pps 139-151], [Bevan, C., et al (1995), Journal of Applied Toxicology, 15(2), pps 117-123. Chronic inhalation has produced testicular effects in laboratory animals. (Kapp, Jr., R.W., et al, 1996, Regulatory Toxicology and Pharmacology 23:183-192, and Burleigh-Flayer, H., et al, 1997, Fundamental and Applied Toxicology: 36:95-111)

4) 1,3,5-Trimethylbenzene

1,3,5-Trimethylbenzene (Mysitylene) is a component of this product. Chronic asthmatic-like bronchitis may be a delayed chronic hazard (EPA, 1985; Laham, 1987; HSDB, 1997). Nervousness, tension, and anxiety have been noted in chronically exposed workers with exposure to a mixture of solvents including mesitylene (HSDB, 1997). Elevated alkaline phosphates and SGOT(liver enzymes) levels have been noted in chronic animal inhalation studies (Clayton & Clayton, 1994). These effects have not been reported in exposed humans. (Reprotext)

Thrombocytopenia (a lack of platelets in the blood) with bleeding from the gums and nose and mild anemia may occur with chronic exposure to mesitylene as a component of the commercial solvent mixture, "Fleet-X-DV-99" (Plunkett, 1976; Finkel, 1983; HSDB, 1997). Coagulation (clotting of the blood) times were delayed by about 40% in a group of workers chronically exposed to a mixture of solvents containing about 30% mesitylene (Laham, 1987). These hematological disorders may have been due to a contaminant, such as benzene (Hathaway et al, 1996). Thrombocytosis (an increase of platelets in the blood) and thrombocytopenia have been noted in rabbits (Clayton & Clayton, 1994). (Reprotext)

1,3,5-Trimethylbenzene has been positive in a mutagenicity assay (Lewis, 1992). (Reprotext)

5) Heavy aromatic naphtha

Not available.

6) 1,2,3-Trimethylbenzene

11 . Toxicological information

Not available.

7) Xylene

Xylene (mixed isomers) is a component of this product. Effects of chronic exposure to xylene are similar to those of acute exposure, but may be more severe. Chronic inhalation reportedly was associated with headache, tremors, apprehension, memory loss, weakness, dizziness, loss of appetite, nausea, ringing in the ears, irritability, thirst, anemia, mucosal bleeding, enlarged liver, and hyperplasia, but not destruction of the bone marrow (Clayton & Clayton, 1994; ILO, 1983). Some earlier reports of effects of chronic exposure to xylene have been questioned, as exposures were not limited to xylene alone.

Effects on the blood have been reported from chronic exposure to as little as 50 mg/m3 (Pap & Varga, 1987). Repeated exposure can damage bone marrow, causing low blood cell count and can damage the liver and kidneys (NJ Department of Health, Hazardous Substance Fact Sheet). Chronic xylene exposure (usually mixed with other solvents) has produced irreversible damage to the CNS (ILO, 1983). CNS effects may be exacerbated by ethanol abuse (Savolainen, 1980). Xylene may damage hearing or enhance sensitivity to noise in chronic occupational exposures (Morata et al, 1994), probably from neurotoxic mechanism. Tolerance to xylene can occur over the work week and disappear over the weekend. (ACGIH, 1992).

Inhalation exposure has produced fetotoxicity and postnatal developmental toxicity in laboratory animals. (API, 1978, Kensington, MD, EPA/OTS Document No. 878210350 and Hass, U., et al, 1995, Neurotoxicology and Teratology 17: 341-349 and 1997, Neurotoxicology 18: 547-552) Xylene has been shown to cause teratogenic effects in mice at does that are toxic to the mother. (Journal of Toxicology and Environmental Health 9:97:105)

Inhalation of hexane has synergistically enhanced the hearing loss caused by inhalation exposure to xylene in laboratory animals. (Nylén, P., 1996, Food and Chemical Toxicology, 34: 1121-1123 and Nylén, P. and Hagman, M., 1994, Pharmacology & Toxicology, 74: 124-129)

Xylene has tested positive as a dermal sensitizer. [Altman, A.T. (1977) Archives of Dermatology 113: 1460 and Palmer, K.T. and Rycroft, R.J. F. (1993) Contact Dermatitis 28: 44]

8) Cumene

Cumene is a component of this product. Workers chronically exposed to cumene vapors for 7 to 10 years had increased calcium salt concentrations, alterations of enzymatic activity, lipid metabolism, liver and hepatobiliary functions, and difficulty performing voluntary movement (Putalova, 1979).

Hyperemia (the presence of an increase in the amount of blood), and congestion were noted in the lungs, liver, and kidneys of experimental animals following repeated exposure; increased kidney weight was observed with high doses (Snyder, 1987; Werner et al, 1944; Fabre et al, 1955; Wolf et al, 1956; Cushman et al, 1995).

Renal (kidney) proximal tubular cell hypertrophy (an increase in the size of the cell), hyperplasia (an increase in the number of cells in a tissue or organ, excluding a tumor), and hyaline drop formation (fibroid formation) have also been noted in experimental animals (ACGIH, 1991; Clayton & Clayton, 1994; Cushman et al, 1995).

Increased fetal death and teratogenicity were reported in the offspring of pregnant rats exposed to the "maximum permissible" concentration of cumene vapor for 4 months (Serebrennikov & Ogleznev, 1978).

9) Naphthalene

This product contains naphthalene. A National Toxicology Program (NTP) report concluded there is clear evidence to support carcinogenicity of naphthalene in male and female rats. These observations were based on 2-year inhalation studies in which the test animals were exposed to 10, 30, and 60 ppm naphthalene. In male and female rats, exposure to naphthalene caused significant increases in the incidence of nonneoplastic lesions of the nose (NTP TR-500). The relevance of the rodent findings to humans is questionable.

Naphthalene has caused hemolytic anemia, jaundice, cataracts (Shopp et al, 1984), allergic reactions (Tsyrkunov & Yakovleva, 1985), possible neurotoxicity (Riala et al, 1984), and aplastic anemia (Harden & Baetjer, 1978) in humans. Increased lung aveolar adenomas were seen in mice exposed to 30 ppm naphthalene for 6hrs/day for 6 months (ACGIH, 1992).

11 . Toxicological information

Naphthalene crosses the placenta leading to methemoglobinemia (decreased ability for the blood to carry oxygen), and/or hemolytic anemia, conditions considered especially dangerous to the unborn (Reprotext). Liver and kidney damage has also been seen with exposure to naphthalene (Reprotext).

Peripheral lens opacities occurred in 8 of 21 workers exposed to high levels of naphthalene fumes or vapors for 5 years, but cataracts have not been reported in other occupational studies. (Hathaway et al, 1991).

The International Agency for Research on Cancer (IARC) evaluated naphthalene and concluded that there was sufficient evidence for carcinogenicity in experimental animals, but inadequate evidence that it causes cancer in exposed humans. Accordingly, IARC classified naphthalene as a possible human carcinogen (Group 2B).

12 . Ecological information

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
Cumene	Acute EC50 7400 to 11290 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp. - Nauplii	48 hours
	Acute EC50 10600 to 14100 ug/L Fresh water	Daphnia - Water flea - Daphnia magna - Neonate - <=24 hours	48 hours
	Acute LC50 2700 ug/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss	96 hours
Xylene	Acute LC50 8500 ug/L Marine water	Crustaceans - Daggerblade grass shrimp - Palaemonetes pugio	48 hours
	Acute LC50 3300 to 4093 ug/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss - 0.6 g	96 hours
1,3,5-Trimethylbenzene	Acute LC50 13000 ug/L Marine water	Crustaceans - Dungeness or edible crab - Cancer magister - Zoea	48 hours
	Acute LC50 12520 to 15050 ug/L Fresh water	Fish - Goldfish - Carassius auratus - 1 to 1.5 years - 13 to 20 cm - 20 to 80 g	96 hours
1,2,4-Trimethylbenzene	Acute LC50 17000 ug/L Marine water	Crustaceans - Dungeness or edible crab - Cancer magister - Zoea	48 hours
	Acute LC50 7720 to 8280 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas - 34 days	96 hours
Isopropanol	Acute LC50 1400000 to 1950000 ug/L Marine water	Crustaceans - Common shrimp, sand shrimp - Crangon crangon	48 hours
	Acute LC50 >1400000 ug/L	Fish - Western mosquitofish - Gambusia affinis - 20 to 30 mm	96 hours
Naphthalene	Acute EC50 1.96 mg/L Fresh water	Daphnia - Water flea - Daphnia magna - <24 hours	48 hours
	Acute LC50 2350 ug/L Marine water	Crustaceans - Daggerblade grass shrimp - Palaemonetes pugio	48 hours
	Acute LC50 213 ug/L Fresh water	Fish - Crimson-spotted rainbowfish - Melanotaenia fluviatilis - LARVAE - 1 days	96 hours
	Chronic NOEC 600 ug/L Fresh water	Daphnia - Water flea - Daphnia magna - <=24 hours	48 hours

Conclusion/Summary : Not available.

Biodegradability

12 . Ecological information

Conclusion/Summary : Not available.

13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	UN1993	FLAMMABLE LIQUID, N.O.S. (Contains: Isopropanol, Light aromatic naphtha)	3	II		-
TDG Classification	UN1993	FLAMMABLE LIQUID, N.O.S. (Contains: Isopropanol, Light aromatic naphtha)	3	II		-
IMDG Class	UN1993	FLAMMABLE LIQUID, N.O.S. (Contains: Isopropanol, Light aromatic naphtha)	3	II		Emergency schedules (EmS) F-E S-E
IATA-DGR Class	UN1993	FLAMMABLE LIQUID, N.O.S (Contains: Isopropanol, Light aromatic naphtha)	3	II		-

PG* : Packing group

DOT Reportable Quantity Xylene, 741 gal of this product.
Naphthalene, 2929 gal of this product.

Marine pollutant Not applicable.

North-America NAERG : 128

15 . Regulatory information

HCS Classification : Flammable liquid
Irritating material
Carcinogen
Target organ effects

U.S. Federal regulations : **United States inventory (TSCA 8b):** All components are listed or exempted.

15 . Regulatory information

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: 1,2,4-trimethylbenzene; xylene; Light aromatic naphtha; 1,2,3-trimethylbenzene; 1,3,5-trimethylbenzene; Isopropanol
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: TRETOLITE™ DMO8026U DEMULSIFIER: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard

CERCLA: Hazardous substances.: naphthalene: 100 lbs. (45.4 kg); potassium hydroxide: 1000 lbs. (454 kg); xylene: 100 lbs. (45.4 kg); ethylbenzene: 1000 lbs. (454 kg); ; 2-butoxyethanol; cumene: 5000 lbs. (2270 kg);

Clean Water Act (CWA) 307: Naphthalene; Ethylbenzene

Clean Water Act (CWA) 311: xylene; Naphthalene; Potassium hydroxide; Ethylbenzene

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) :
Listed

SARA 313

	Product name	CAS number	Concentration
Supplier notification :	1,2,4-Trimethylbenzene	95-63-6	10 - 30
	Xylene	1330-20-7	1 - 5
	Naphthalene	91-20-3	0.1 - 1

United States inventory (TSCA 8b) : All components are listed or exempted.

Canada

WHMIS (Canada) : Class B-2: Flammable liquid
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

Canada (CEPA DSL): : All components are listed or exempted.

16 . Other information

Label requirements : FLAMMABLE LIQUID AND VAPOR. INHALATION CAUSES HEADACHES, DIZZINESS, DROWSINESS AND NAUSEA AND MAY LEAD TO UNCONSCIOUSNESS. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY BE HARMFUL IF ABSORBED THROUGH SKIN. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. HARMFUL OR FATAL IF SWALLOWED. CAN ENTER LUNGS AND CAUSE DAMAGE. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. SUSPECT CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER. ASPIRATION HAZARD.

National Fire Protection Association (U.S.A.) :

Date of printing : **7/18/2012.**

☑ **Indicates information that has changed from previously issued version.**

Notice to reader

16 . Other information

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ DMO761G DEMULSIFIER
™ a trademark of Baker Hughes Incorporated.

Product code : DMO761

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Demulsifier.

Print date : 12/18/2014.

Validation date : 12/1/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
ACUTE TOXICITY: ORAL - Category 4
ACUTE TOXICITY: SKIN - Category 4
ACUTE TOXICITY: INHALATION - Category 4
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE): ORAL [optic nerve] - Category 1
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Danger

Section 2. Hazards identification

Hazard statements : Highly flammable liquid and vapor.
Harmful if swallowed, in contact with skin or if inhaled.
Causes serious eye irritation.
Causes skin irritation.
Suspected of causing cancer.
Causes damage to organs if swallowed. (optic nerve)
Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

Response : IF exposed: Call a POISON CENTER or physician. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or physician if you feel unwell. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Avoid contact with skin and clothing. Wash thoroughly after handling.

Hazards not otherwise classified : Prolonged or repeated contact may dry skin and cause irritation.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Methanol	10 - 20	67-56-1
Light aromatic naphtha	10 - 20	64742-95-6
1,2,4-Trimethylbenzene	5 - 10	95-63-6
1,3,5-Trimethylbenzene	1 - 5	108-67-8
1,2,3-Trimethylbenzene	1 - 5	526-73-8
Cumene	0.1 - 1	98-82-8

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention. If necessary, call a poison center or physician.

Section 4. First aid measures

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Wash skin thoroughly with soap and water or use recognized skin cleanser. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. If necessary, call a poison center or physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Harmful if inhaled.

Skin contact : Harmful in contact with skin. Causes skin irritation. Defatting to the skin.

Ingestion : Harmful if swallowed. Causes damage to organs following a single exposure if swallowed. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain or irritation,watering,redness

Inhalation : No specific data.

Skin contact : irritation,redness,dryness,cracking

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Additional information

If product is ingested and vomiting occurs naturally, have person lean forward to reduce the risk of aspiration into the lungs.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Highly flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product.

Section 6. Accidental release measures

Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Methanol	US ACGIH	200	262	-	250	328	-	-	-	-	[1]
	OSHA PEL	200	260	-	-	-	-	-	-	-	
	OSHA PEL 1989	200	260	-	250	325	-	-	-	-	[1]
1,2,4-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
1,3,5-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
1,2,3-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
Cumene	US ACGIH	50	-	-	-	-	-	-	-	-	
	OSHA PEL	50	245	-	-	-	-	-	-	-	[1]
	OSHA PEL 1989	50	245	-	-	-	-	-	-	-	[1]

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Section 8. Exposure controls/personal protection

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Amber liquid]

Color : Amber.

Odor : Aromatic.

Odor threshold : Not available.

pH : Not available.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 21.1°C (70°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Highly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 0.93 (15.6°C)

Density : 7.78 (lbs/gal)

Solubility in water : Dispersible

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Section 9. Physical and chemical properties

Viscosity : Dynamic: 124.78 cP

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials and reducing materials.
Methanol is incompatible and may react with acetyl bromide, alkyl aluminum solutions, beryllium hydride, boron trichloride, nitric acid, cyanuric chloride, dichloromethane, diethylzinc, metals (granulated forms of aluminum and magnesium – including aluminum and zinc salts), phosphorus III oxide, and potassium tert-butoxide.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Methanol	LC50 Inhalation Gas.	Rat	145000 ppm	1 hours
	LC50 Inhalation Gas.	Rat	64000 ppm	4 hours
	LD50 Dermal	Rabbit	15800 mg/kg	-
	LD50 Oral	Rat	5600 mg/kg	-
Light aromatic naphtha	LD50 Oral	Rat	2900 mg/kg	-
1,2,4-Trimethylbenzene	LC50 Inhalation Vapor	Rat	18000 mg/m³	4 hours
	LD50 Oral	Rat	5 g/kg	-
1,3,5-Trimethylbenzene	LC50 Inhalation Vapor	Rat	24000 mg/m³	4 hours
	LD50 Oral	Rat	5000 mg/kg	-
Cumene	LC50 Inhalation Vapor	Mouse	10000 mg/m³	7 hours
	LC50 Inhalation Vapor	Rat	39000 mg/m³	4 hours
	LD50 Dermal	Rabbit	10600 mg/kg	-
	LD50 Oral	Rat	2.9 g/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Section 11. Toxicological information

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
Cumene	-	2B	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Methanol	Category 1	Oral	optic nerve
Light aromatic naphtha	Category 3	Not applicable.	Narcotic effects
1,2,4-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
1,3,5-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
1,2,3-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Cumene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Name	Result
Light aromatic naphtha	ASPIRATION HAZARD - Category 1
1,2,3-Trimethylbenzene	ASPIRATION HAZARD - Category 1
Cumene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Section 11. Toxicological information

Acute toxicity estimates

Route	ATE value
Oral	634.7 mg/kg
Dermal	2000 mg/kg
Inhalation (vapors)	18.09 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Methanol	Acute EC50 16.912 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 10000000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2500000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 100 mg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 9.96 mg/l Marine water	Algae - Ulva pertusa	96 hours
1,2,4-Trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - Elasmopus pectenicrus	48 hours
	Acute LC50 22.4 mg/l Fresh water	Fish - Tilapia zillii	96 hours
1,3,5-Trimethylbenzene	Acute LC50 12520 to 15050 µg/l Fresh water	Fish - Carassius auratus	96 hours
	Chronic NOEC 400 µg/l Fresh water	Daphnia - Daphnia magna	21 days
Cumene	Acute EC50 2600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute LC50 7400 to 11290 µg/l Fresh water	Crustaceans - Artemia sp.	48 hours
	Acute LC50 30500 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2700 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1993	UN1993	UN1993	UN1993
UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Contains: Methanol, Light aromatic naphtha)	FLAMMABLE LIQUID, N.O.S. (Contains: Methanol, Light aromatic naphtha)	FLAMMABLE LIQUID, N.O.S. (Contains: Methanol, Light aromatic naphtha)	FLAMMABLE LIQUID, N.O.S. (Contains: Methanol, Light aromatic naphtha)
Transport hazard class(es)	3 	3 	3 	3 
Packing group	II	II	II	II
Environmental hazards	No.	No.	No.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-E S-E	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Methanol, 4284 gal of this product.
Xylene, 1529 gal of this product.

Marine pollutant Not available.

North-America NAERG : 128

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Naphthalene; Ethylbenzene
Clean Water Act (CWA) 311: Xylene; Naphthalene; sodium hydroxide; Ethylbenzene; Potassium hydroxide

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Section 15. Regulatory information

Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

SARA 313

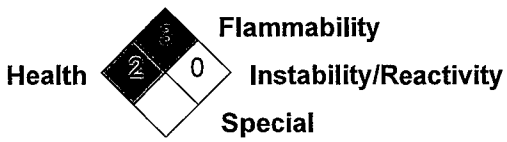
	Product name	CAS number	%
Supplier notification	Methanol 1,2,4-Trimethylbenzene	67-56-1 95-63-6	10 - 20 5 - 10

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 12/18/2014.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ DMO7040 DEMULSIFIER
™ a trademark of Baker Hughes, Inc.

Product code : DMO7040

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Demulsifier.

Print date : 11/3/2014.

Validation date : 11/3/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation and Narcotic effects] - Category 3
AQUATIC HAZARD (ACUTE) - Category 3
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Warning

Section 2. Hazards identification

Hazard statements : Flammable liquid and vapor.
Causes serious eye irritation.
Causes skin irritation.
Suspected of causing cancer.
May cause respiratory irritation.
May cause drowsiness and dizziness.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves: > 8 hours (breakthrough time): Nitrile or Neoprene gloves. 4H gloves.. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing vapor. Wash hands thoroughly after handling.

Response : Collect spillage. IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Avoid contact with skin and clothing. Wash thoroughly after handling.

Hazards not otherwise classified : Prolonged or repeated contact may dry skin and cause irritation.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Light aromatic naphtha	20 - 30	64742-95-6
1,2,4-Trimethylbenzene	10 - 20	95-63-6
Heavy aromatic naphtha	5 - 10	64742-94-5
1,3,5-Trimethylbenzene	5 - 10	108-67-8
Xylene	1 - 5	1330-20-7
1,2,3-Trimethylbenzene	1 - 5	526-73-8
Naphthalene	0.1 - 1	91-20-3
Cumene	0.1 - 1	98-82-8
Ethylbenzene	0.1 - 1	100-41-4

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Wash skin thoroughly with soap and water or use recognized skin cleanser. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. May cause respiratory irritation.

Skin contact : Causes skin irritation. Defatting to the skin.

Ingestion : Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain or irritation,watering,redness

Inhalation : respiratory tract irritation,coughing,nausea or vomiting,headache,drowsiness/fatigue, dizziness/vertigo,unconsciousness

Skin contact : irritation,redness,dryness,cracking

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Additional information

Section 4. First aid measures

If product is ingested and vomiting occurs naturally, have person lean forward to reduce the risk of aspiration into the lungs.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
1,2,4-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
1,3,5-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
Xylene	US ACGIH	100	434	-	150	651	-	-	-	-	
	OSHA PEL	100	435	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	435	-	150	655	-	-	-	-	
1,2,3-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
Naphthalene	US ACGIH	10	52	-	-	-	-	-	-	-	[1]
	OSHA PEL	10	50	-	-	-	-	-	-	-	

Section 8. Exposure controls/personal protection

Cumene	OSHA PEL 1989	10	50	-	15	75	-	-	-	-	
	US ACGIH	50	-	-	-	-	-	-	-	-	
	OSHA PEL	50	245	-	-	-	-	-	-	-	[1]
	OSHA PEL 1989	50	245	-	-	-	-	-	-	-	[1]
Ethylbenzene	US ACGIH	20	-	-	-	-	-	-	-	-	
	OSHA PEL	100	435	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	435	-	125	545	-	-	-	-	

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves: Nitrile or Neoprene gloves. 4H gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Amber.

Odor : Aromatic hydrocarbon.

Odor threshold : Not available.

pH : 5 to 6

: in IPA/water

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 45°C (113°F) [PMCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 0.93 (15.6°C)

Density : 7.75 (lbs/gal)

Solubility in water : Dispersible

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials and acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Light aromatic naphtha	LD50 Oral	Rat	2900 mg/kg	-
1,2,4-Trimethylbenzene	LC50 Inhalation Vapor	Rat	18000 mg/m³	4 hours
	LD50 Oral	Rat	5 g/kg	-
Heavy aromatic naphtha	LC50 Inhalation Vapor	Rat	>11.4 mg/l	6 hours
	LD50 Oral	Rat	3200 mg/kg	-
	LD50 Oral	Rat	>2000 mg/kg	-
1,3,5-Trimethylbenzene	LC50 Inhalation Vapor	Rat	24000 mg/m³	4 hours
	LD50 Oral	Rat	5000 mg/kg	-
Xylene	LC50 Inhalation Gas.	Rat	5000 ppm	4 hours
	LD50 Dermal	Rabbit	>1700 mg/kg	-
	LD50 Oral	Male rat	3523 mg/kg	-
	LD50 Oral	Rat	4300 mg/kg	-
Naphthalene	LD50 Dermal	Rabbit	>20 g/kg	-
Cumene	LC50 Inhalation Vapor	Mouse	10000 mg/m³	7 hours
	LC50 Inhalation Vapor	Rat	39000 mg/m³	4 hours

Section 11. Toxicological information

	LD50 Dermal	Rabbit	10600 mg/kg	-
	LD50 Oral	Rat	2.9 g/kg	-
Ethylbenzene	LD50 Dermal	Rabbit	15400 mg/kg	-
	LD50 Oral	Rat	3500 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
Xylene	-	3	-
Naphthalene	-	2B	Reasonably anticipated to be a human carcinogen.
Cumene	-	2B	Reasonably anticipated to be a human carcinogen.
Ethylbenzene	-	2B	-

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Light aromatic naphtha	Category 3	Not applicable.	Narcotic effects
1,2,4-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Heavy aromatic naphtha	Category 3	Not applicable.	Narcotic effects
1,3,5-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Xylene	Category 3	Not applicable.	Narcotic effects
1,2,3-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Cumene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Name	Result
Light aromatic naphtha	ASPIRATION HAZARD - Category 1
Heavy aromatic naphtha	ASPIRATION HAZARD - Category 1
Xylene	ASPIRATION HAZARD - Category 1
1,2,3-Trimethylbenzene	ASPIRATION HAZARD - Category 1
Cumene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Section 11. Toxicological information

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	5476.4 mg/kg
Dermal	33344.2 mg/kg
Inhalation (gases)	151564.8 ppm
Inhalation (vapors)	95.43 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
1,2,4-Trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - Elasmopus pectenicrus	48 hours
	Acute LC50 22.4 mg/l Fresh water	Fish - Tilapia zillii	96 hours
1,3,5-Trimethylbenzene	Acute LC50 12520 to 15050 µg/l Fresh water	Fish - Carassius auratus	96 hours
	Chronic NOEC 400 µg/l Fresh water	Daphnia - Daphnia magna	21 days
Xylene	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Naphthalene	Acute EC50 1.6 ppm Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2350 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 213 µg/l Fresh water	Fish - Melanotaenia fluviatilis - Larvae	96 hours
	Chronic NOEC 0.67 ppm Fresh water	Fish - Oncorhynchus kisutch	40 days
Cumene	Acute EC50 2600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute LC50 7400 to 11290 µg/l Fresh water	Crustaceans - Artemia sp.	48 hours
	Acute LC50 30500 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2700 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
Ethylbenzene	Acute EC50 4600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 2930 to 4400 µg/l Fresh	Daphnia - Daphnia magna	48 hours

Section 12. Ecological information

	water Acute LC50 5200 µg/l Marine water	Crustaceans - Americamysis bahia	48 hours
	Acute LC50 4200 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 1000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1993	UN1993	UN1993	UN1993
UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, Xylene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, Xylene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, Xylene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)
Transport hazard class(es)	3 	3 	3 	3 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-E S-E	-

Section 14. Transport information

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Xylene, 391 gal of this product.
Naphthalene, 1356 gal of this product.

Marine pollutant Light aromatic naphtha
1,2,4-Trimethylbenzene

North-America NAERG : 128

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Naphthalene; Ethylbenzene
Clean Water Act (CWA) 311: Xylene; Naphthalene; Ethylbenzene; Potassium hydroxide

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

SARA 313

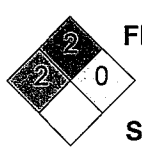
	Product name	CAS number	%
Supplier notification	1,2,4-Trimethylbenzene	95-63-6	10 - 20
	Xylene	1330-20-7	1 - 5
	Naphthalene	91-20-3	0.1 - 1
	Ethylbenzene	100-41-4	0.1 - 1

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



Health **Flammability** **Instability/Reactivity** **Special**

History

Date of printing : 11/3/2014.

Indicates information that has changed from previously issued version.

Section 16. Other information

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

BAKER HUGHES

Material Safety Data Sheet

1. Product and company identification

Product name : DFO3009 DEFOAMER

Supplier : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Material Uses : Special: Defoamer.

Code : DFO3009

Validation date : 11/14/2012.

Print date : 11/14/2012.

Version : 7

Responsible name : Global Regulatory Affairs - Telephone 281-276-5400 or 800-231-3606

In case of emergency : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

2. Hazards identification

Physical state : Liquid.

Odor : Hydrocarbon. [Strong]

Color : Colorless.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview : WARNING!

COMBUSTIBLE LIQUID AND VAPOR. INHALATION CAUSES HEADACHES, DIZZINESS, DROWSINESS AND NAUSEA AND MAY LEAD TO UNCONSCIOUSNESS. CAUSES RESPIRATORY TRACT AND EYE IRRITATION. MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. HARMFUL OR FATAL IF SWALLOWED. CAN ENTER LUNGS AND CAUSE DAMAGE. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. SUSPECT CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER. ASPIRATION HAZARD.

At elevated temperatures, vapors can form an ignitable or explosive mixture with air. Can form explosive mixtures at temperatures at or above the flash point. Static discharges can cause ignition or explosion when container is not bonded. Keep away from heat, sparks and flame. Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling. Vapors can travel to a source of ignition and flashback. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material.

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Inhalation : Can cause central nervous system (CNS) depression. Irritating to respiratory system.

Ingestion : Can cause central nervous system (CNS) depression. Aspiration hazard if swallowed. Can enter lungs and cause damage.

Skin : Moderately irritating to the skin.

2. Hazards identification

Eyes : Irritating to eyes.

Potential chronic health effects

Chronic effects : Contains material that may cause target organ damage, based on animal data. Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Carcinogenicity : Contains material which may cause cancer. Risk of cancer depends on duration and level of exposure.

Target organs : Contains material which may cause damage to the following organs: blood, kidneys, the nervous system, liver, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

Over-exposure signs/symptoms

Inhalation : respiratory tract irritation, nausea or vomiting, coughing, headache, drowsiness/fatigue, dizziness/vertigo, unconsciousness

Ingestion : nausea or vomiting

Skin : irritation, redness, dryness, cracking

Eyes : pain or irritation, watering, redness

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (Section 11)

3. Composition/information on ingredients

Name	CAS number	%
Kerosene	8008-20-6	60 - 100
Naphthalene	91-20-3	1 - 5

4. First aid measures

Eye contact : Get medical attention immediately. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wear suitable protective clothing and gloves. Remove contaminated clothing and shoes.

Additional information

If product is ingested and vomiting occurs naturally, have person lean forward to reduce the risk of aspiration into the lungs.

5 . Fire-fighting measures

Flammability of the product : Combustible liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.

Extinguishing media

Suitable : Use dry chemical, CO_2, water spray (fog) or foam.

Not suitable : Do not use water jet.

Special exposure hazards : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,metal oxide/oxides

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Absorb with an inert material. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

7 . Handling and storage

Handling : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

7 . Handling and storage

Storage : Store in accordance with local regulations. Store in a segregated and approved area. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Kerosene	US ACGIH	-	200	-	-	-	-	-	-	-	[1]
Naphthalene	US ACGIH	10	52	-	15	79	-	-	-	-	
	OSHA PEL	10	50	-	-	-	-	-	-	-	
	OSHA PEL 1989	10	50	-	15	75	-	-	-	-	

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. Use explosion-proof ventilation equipment.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location. Take off contaminated clothing and wash before reuse.

Personal protection

Respiratory : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Chemical-resistant gloves: Nitrile or Neoprene gloves.

Eyes : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Skin : Wear long sleeves and other protective clothing to prevent repeated or prolonged skin contact.

9 . Physical and chemical properties

Physical state : Liquid.

Flash point : Closed cup: 59°C (138.2°F) [TCC]

Auto-ignition temperature : Not available.

Flammable limits : Not available.

Color : Colorless.

Odor : Hydrocarbon. [Strong]

pH : 7.5 to 8.5

: 5% of product

9 . Physical and chemical properties

Boiling/condensation point	: Not available.
Initial Boiling Point	: Not available.
Melting/freezing point	: Not available.
Relative density	: 0.816 (15.6°C)
Density	: 6.7973 (lbs/gal)
Vapor density	: >1 [Air = 1]
Odor threshold	: Not available.
Evaporation rate	: Not available.
VOC	: Not available.
Viscosity	: Not available.
Solubility (Water)	: Insoluble
Vapor pressure	: 0.084 kPa (0.63 mm Hg) at 21.1°C (Calculated value for all components.)
Pour Point	: <-40°C (<-40°F)
Partition coefficient (LogKow)	: Not available.

10 . Stability and Reactivity

Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
Materials to avoid	: Reactive or incompatible with the following materials: oxidizing materials.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Conditions of reactivity	: Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

11 . Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Kerosene	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	15 g/kg	-
	LD50 Oral	Guinea pig	16300 mg/kg	-
	LD50 Oral	Rat	>5000 mg/kg	-
	LD50 Oral	Rabbit	2835 mg/kg	-
	LC50 Inhalation Vapor	Rat	>5000 mg/m3	4 hours
	LC50 Inhalation Vapor	Rat	>5000 mg/m³	4 hours
Naphthalene	LD50 Dermal	Rabbit	>20 g/kg	-
	LD50 Dermal	Rat	>2500 mg/kg	-
	LD50 Oral	Rat	490 mg/kg	-

Carcinogenicity Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Kerosene	A3	-	-	-	-	-
Naphthalene	A4	2B	-	-	Possible	-

Chronic toxicity Remarks

11 . Toxicological information

1) Kerosene

Kerosene is a component of this product. Chronic exposures to kerosene may cause headache, neuralgia (a pain or throbbing of the nerves), memory loss, decreased blood counts, respiratory impairment, and polyneuritis (inflammation of the peripheral nerves) (Anon, 1967). One case of fatal hypoplastic anemia (a decrease in red blood cells, that cannot be regenerated, in the bone marrow) has been reported in a person with chronic kerosene exposure (Johnson, 1955). Chronic inhalation of kerosene aerosols has induced hardening of the arteries in laboratory animals [Noa, M., et al (1987) Archives of Environmental Health 42:1:31-36].

Based on epidemiological studies (studies dealing with the distribution and determinants of human health) involving petroleum refinery workers indicate persons with routine chronic exposure to petroleum or one of its constituents may be at an increased risk to the development of benign neoplasms (rapidly growing abnormal tissue growth that is non-cancerous in nature), digestive tract cancers, and skin cancer (melanoma).

In 2003, the ACGIH has classified kerosene as A3, confirmed animal carcinogen with unknown relevance to humans. It has also shown to cause mutagenic effects in bacteria (Blackburn, G.R. et al, Cell Biology and Toxicology (1986) (2:1:63-84).

2) Naphthalene

This product contains naphthalene. A National Toxicology Program (NTP) report concluded there is clear evidence to support carcinogenicity of naphthalene in male and female rats. These observations were based on 2-year inhalation studies in which the test animals were exposed to 10, 30, and 60 ppm naphthalene. In male and female rats, exposure to naphthalene caused significant increases in the incidence of nonneoplastic lesions of the nose (NTP TR-500). The relevance of the rodent findings to humans is questionable.

Naphthalene has caused hemolytic anemia, jaundice, cataracts (Shopp et al, 1984), allergic reactions (Tsyrkunov & Yakovleva, 1985), possible neurotoxicity (Riala et al, 1984), and aplastic anemia (Harden & Baetjer, 1978) in humans. Increased lung aveolar adenomas were seen in mice exposed to 30 ppm naphthalene for 6hrs/day for 6 months (ACGIH, 1992).

Naphthalene crosses the placenta leading to methemoglobinemia (decreased ability for the blood to carry oxygen), and/or hemolytic anemia, conditions considered especially dangerous to the unborn (Reprotext). Liver and kidney damage has also been seen with exposure to naphthalene (Reprotext).

Peripheral lens opacities occurred in 8 of 21 workers exposed to high levels of naphthalene fumes or vapors for 5 years, but cataracts have not been reported in other occupational studies. (Hathaway et al, 1991).

The International Agency for Research on Cancer (IARC) evaluated naphthalene and concluded that there was sufficient evidence for carcinogenicity in experimental animals, but inadequate evidence that it causes cancer in exposed humans. Accordingly, IARC classified naphthalene as a possible human carcinogen (Group 2B).

12 . Ecological information

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
Naphthalene	Acute EC50 1.96 mg/L Fresh water	Daphnia - Water flea - Daphnia magna - <24 hours	48 hours
	Acute LC50 2350 ug/L Marine water	Crustaceans - Daggerblade grass shrimp - Palaemonetes pugio	48 hours
	Acute LC50 213 ug/L Fresh water	Fish - Crimson-spotted rainbowfish - Melanotaenia fluviatilis	96 hours
	Chronic NOEC 600 ug/L Fresh water	Daphnia - Water flea - Daphnia magna - <=24 hours	48 hours

Conclusion/Summary : Not available.

Biodegradability

Conclusion/Summary : Not available.

13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	UN1993	FLAMMABLE LIQUID, N.O.S. (Contains: Kerosene)	3	III		-
TDG Classification	UN1993	FLAMMABLE LIQUID, N.O.S. (Contains: Kerosene)	3	III		-
IMDG Class	UN1993	FLAMMABLE LIQUID, N.O.S. (Contains: Kerosene)	3	III		Emergency schedules (EmS) F-E S-E
IATA-DGR Class	UN1993	FLAMMABLE LIQUID, N.O.S (Contains: Kerosene)	3	III		-

PG* : Packing group

DOT Reportable Quantity Naphthalene, 534 gal of this product.
Xylene, 1549 gal of this product.

Marine pollutant Not applicable.

North-America NAERG : 128

15 . Regulatory information

HCS Classification : Combustible liquid
Irritating material
Carcinogen
Target organ effects

U.S. Federal regulations : **United States inventory (TSCA 8b):** All components are listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Kerosene; Naphthalene
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: DFO3009 DEFOAMER: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard

15 . Regulatory information

CERCLA: Hazardous substances.: xylene: 100 lbs. (45.4 kg); Naphthalene: 100 lbs. (45.4 kg);

Clean Water Act (CWA) 307: Naphthalene

Clean Water Act (CWA) 311: Naphthalene; xylene

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) :

Listed

SARA 313

	Product name	CAS number	Concentration
Supplier notification	: Naphthalene	91-20-3	1 - 5

United States inventory (TSCA 8b) : All components are listed or exempted.

Canada

WHMIS (Canada) : Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

Canada (CEPA DSL): : All components are listed or exempted.

16 . Other information

Label requirements : COMBUSTIBLE LIQUID AND VAPOR. INHALATION CAUSES HEADACHES, DIZZINESS, DROWSINESS AND NAUSEA AND MAY LEAD TO UNCONSCIOUSNESS. CAUSES RESPIRATORY TRACT AND EYE IRRITATION. MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. HARMFUL OR FATAL IF SWALLOWED. CAN ENTER LUNGS AND CAUSE DAMAGE. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. SUSPECT CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER. ASPIRATION HAZARD.

National Fire Protection Association (U.S.A.) :

Date of printing : **11/14/2012.**

☑ Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

16 . Other information

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ RBW507 WATER CLARIFIER
™ a trademark of Baker Hughes Incorporated.

Product code : RBW507

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Water clarifier.

Print date : 1/22/2015.

Validation date : 1/22/2015.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Narcotic effects] - Category 3

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Causes skin irritation.
May cause drowsiness and dizziness.

Precautionary statements

Prevention : Wear protective gloves: > 8 hours (breakthrough time): Nitrile or Neoprene gloves.. Use only outdoors or in a well-ventilated area. Avoid breathing vapor. Wash hands thoroughly after handling.

Response : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical attention.

Section 2. Hazards identification

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Avoid contact with skin and clothing. Wash thoroughly after handling.

Hazards not otherwise classified : Prolonged or repeated contact may dry skin and cause irritation.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Petroleum distillates	20 - 30	64742-47-8
Oxyalkylated alkylphenol	0.1 - 1	Trade secret.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Wash skin thoroughly with soap and water or use recognized skin cleanser. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes skin irritation. Defatting to the skin.

Section 4. First aid measures

Ingestion : Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain or irritation,watering,redness

Inhalation : nausea or vomiting,headache,drowsiness/fatigue,dizziness/vertigo,unconsciousness

Skin contact : irritation,redness,dryness,cracking

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Additional information

If product is ingested and vomiting occurs naturally, have person lean forward to reduce the risk of aspiration into the lungs.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Section 6. Accidental release measures

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Additional information

Spills of this product are very slippery. Spilled material should be absorbed onto an inert material and scooped up. The area should be thoroughly flushed with water and washed to remove residue. If area is still slippery, apply more dry-sweeping compound.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Petroleum distillates, as total hydrocarbon vapor	US ACGIH	-	200	-	-	-	-	-	-	-	[1]

[1]Absorbed through skin.

Section 8. Exposure controls/personal protection

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves: Nitrile or Neoprene gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Milky-white.

Odor : Aliphatic solvent.

Odor threshold : Not available.

pH : 4 to 6

: 5% of product

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: >93.4°C (>200.1°F) [TCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : Not available.

Relative density : 1.035 (15.6°C)

Density : 8.62 (lbs/gal)

Solubility in water : Soluble

Section 9. Physical and chemical properties

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Petroleum distillates	LD50 Oral	Rat	>5000 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Petroleum distillates	Category 3	Not applicable.	Narcotic effects

Section 11. Toxicological information

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Name	Result
Petroleum distillates	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	50000 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Petroleum distillates	Acute LC50 2200 µg/l Fresh water Acute LC50 2900 µg/l Fresh water	Fish - Lepomis macrochirus Fish - Oncorhynchus mykiss	4 days 96 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-
Transport hazard class(es)	-	-	-	-
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.
Additional information	-	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Not applicable.

Marine pollutant Not available.

North-America NAERG : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard

SARA 313

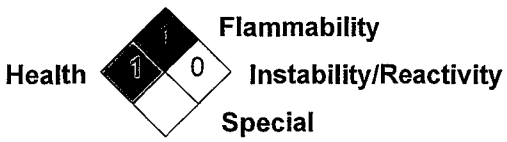
Supplier notification : No products were found.

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 1/22/2015.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ RBW517 WATER CLARIFIER
™ a trademark of Baker Hughes Incorporated.

Product code : RBW517

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Water clarifier.

Print date : 1/23/2015.

Validation date : 1/22/2015.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not classified.

GHS label elements

Signal word : No signal word.

Hazard statements : No known significant effects or critical hazards.

Precautionary statements

Prevention : Not applicable.

Response : Not applicable.

Storage : Not applicable.

Disposal : Not applicable.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Ammonium chloride	1 - 5	12125-02-9

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Ingestion : Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,sulfur oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ammonium chloride	US ACGIH	-	10	-	-	20	-	-	-	-	[a]
	OSHA PEL 1989	-	10	-	-	20	-	-	-	-	

Form: [a]Fume

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves: Nitrile or Neoprene gloves. 4H gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid. [Milky.]
Color	: White.
Odor	: Mild.
Odor threshold	: Not available.
pH	: 3.5 to 4.5 [Conc. (% w/w): 100%]
	: Neat - without dilution.
Melting/freezing point	: -20°C (-4°F)
Boiling point	: 120°C (248°F)
Initial Boiling Point	: Not available.
Flash point	: Closed cup: >93.4°C (>200.1°F)
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: >1 [Air = 1]
Relative density	: 1.15 to 1.21 (15.6°C)
Density	: 9.633 to 10.079 (lbs/gal)
Solubility in water	: Soluble
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Not available.
VOC	: Not available.
Pour Point	: Not available.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: Reactive or incompatible with the following materials: oxidizing materials and acids.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ammonium chloride	LD50 Oral	Rat	1220 mg/kg	-
	LD50 Oral	Rat	1410 mg/kg	-
TRETOLITE™ RBW517 WATER CLARIFIER	LD50 Oral	Rat	>7500 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Section 11. Toxicological information

Acute toxicity estimates

Not available.

Additional information

Acrylamide is a component of this product. The major effects of chronic acrylamide exposure are on the nervous system. Exposure to acrylamide for a few days or weeks can produce lassitude (weariness), drowsiness, sleepiness, loss of concentration, nervousness, irritability, loss of body coordination, speech and language disturbances, jerking of the eye, and urinary retention (ACGIH, 1991). Peripheral neuropathy with primarily motor and proprioceptive disturbances (interruptions in the ability of the muscles, tendons, and other internal tissue to receive stimuli), may follow 2 to 3 weeks later (Igisu et al, 1975).

In chronic low-dose exposure, effects are predominantly sensorimotor (mixed bed fibers containing sensory and motor nerves) and proprioceptive neuropathies (interruptions in the nerves ability to receive stimuli) with loss of deep tendon reflexes, muscle weakness and wasting, distal extremity numbness, paresthesias (abnormal burning, pricking, tickling or tingling), foot drop, and persistent ataxia (Auld & Bedwell, 1967; Garland & Patterson, 1967; Fullerton, 1969; Satchell & McLeod, 1981). In severe cases, residual ataxia, loss of reflexes, distal extremity weakness, and sensory disturbances may remain (Donovan & Pearson, 1987; Fullerton, 1969). Persons exposed for more than 22 weeks showed little recovery in peripheral neural function (outer neurons) after one year (Cavigneaux & Cabasson, 1972; Kesson et al, 1977; He et al, 1989). Rats and hens exposed to 12, 25, or 50 mg/kg of acrylamide 3 times per week for 3 weeks developed ataxia (staggering gait). Both peripheral and central nervous system damage were seen in rats, while hens developed only peripheral nerve lesions (Jortner & Ehrich, 1993).

In a two year study in rats where acrylamide was administered in the drinking water, an increased incidence of scrotal mesotheliomas (a rare abnormal increase in tissue growth in the scrotum), central nervous system tumors, thyroid tumors and tumors at other sites were described.

Acrylamide has been reported to be genotoxic in many test systems. Acrylamide inhibited DNA synthesis in rat cells in vitro (RTECS, 1996). Acrylamide induced chromosome aberrations in mice in vivo, in mouse lymphocytes and hamster lung cells, and in cultured human lymphocytes (white blood cells) (RTECS, 1996; HSDB, 1996). Sister chromatid exchanges were seen in rats and mice in vivo, and in hamster lung cells (RTECS, 1996).

IARC has classified acrylamide as a Group 2A carcinogen [probable human carcinogen (human evidence is inadequate, animal evidence is sufficient)]. NTP has classified acrylamide as a suspect carcinogen, and OSHA has classified acrylamide as a Group 2A (possible select carcinogen), upgraded from a Group 2B, based on a study conducted in 1994. (LOLI)

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Ammonium chloride	Acute EC50 0.07 mg/l Marine water	Algae - Hormosira banksii	72 hours
	Acute EC50 0.1 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute LC50 390 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 80 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 0.6 mg/l Marine water	Algae - Entomoneis punctulata	72 hours
	Chronic NOEC 330 µg/l Fresh water	Crustaceans - Crangonyx sp.	21 days
	Chronic NOEC 19.66 mg/l Fresh water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 0.006 mg/l Fresh water	Fish - Ictalurus punctatus	30 days
TRETOLITE™ RBW517 WATER CLARIFIER	Acute EC50 88 mg/l	Daphnia	48 hours
	Acute LC50 52 mg/l	Daphnia	96 hours
	Acute LC50 28 mg/l	Fish	96 hours
	Acute LC50 7.9 mg/l	Fish	96 hours

Section 12. Ecological information

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3082	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Contains: Ammonium chloride)	-	-	-
Transport hazard class(es)	9 	-	-	-
Packing group	III	-	-	-
Environmental hazards	Yes.	No.	No.	No.
Additional information	**Remarks** This material is Not Regulated if transported in a package that does not meet or exceed the Reportable Quantity (RQ).	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 14. Transport information

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Ammonium chloride, 16910 gal of this product.

Marine pollutant Not available.

North-America NAERG : 171

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: Ammonium chloride

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Not applicable.

SARA 313

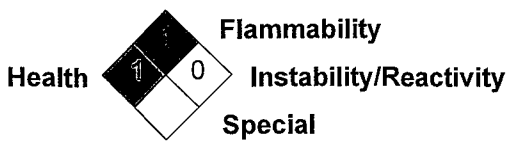
	Product name	CAS number	%
Supplier notification	Ammonium sulfate Ammonium chloride	7783-20-2 12125-02-9	10 - 20 1 - 5

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 1/23/2015.

Indicates information that has changed from previously issued version.

Notice to reader

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Section 16. Other information

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ RBW264X WATER CLARIFIER
™ a trademark of Baker Hughes Incorporated.

Product code : RBW264X

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Water clarifier.

Print date : 12/18/2014.

Validation date : 10/27/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) [kidneys] - Category 2
AQUATIC HAZARD (ACUTE) - Category 2
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Causes serious eye irritation.
Causes skin irritation.
May cause damage to organs through prolonged or repeated exposure. (kidneys)
Toxic to aquatic life.
Harmful to aquatic life with long lasting effects.

Precautionary statements

Section 2. Hazards identification

Prevention : Wear protective gloves: > 8 hours (breakthrough time): Neoprene gloves.. Wear eye or face protection. Avoid release to the environment. Do not breathe vapor. Wash hands thoroughly after handling.

Response : Get medical attention if you feel unwell. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Not applicable.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Ethylene glycol	10 - 20	107-21-1
Amine salt	10 - 20	Trade secret.
Zinc chloride	0.1 - 1	7646-85-7

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention following exposure or if feeling unwell. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention following exposure or if feeling unwell. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Section 4. First aid measures

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes skin irritation.

Ingestion : Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain or irritation,watering,redness

Inhalation : No specific data.

Skin contact : irritation,redness

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is toxic to aquatic life. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Section 6. Accidental release measures

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Ethylene glycol	US ACGIH	-	-	-	-	-	-	-	100	-	[a]
	OSHA PEL 1989	-	-	-	-	-	-	50	125	-	
Zinc chloride	US ACGIH	-	1	-	-	2	-	-	-	-	[b]
	OSHA PEL	-	1	-	-	-	-	-	-	-	[b]
	OSHA PEL 1989	-	1	-	-	2	-	-	-	-	[b]

Form: [a]Aerosol [b]Fume

Consult local authorities for acceptable exposure limits.

Section 8. Exposure controls/personal protection

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves: Neoprene gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Clear to slightly hazy liquid.

Color : Amber. / Brown. [Dark]

Odor : Sweet. [Slight]

Odor threshold : Not available.

pH : 4.5

: Neat - without dilution.

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: >93.4°C (>200.1°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : >1 [Air = 1]

Relative density : 1.1315 (15.6°C)

Density : 9.43 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Section 9. Physical and chemical properties

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : -23.3°C (-9.9°F)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.
Slightly reactive or incompatible with the following materials: acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ethylene glycol	LD50 Oral	Rat	4700 mg/kg	-
Zinc chloride	LD50 Oral	Rat	350 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

No applicable toxicity data

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Not applicable.

Specific target organ toxicity (repeated exposure)

Section 11. Toxicological information

Name	Category	Route of exposure	Target organs
Ethylene glycol	Category 2	Not determined	kidneys

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	3980.4 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Ethylene glycol	Acute LC50 100000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 10000000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 8050000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Zinc chloride	Acute EC50 26 µg/l	Algae - Navicula incerta	96 hours
	Acute EC50 34 µg/l Fresh water	Algae - Chlorella vulgaris	72 hours
	Acute EC50 1.8 mg/l Fresh water	Aquatic plants - Lemna aequinoctialis	96 hours
	Acute EC50 100 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 49.99 µg/l Fresh water	Crustaceans - Moina irrasa	48 hours
	Acute LC50 0.027 mg/l Marine water	Fish - Limanda punctatissima	96 hours
	Chronic NOEC 20 µg/l Marine water	Algae - Chlorella sp.	72 hours
	Chronic NOEC 1000 µg/l Fresh water	Crustaceans - Procambarus clarkii	21 days
	Chronic NOEC 80 µg/l Fresh water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 31.5 µg/l Fresh water	Fish - Oncorhynchus mykiss	30 days

Section 12. Ecological information

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3082	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (Contains: Ethylene glycol)	-	-	-
Transport hazard class(es)	9 	-	-	-
Packing group	III	-	-	-
Environmental hazards	Yes.	No.	No.	No.
Additional information	**Remarks** This material is Not Regulated if transported in a package that does not meet or exceed the Reportable Quantity (RQ).	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 14. Transport information

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Ethylene glycol, 4221 gal of this product.

Marine pollutant Not available.

North-America NAERG : 171

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: zinc chloride
Clean Water Act (CWA) 311: zinc chloride

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard
Delayed (chronic) health hazard

SARA 313

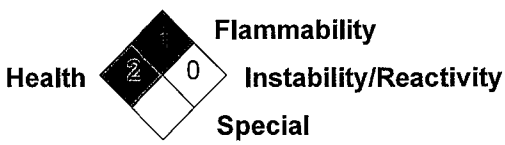
	Product name	CAS number	%
Supplier notification	Ethylene glycol	107-21-1	10 - 20

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 12/18/2014.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or

Section 16. Other information

disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

SDS for Products Identified

in

Attachment C

MATERIAL SAFETY DATA SHEET

MSDS NO. 10055 **Trade Name:** KWIK-SEAL (All Grades) **Revision Date:** 09/15/2004

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: KWIK-SEAL (All Grades)
Chemical Family: Mixture
Product Use: Oil well drilling fluid additive. Lost circulation material. MSDS covers all grades.
Emergency Telephone (24 hr.): 281-561-1600

Supplied by: M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
www.miswaco.com
Telephone Number: 281-561-1511
Contact Person: Karsten Fontenot, Product Safety Specialist

Revision Number: 3

HMIS Rating
Health: 1* **Flammability:** 1 **Physical Hazard:** 0 **PPE:** E

HMIS Key: 4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. HAZARDS IDENTIFICATION

Emergency Overview: Caution! May cause eye, skin, and respiratory tract irritation. Long term inhalation of particulates may cause lung damage.

Canadian Classification:
UN PIN No: Not regulated. **WHMIS Class:** D2A D2B

Physical State: Powder, dust. **Odor:** Woody **Color:** Brown

Potential Health Effects:

Acute Effects

Eye Contact: May cause mechanical irritation
Skin Contact: May cause mechanical irritation. Long term contact can cause skin dryness.
Inhalation: May cause mechanical irritation.
Ingestion: May cause gastric distress, nausea and vomiting if ingested.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.
Routes of Exposure: Eyes. Dermal (skin) contact. Inhalation.
Target Organs/Medical Conditions Aggravated by Overexposure: Eyes. Skin. Respiratory System. Heart Liver. Gastrointestinal Tract

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Antimony trioxide	1309-64-4	2 - 8	No comments.
Propene polymer		2 - 8	No comments.
Carbohydrate		60 - 100	No comments.
Cellophane	9005-81-6	1 - 3	No comments.

4. FIRST AID MEASURES

Eye Contact: Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

Skin Contact: Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if any discomfort continues.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. If signs of irritation or toxicity occur seek medical attention.

General Notes: Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): NA
Flammable Limits in Air - Lower (%): NA
Flammable Limits in Air - Upper (%): NA
Autoignition Temperature: F (C): NA
Flammability Class: NA
Other Flammable Properties: Particulate may accumulate static electricity. Dusts at sufficient concentrations can form explosive mixtures with air. Palleted bags of some fine cellulosic materials have been reported to smolder under certain conditions. See Section 7 Handling and Storage.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways.

Hazardous Combustion Products: Oxides of: Carbon.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

Spill Procedures: Evacuate surrounding area, if necessary. Wet product may create a slipping hazard. Contain spilled material. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.

Environmental Precautions: Do not allow to enter sewer or surface and subsurface waters. Waste must be disposed of in accordance with federal, state and local laws.

7. HANDLING AND STORAGE

Handling: Put on appropriate personal protective equipment. Avoid contact with skin and eyes. Avoid generating or breathing dust. Product is slippery if wet. Use only in a well ventilated area. Wash thoroughly after handling.

Storage: Store in dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.
Palleted bags of some fine cellulosic materials have been reported to smolder. To minimize the risk of smoldering: 1. Minimize fines in the product. 2. Minimize moisture. 3. If shrink wrapped: a. Minimize dust on bags as being stacked prior to shrink wrapping. b. Allow to sit for at least 24 hours before loading. Observe for smoldering. c. Practice care if heat gun is used to seal shrink wrap. Avoid generation of sparks.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Antimony trioxide	1309-64-4	2 - 8	0.5mg/m^3 (listed under Antimony)	0.5mg/m^3 (listed under Antimony)	NA	None
Propene polymer		2 - 8	NA	NA	NA	(1)
Carbohydrate		60 - 100	10 mg/m^3	15 mg/m^3 (Total); 5 mg/m^3 (Respirable)	NA	None
Cellophane	9005-81-6	1 - 3	NA	NA	NA	None

Notes
(1) Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m^3 (Inhalable); 3 mg/m^3 (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m^3 (Total); 5 mg/m^3 (Respirable).

Engineering Controls: Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to ensure air contamination and keep workers exposure below the applicable limits.

Personal Protection Equipment

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazards present and the risk of exposure to those hazards. The PPE recommendations below are based on our assessment of the chemical hazards associated with this product. The risk of exposure and need for respiratory protection will vary from workplace to workplace and should be assessed by the user.

Eye/Face Protection: Dust resistant safety goggles.

Skin Protection: Wear appropriate clothing to prevent repeated or prolonged skin contact. Chemical resistant gloves recommended for prolonged or repeated contact. Use protective gloves made of: Neoprene. Nitrile.

Respiratory Protection: All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne particles of this product use at least a NIOSH-approved N95 half-mask disposable or re-useable particulate respirator. In work environments containing oil mist/aerosol use at least a NIOSH-approved P95 half-mask disposable or re-useable particulate respirator.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Brown
Odor:	Woody
Physical State:	Powder, dust.
pH:	Approximately neutral (as a 1% solution)
Specific Gravity (H2O = 1):	0.24 - 0.36 at 68 F (20 C)
Solubility (Water):	Insoluble
Flash Point: F (C):	NA
Melting/Freezing Point:	NA
Boiling Point:	NA
Vapor Pressure:	NA
Vapor Density (Air=1):	NA
Evaporation Rate:	NA
Odor Threshold(s):	ND

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable
Conditions to Avoid:	Keep away from heat, sparks and flame. See Section 7 also.
Materials to Avoid:	Oxidizers.
Hazardous Decomposition Products:	For thermal decomposition products, see Section 5.
Hazardous Polymerization:	Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data: Any adverse component toxicological effects are listed below. If no effects are listed, no such data were found.

Ingredient	CAS No.	Acute Data
Antimony trioxide	1309-64-4	Oral LD50: >34600mg/kg (rat); Intraperitoneal LD50: 172mg/kg (mouse); Intraperitoneal LD50: 3250mg/kg (rat); Intravenous LDLo: 3mg/kg (dog); Subcutaneous LDLo: 2500mcg/kg (rabbit); Inhalation TCLo: 4200mcg/m(3) for 52W-I --CAR; Inhalation TCLo: 1600mcg/m(3) for 52W-I --CAR
Propene polymer		Oral LD50: >5000 mg/kg (rat); Dermal LD50: >2000 mg/kg (rabbit)
Carbohydrate		Oral LD50: >5000 mg/kg (rat); Dermal LD50: >2000 mg/kg (rabbit); Inhalation LC50: >5800 mg/m³/4H (rat)

Ingredient	Component Toxicological Summary
Antimony trioxide	The International Agency for Research on Cancer (IARC) has classified Antimony trioxide as a Group 2b carcinogen (possibly carcinogenic to humans). This classification was based on sufficient evidence of carcinogenicity in animals and insufficient evidence of carcinogenicity in humans. (IARC)
Carbohydrate	Long term inhalation exposure to this particulate may cause a benign pneumoconiosis (irritation caused by dust inhalation which may lead to fibrosis (formation of fibrous tissue)). (NIOSH, HazardText)

Product Toxicological Information:
Long term inhalation of particulate can cause irritation, inflammation and/or permanent injury to the lungs. Illnesses such as pneumoconiosis ("dusty lung"), pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma may develop.

12. ECOLOGICAL INFORMATION

Ingredient	CAS No.	Data
Antimony trioxide	1309-64-4	LC50 96H: 833mg/L (fathead minnow); LC50 96H: 530mg/L (bluegill)

Product Ecotoxicity Data: LC50 96H: >1,000,000 ppm (mysid shrimp)

Biodegration: ND
Bioaccumulation: ND
Octanol/Water Partition Coefficient: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification: ND

Waste Management: Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method: Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT Shipping Description: Not regulated for transportation by DOT, TDG, IMDG, ICAO/IATA.

Canada TDG Shipping Description: Not regulated.
UN PIN No: Not regulated.

IMDG Shipping Description: Not regulated.

ICAO/IATA Shipping Description: Not regulated.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Catagories: Delayed (chronic) health hazard.

SARA 302/304, 313; CERCLA RQ, California Proposition 65: Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

Ingredient	SARA 302 / TPQs	SARA 313	CERCLA RQ	CA 65 Cancer	CA 65 Dev. Tox.	CA 65 Repro. F	CA 65 Repro. M

Antimony trioxide	---	---	1000 lb (454 kg)	---	---	---	---

International Chemical Inventories

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Components are listed or exempt from listing.
European Union EINECS/ELINCS - Components are listed or exempt from listing.
Japan METI ENCS - Components are listed or exempt from listing.
Korea TCCL ECL - Components are listed or exempt from listing.
Philippine PICCS - Components are listed or exempt from listing.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: D2A D2B

16. OTHER INFORMATION

The following sections have been revised: All sections.

NA - Not Applicable, ND - Not Determined.

Disclaimer:

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, user may rely on it only at user's risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guartantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

SDS no. 10288
Version 6
Revision date 21/Oct/2014
Supersedes date 21/Sep/2009

MI SWACO
A Schlumberger Company

Safety Data Sheet
TANNATHIN†

1. Identification of the substance/preparation and of the Company/undertaking

1.1 Product identifier

Product name TANNATHIN†

Product code 10288

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Drilling fluid additive Dispersant.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.
P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com

Prepared by
Global Chemical Regulatory Compliance (GCRC) , Mike McDowell

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600
Telephone Number - 281-561-1511

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards

Carcinogenicity	Category 1A

Environmental hazards Not classified

Physical Hazards

Combustible dust

2.2 Label elements

Signal word
DANGER

Hazard statements
H350 - May cause cancer
May form combustible dust concentrations in air

Precautionary statements
P201 - Obtain special instructions before use
P281 - Use personal protective equipment as required
P308 + P313 - IF exposed or concerned: Get medical advice/ attention

Supplementary precautionary statements
P202 - Do not handle until all safety precautions have been read and understood
P501 - Dispose of contents/ container to an approved waste disposal plant
P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical/ ventilating/ lighting/ equipment
P243 - Take precautionary measures against static discharge

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Component	CAS-No	Weight % - range
Lignite	1415-93-6	60 - 100
Silica, crystalline, quartz	14808-60-7	5 - 10

4. First aid measures

4.1 Description of first-aid measures

Inhalation — Move to fresh air. If breathing is difficult, (trained personnel should) give oxygen. Get medical attention immediately if symptoms occur.

Ingestion — Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

Skin contact — Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if irritation persists.

Eye contact Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

Main symptoms

Inhalation Please see Section 11. Toxicological Information for further information.

Ingestion Please see Section 11. Toxicological Information for further information.

Skin contact Please see Section 11. Toxicological Information for further information.

Eye contact Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
Dusts or fumes may form explosive mixtures in air.

Hazardous combustion products
Silicon oxide, Nitrogen oxides (NOx), Carbon oxides (COx).

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear suitable protective equipment. Evacuate personnel to safe areas. Prevent further leakage or spillage if safe to do so. Avoid dust formation.

6.2 Environmental precautions

Do not allow material to contaminate ground water system.

Environmental exposure controls
No information available.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Cover powder spill with plastic sheet or tarp to minimize spreading.

Methods for cleaning up
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).

6.4 Reference to other sections

No information available.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Avoid breathing dust; if exposed to high dust concentration, leave area immediately. Avoid contact with skin, eyes and clothing.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation.

Storage precautions Protect from moisture

8. Exposure controls/personal protection

8.1 Control parameters

Component Information

Component	ACGIH TLV	OSHA PEL
Lignite	Not Determined	Not Determined
Silica, crystalline, quartz	0.025 mg/m³	see Table Z-3

Silica, crystalline, quartz
OSHA - Final PELs - Table Z-3 Mineral Dusts
(30)/(%SiO2 + 2) mg/m³ TWA, total dust; (250)/(%SiO2 + 5) mppcf TWA, respirable fraction; (10)/(%SiO2 + 2) mg/m³ TWA, respirable fraction

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye protection Tightly fitting safety goggles.
Hand protection Neoprene, Nitrile.

Respiratory protection

All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator.

If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid
Appearance	Opaque
Odor	Mild
Color	Tan - Gray
Odor threshold	Not applicable

Property	Values	Remarks
pH	Not applicable	
pH @ dilution		
Melting/freezing point		
Boiling point/range	No information available	
Flash point	No information available	
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	1.5 - 1.7	
Bulk density	No information available	
Relative density	No information available	
Water solubility	Negligible	
Solubility in other solvents	Insoluble	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	No information available
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable. Hazardous polymerization does not occur.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
None known.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Silicon oxide. Carbon oxides (COx). Nitrogen oxides (NOx).

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation — Inhalation of dust in high concentration may cause irritation of respiratory system. Repeated or prolonged inhalation of crystalline silica dust can cause delayed lung injury, and other diseases, including silicosis and lung cancer.

Eye contact — Dust contact with the eyes can lead to mechanical irritation.

Skin contact — Repeated exposure may cause skin dryness or cracking.

Ingestion — Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Acute toxicity — 0% of the mixture consists of ingredient(s) of unknown toxicity.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Lignite	No data available	No data available	No data available
Silica, crystalline, quartz	= 500 mg/kg (Rat)	No data available	No data available

Sensitization — This product does not contain any components suspected to be sensitizing.

Mutagenic effects — No evidence of mutagenic properties.

Carcinogenicity — Contains a known or suspected carcinogen. Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled.

Reproductive toxicity	No evidence of toxicity to reproduction.
Developmental toxicity	Not known to cause birth defects or have a deleterious effect on a developing fetus.
Routes of exposure	Skin contact. Inhalation. Eye contact.
Routes of entry	Inhalation.
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.
Aspiration hazard	Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Lignite 1415-93-6 (60 - 100)	No information available	No information available	No information available
Silica, crystalline, quartz 14808-60-7 (5 - 10)	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No product level data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated
UN No. (DOT)	Not regulated

14.2 Proper shipping name
Not regulated for transportation by DOT, TDG, IMDG and ICAO/IATA.

14.3 Hazard class(es)

ADR/RID/ADN Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated
DOT Hazard class	Not regulated

14.4 Packing group

ADR/RID/ADN Packing Group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated
DOT Packing group	Not regulated

14.5 Environmental hazard
No

14.6 Special precautions
Not Applicable

15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

International inventories

USA (TSCA)	Complies
European Union (EINECS and ELINCS)	Complies
Canada (DSL)	Complies
Philippines (PICCS)	Complies
Japan (ENCS)	Does not Comply
China (IECSC)	Complies

Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Delayed (chronic) health hazard.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Lignite	N/A	N/A	N/A
Silica, crystalline, quartz	N/A	N/A	N/A

State Comments
Proposition 65: This product contains chemical(s) considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 to cause cancer and/or reproductive toxicity. See table under U.S. Federal and State Regulations for the specific chemicals.

Silica, crystalline, quartz
carcinogen

This product has been classified in accordance with the hazard criteria of the CPR and the SDS contains all the information required by the CPR.

WHMIS Hazard Class D2A (Other Toxic Effects - Very Toxic Material)

-

16. Other information

Supersedes date	21/Sep/2009
Revision date	21/Oct/2014
Version	6
The following sections have been revised	All sections. Format changes.

HMIS classification

Health	1*
Flammability	1
Physical hazard	0
PPE	E

N/A - Not Applicable, N/D - Not Determined.

Disclaimer
The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this MSDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

AMBER CHEMICAL INC.

SAFETY DATA SHEET

Transport Symbol	NFPA Rating (estimated)	GHS	Personal Protective Equipment
Not Regulated		*Not Classified*	

Section 1: Identification

Product Name:	**PAC LV**
ACI SDS Number:	ACISDS0050
Other Common Names:	Carboxymethyl Cellulose, Sodium; Polyanionic Cellulose; CMC PAC LV
Chemical Formula:	Polymer
Company Name:	Amber Chemical Inc.
Address:	5201 Boylan Street Bakersfield, CA 93308
Phone:	(661) 325-2072
Emergency Contact:	CHEMTREC (Available 24 hours for chemical emergency, spill, leak, fire, exposure, or accident)
Emergency Number:	1-800-424-9300
Product Use:	User is responsible for ensuring that the product is suitable for their purpose.
Date Revised:	March 2015

Section 2: Hazard(s) Identification

Not a dangerous substance according to Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Section 3: Composition/Information on Ingredients

Formulation: Cellulose + NaOH + MCA/SCMA → NaCMC+NaCl
CAS Number: 9004-32-4

Components	Technical Grades %	Pure Grades %	Highly Purified Grades %
Carboxymethyl cellulose (CMC)	Min. 60	Up to 99.5	Min. 99.5
Sodium Chloride (NaCl)	Max. 40	Min. 0.5	Max. 0.5

Synonyms: Sodium Carboxymethyl Cellulose, CMC Sodium Salt and Sodium Cellulose

Section 4: First Aid Measures

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.

Eye Contact: Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention if irritation occurs.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Ingestion: Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Refer to Section 11 for other Health Effects

Section 5: Fire Fighting Measures

Fire Fighting Media and Instructions:

- *Small Fire:* Use dry chemical powder.
- *Large Fire:* Use water spray, fog or foam. Do not use water jet.

Auto-ignition Temperature: 370°C (698°F)

Flash Points: Not available.

Flammable Limits: Not available.

Flammability of the Product: May be combustible at high temperature.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Slightly flammable to flammable in presence of heat.

Explosion Hazards in Presence of Various Substances:

- Risks of explosion of the product in presence of mechanical impact: Not Available.
- Risks of explosion of the product in presence of static discharge: Not Available.

Special Remarks on Fire Hazards: Material in powder form, capable of creating a dust explosion.

Special Remarks on Explosion Hazards: Material in powder form, capable of creating a dust explosion. Fine dust dispersed in air in sufficient concentrations and in the presence of an ignition source is a potential dust explosion hazard.

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill: Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Precautions: Extremely slippery wet material on walking grounds when mixed with water. Avoid dust formation.

Environmental: Contain all spills and leaks to prevent discharge into the environment.

Refer to Section 8 for Engineering Controls and Personal Protective Equipment.

Section 7: Handling and Storage

Precautions: Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibilities, such as oxidizing agents.

Handling: Keep formation of dust minimum. Use dust suction and ventilation. Never eat, drink or smoke in work area. Contain all spills and leaks to prevent discharge into the environment.

Storage: Store in a dry place. Keep container tightly closed. Keep container in a cool, well-ventilated area. Use original packing for humidity and water protection.

Section 8: Exposure Controls/Personal Protection

Exposure Limits: Not available.

Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Equipment: If handling generates dust, use ventilation.

Personal Protection
Eye Protection: Safety goggles
Hand Protection: Gloves.
Body Protection: Lab coat.
Inhalation Protection: Dust respirator. Use a dust respirator if ventilation is inadequate and/or if handling of material creates visible dust clouds. Be sure to use an approved/certified respirator or equivalent.

Personal Protection in Case of a Large Spill: Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient. Consult a specialist before handling this product.

Section 9: Physical and Chemical Properties

Physical State and Appearance	Solid (Powdered Solid)
Color	White
Odor	Odorless
pH	7-11 (1% solution)
Bulk Density	500-800 kg/ m^3
Solubility	Soluble in Cold Water
Flash Point	Not Applicable
Auto-ignition	Above 350°C
Molecular Weight	Not Available

Boiling Point	Not Available
Melting Point	Not Available
Critical Temperature	Not Available
Specific Gravity	1.59 (Water=1)
Vapor Pressure	Not Applicable
Vapor Density	Not Available
Volatility	Not Available
Odor Threshold	Not Available
Water/Oil Dist. Coeff.	Not Available
Ionicity (In Water)	Not Available
Dispersion Properties	See Solubility in Water
Taste	Not Available

Not all physical and chemical properties are displayed on this SDS, as not all information is relevant or available at this time.

Section 10: Stability and Reactivity

Stability: Stable under normal conditions

Conditions to Avoid: Strong oxidizers

Incompatibility with Various Substances: Reactive with oxidizing agents.

Conditions of Instability: Excess heat, moist air or water, dust generation

Instability Temperature: Not available.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Exposure: Skin/Eye Contact, Ingestion, Inhalation

Potential Acute Health Effects: Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

Acute Effects and Symptoms
Skin: May cause skin irritation.
Inhalation: Low hazard. Dust may cause respiratory tract irritation.
Ingestion: Low hazard. May cause gastrointestinal tract irritation with nausea, vomiting, diarrhea.
Eyes: Dust may cause eye irritation.

Potential Chronic Health Effects
Carcinogenic Effects: Not available.
Mutagenic Effects: Not available.

Teratogenic Effects: Not available.
Developmental Toxicity: Not available.
*Repeated or prolonged exposure is not known to aggravate medical condition.
Special Remarks on Possible Chronic Effects on Humans: May cause adverse reproductive effects based on animal test data. May cause cancer based on animal test data.
Ingestion Effects: Prolonged or repeated ingestion may affect the liver, urinary system, and metabolism (sodium levels).

Toxicity to Animals

LD_{50}	Oral	27000 mg/kg	Rat
LD_{50}	Oral	>27000 mg/kg	Rabbit
LD_{50}	Oral	16000 mg/kg	Guinea Pig
LD_{50}	Dermal	>2000 mg/kg	Rabbit
LC_{50}	Inhalation	>5800 mg/m^3 / 4 hours	Rat

Carboxymethyl Cellulose, Sodium (CAS# 9004-32-4) is not listed on the NTP Report on Carcinogens or on the IARC Monographs.

Section 12: Ecological Information

Degradability: Unknown

Fish Toxicity: Negative influence only in high concentrations

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation: Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal: Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Disposal can occur only in properly permitted facilities. Refer to regional, state, provincial and local health, safety and pollution laws for any additional requirements, as these may be different from Federal laws and regulations. If in doubt, contact appropriate agencies. Chemical additions, processing or otherwise altering this material may make waste management information presented in the SDS incomplete, inaccurate or otherwise inappropriate. ACI has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

To minimize exposure refer to Section 8.

Section 14: Transport Information

A non-hazardous product for land, maritime, and air transport.
No restrictions and labeling is required.

DOT Classification: Not a DOT controlled material (United States)
Identification: Not applicable
Special Provisions for Transport: Not applicable
DOT (Pictogram): N/A

Note: There are specific regulations in regards to transporting chemicals by water. Shipper is responsible for ensuring that they meet all of the requirements and follow the regulations for the chemical they are transporting.

Section 15: Regulatory Information

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material. There are no other regulations applicable for this product for its handling, transportation packing, etc...

Federal and State Regulations
TSCA 8(b) Inventory: Carboxymethyl cellulose sodium
FEMA: Generally Recognized as Safe List
California Proposition 65: No products were found.
FIFRA Inerts: Sodium carboxymethyl cellulose [Cellulose, carboxymethyl ether, sodium salt] 9004-32-4
FDA GRAS (Generally Regarded as Safe): Sodium carboxycellulase is listed as GRAS.

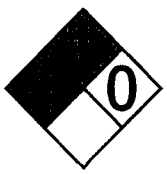
Other Regulations
Canada: Listed on Canadian Domestic Substance List (DSL)
China: Listed on National Inventory.
Japan: Listed on National Inventory (ENCS)
Korea: Listed on National Inventory (KECI)
Philippines: Listed on National Inventory (PICCS)
Australia: Listed on AICS

Other Classifications
WHMIS (Canada): Not controlled under WHMIS (Canada)
DSCL (EEC): This product is not classified according to the EU regulations. Not applicable.

Section 16: Other Information

Date Revised: March 2015

NFPA Rating (estimated)



Health	1
Flammability	1
Instability	0

This information is intended solely for the use of individuals trained in the NFPA and HMIS hazard rating systems.

Disclaimer: All statements, technical information and recommendations contained herein are, to the best of our knowledge, reliable and accurate. The information in this data sheet has been assembled by the

manufacturer based on its own studies and on the work of others. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof, nor will any liability be assumed for damages resultant form the use of the material described. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. The manufacturer shall not be liable (regardless of fault) to the vendee, the vendee's employees, or anyone for any direct, special or consequential damages arising out of, or in connection with, the accuracy, completeness, adequacy or furnishing of such information. It is offered solely for your consideration, investigation and verification. As a result, the customer shall be solely responsible for deciding whether said information is suitable and beneficial. Furthermore, vendee assumes the risk in his use of the material. We assume no legal responsibility whatsoever for any damage resulting from reliance upon this information since it is being furnished upon the condition that the person receiving it shall make his or her own determination of the suitability of the material described herein for a particular application or storage situation. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release, and is not to be considered a warranty or quality specification. The user should take the necessary steps to instruct employees, and to develop work practice procedures to ensure and maintain a safe work environment. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process unless specified in the text. Personal Protection rating to be supplied by user depending on use conditions. Since the use of this product is within the exclusive control of the user, it is the user's responsibility to determine the conditions of safe use. Such conditions must comply with all governmental regulations. This information is not intended as a license to operate under, or a recommendation to practice or infringe upon any patent of this company or others covering any process, compositions of matter or use. Neither this data sheet nor any statement contained herein grants or extends any license, express or implied, in connection with patents issued or pending which may be the property of the manufacturer or others.

ASBURY CARBONS

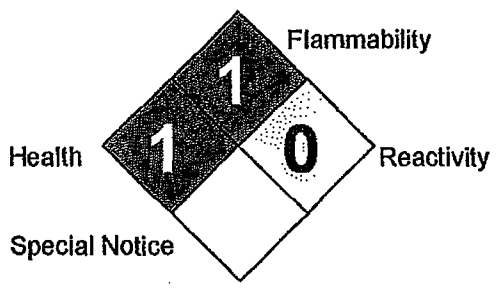
Asbury Graphite Mills, Inc.	PO Box 144, 405 Old Main St. Asbury, NJ 08802	908-537-2155
Cummings – Moore Graphite Co.	616 Green Ave. Detroit, MI 48209	313-841-1615
Anthracite Industries	PO Box 112, Sunbury, PA 17801	570-286-2176
Southwestern Graphite	PO Box 876, 2564 Hwy 12 DeQuincy, LA 70633	337-786-5905
Asbury Graphite of California	2855 Franklin Canyon Rd. Rodeo, CA 94572	510-799-3636

Material Safety Data Sheet

HMIS

HEALTH	1
FLAMMABILITY	0
REACTIVITY	0
PERSONAL PROTECTION	E

NFPA



Section I – Product and Company Identification

Product Name/ Trade Name	**Natural Graphite less than 85% Carbon**		
Manufacturer	Asbury Carbons	**Emergency Phone**	1-800-255-3924
		Information Phone	1-908-537-2155
		Date Prepared	January 28, 2008
		Preparer *(optional)*	AVT

Section II – Hazard Ingredients/Identity Information

Hazardous Components	CAS Number	OSHA PEL	ACGIH TLV/TWA	% (optional)
Graphite	7782-42-5		2.0 mg/m^3 (TWA)	
Silica	14808-60-7	NIOSH REL= 0.05mg/m^3	0.025 mg/m^3	1.5-4%

Section III – Physical / Chemical Characteristics

Boiling Point: NA		**Specific Gravity (H_2O = 1) 2.26**	
Vapor Pressure (mm Hg)	NA	**Melting Point**	Above 3000 C
Solubility in Water	Negligible	**Appearance and Odor**	Silver grey to black powder or flake. No odor.
pH	NA		

Section IV – Fire and Explosion Hazard Data

Extinguishing Media	Use water, foam, sand, or dry chemical
Special Fire Fighting Procedures	Spray with water. Other media may be used depending on the location of fire and form of graphite, i.e. powder vs. granular. Graphite does not typically catch fire in ambient

Unusual Fire and Explosion Hazards	: When exposed to extremely high energy ignition sources fine graphite and carbon powder can form explosive mixtures with air. Avoid contact between graphite or carbon dust clouds and high energy ignition sources.

Asbury Carbons MSDS: Natural Graphite less than 85% Carbon, Page 2, January 28, 2008

Section V – Reactivity Data

Stability	Stable
Conditions to Avoid	Contact with strong oxidizing agents.
Incompatibility *(Materials to Avoid)*	Oxidizing agents.
Hazardous Decomposition or Byproducts	Carbon dioxide, CO_2, and carbon monoxide, CO.
Hazardous Polymerization	Will not occur

Section VI – Health Hazard Data

Route(s) of Entry: Inhalation? Yes	**Skin?** No **Ingestion?** Yes
Carcinogenicity: Silica **NTP?** Yes	**IARC Monographs?** Yes **OSHA Regulated?** No
IARC Monograph Vol. 68, 1997, concludes that there is sufficient evidence that inhaled crystalline silica causes cancer in humans. IARC Classification Group1	
Health Hazards *(Acute and Chronic)*	**Eye Contact:** Contact with eyes may cause severe mechanical irritation. **Ingestion:** Although not soluble and orally non-toxic, ingestion of large quantities of graphite can result in gastrointestinal irritation and blockage. **Inhalation:** Shortness of breath may occur. Prolonged exposure may result in pulmonary fibrosis, emphysema, and corpulmonale. Inhalation of silica may result in silicosis. **Skin Contact**: Mechanical irritation may result.
Signs and Symptoms of Exposure	**Eye contact**: Redness, irritation, obvious staining of eyes by dark powder. **Inhalation:** Shortness of breath, nose and or throat irritation. Sputum may be stained with graphite powder. Mucus emanating from nasal passages may be stained with graphite powder. Skin directly adjacent to nose and mouth may be stained with graphite powder. **Skin Contact:** Irritation and redness, graphite staining.
Medical Conditions Generally Aggravated by Exposure	Emphysema, asthma and other respiratory problems aggravated by suspended particulates.
Emergency and First Aid Procedures	**Eye Contact:** Flush eyes with plenty of water for 15 minutes while holding eyelids open. Get medical attention. **Skin Contact:** Wash with mild soap, and water. **Inhalation:** Remove victim to fresh air and provide oxygen if breathing is difficult. Seek medical attention.

Section VII – Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled	Sweep or vacuum. Try to minimize dusting.
Waste Disposal Method	Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.
Precautions to Be Taken in Handling and Storing	Handle and transfer in a manner that minimizes dust. Store away from oxidizing agents.
Other Precautions	Graphite is a conductor of electricity. Exercise caution when handling graphite in

Section VIII – Control Measures

Respiratory Protection (Specify Type)	Avoid prolonged or repeated breathing of graphite dust. If exposure may or does exceed occupational exposure limits use a NIOSH-approved respirator to prevent overexposure.
Ventilation:	Use ventilation as required to maintain dust concentrations below TLV.
Eye Protection	Safety glasses or goggles.
Gloves and Other Protective Clothing	Wear gloves and protective clothing to reduce skin contact.
Work/Hygienic Practices	Keep work area clean. Use adequate dust collection and ventilation to maintain dust levels below the ACGIH-TLV.

SAFETY DATA SHEET
XCD POLYMER

1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

PRODUCT NAME	XCD POLYMER
SYNONYMS, TRADE NAMES	Xanthan Gum
APPLICATION	Viscosifier
SUPPLIER	M-I Drilling Fluids UK Ltd, Pocra Quay, Footdee, Aberdeen. AB11 5DQ T -44 (0)1224-584336 F -44 (0)1224-576119
EMERGENCY TELEPHONE	+44(0)208 762 8322

2 COMPOSITION/INFORMATION ON INGREDIENTS

Name	EC No.	CAS-No.	Content	Classification
XANTHAN GUM	234-394-2	11138-66-2	60-100%	-

The Full Text for all R-Phrases are Displayed in Section 16

COMPOSITION COMMENTS

This product is classified as containing no hazardous ingredients according to the EC Directives.

3 HAZARDS IDENTIFICATION

Not regarded as a health or environmental hazard under current legislation.

4 FIRST-AID MEASURES

INHALATION

Move the exposed person to fresh air at once. Get medical attention if any discomfort continues.

INGESTION

First aid is not normally required. Rinse mouth thoroughly. Drink plenty of water.

SKIN CONTACT

Remove contaminated clothing. Wash skin with soap and water. Get medical attention if any discomfort continues.

EYE CONTACT

Promptly wash eyes with plenty of water while lifting the eye lids. Get medical attention if any discomfort continues.

5 FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

Water spray, foam, dry powder or carbon dioxide.

UNUSUAL FIRE & EXPLOSION HAZARDS

High concentrations of dust may form explosive mixture with air.

SPECIFIC HAZARDS

Asphyxiating gases/vapours/fumes of: Carbon dioxide (CO2). Carbon monoxide (CO).

PROTECTIVE MEASURES IN FIRE

Self contained breathing apparatus and full protective clothing must be worn in case of fire.

6 ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

Wear protective clothing as described in Section 8 of this safety data sheet.

ENVIRONMENTAL PRECAUTIONS

Do not allow to enter drains, sewers or watercourses.

SPILL CLEAN UP METHODS

Avoid generation and spreading of dust. Collect in containers and seal securely. Flush area clean with lots of water. Be aware of potential for surfaces to become slippery.

7 HANDLING AND STORAGE

USAGE PRECAUTIONS
Avoid handling which leads to dust formation. Provide good ventilation.
STORAGE PRECAUTIONS
Store in tightly closed original container in a cool, dry well-ventilated place.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

INGREDIENT COMMENTS
NUI = Nuisance Dust. WEL TWA 4mg/m3 respirable dust, 10mg/m3 total dust.
PROTECTIVE EQUIPMENT

ENGINEERING MEASURES
Provide adequate general and local exhaust ventilation.
RESPIRATORY EQUIPMENT
Respiratory protection must be used if air contamination exceeds acceptable level. Dust filter P2 (for fine dust).
HAND PROTECTION
PVC or rubber gloves are recommended.
EYE PROTECTION
Wear dust resistant safety goggles where there is danger of eye contact.
OTHER PROTECTION
Wear appropriate clothing to prevent repeated or prolonged skin contact. Provide eyewash station.

9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Powder, dust		
COLOUR	White / off-white to Brownish		
ODOUR	Mild (or faint).		
SOLUBILITY	Completely soluble in water		
RELATIVE DENSITY	1.5 @ 20 °c	pH-VALUE, DILUTED SOLUTION	7 @ 1 %
AUTO IGNITION TEMPERATURE (°C> 200)			

10 STABILITY AND REACTIVITY

STABILITY
Stable under normal temperature conditions.
MATERIALS TO AVOID
Strong oxidising substances.
HAZARDOUS DECOMPOSITION PRODUCTS
Fire or high temperatures create: Asphyxiating gases/vapours/fumes of: Carbon dioxide (CO2). Carbon monoxide (CO).

11 TOXICOLOGICAL INFORMATION

INHALATION
Dust may irritate respiratory system or lungs.
INGESTION
May cause discomfort if swallowed.
SKIN CONTACT
Powder may irritate skin.
EYE CONTACT
Particles in the eyes may cause irritation and smarting.

12 ECOLOGICAL INFORMATION

ECOTOXICITY
Contact M-I Swaco's QHSE Department for ecological information. Not regarded as dangerous for the environment.

13 DISPOSAL CONSIDERATIONS

DISPOSAL METHODS

Recover and reclaim or recycle, if practical. Dispose of waste and residues in accordance with local authority requirements.

14 TRANSPORT INFORMATION

GENERAL — The product is not covered by international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID).

15 REGULATORY INFORMATION

RISK PHRASES

NC — Not classified.

SAFETY PHRASES

NC — Not classified.

UK REGULATORY REFERENCES

Chemicals (Hazard Information & Packaging) Regulations. Chemicals (Hazard Information & Packaging) Regulations.

STATUTORY INSTRUMENTS

Chemicals (Hazard Information and Packaging) Regulations. Control of Substances Hazardous to Health.

GUIDANCE NOTES

Workplace Exposure Limits EH40.

16 OTHER INFORMATION

GENERAL INFORMATION

HMIS Health - 1 HMIS Flammability - 1 HMIS Physical Hazard - 0 E - Safety glasses, Gloves, Dust Respirator

INFORMATION SOURCES

Material Safety Data Sheet, Misc. manufacturers. Sax's Dangerous Properties of Industrial Materials, 10th ed., Lewis, R.J. Sr., (ed.).

REVISION COMMENTS

The following sections have been revised: 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15 and 16. Revised by Bill Cameron

ISSUED BY

Sam Hoskin

REVISION DATE	12-09-05
REV. NO./REPL. SDS GENERATED	2
SDS NO.	10461

MATERIAL SAFETY DATA SHEET

Drispac® (Regular and Superlo®) Polymer

Version 1.1 Revision Date 2011-03-03

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product information

Trade name : Drispac® (Regular and Superlo®) Polymer
Material : 1016803, 1016806

Use : Drilling Mud Additive

Company : Chevron Phillips Chemical Company LP
Drilling Specialties Company
10001 Six Pines Drive
The Woodlands, TX 77380

Emergency telephone:

Health:
866.442.9628 (North America)
1.832.813.4984 (International)

Transport:
North America: CHEMTREC 800.424.9300 or 703.527.3887
Asia: +800 CHEMCALL (+800 2436 2255) China: 0532.8388.9090
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Chemcare Asia: Tel: +65 6848 9048 - Mob: +65 8382 9188 - Fax: +65 6848
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Responsible Department : Product Safety and Toxicology Group
E-mail address : MSDS@CPChem.com
Website : www.CPChem.com

2. HAZARDS IDENTIFICATION

Emergency Overview

Form: Powder **Physical state**: Solid

OSHA Hazards : This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

GHS Classification

Not a dangerous substance according to Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

GHS-Labeling

Not a dangerous substance according to Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Carcinogenicity:

IARC	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Viscosifier, Water loss control agent

Molecular formula : Proprietary

Component	CAS-No.	Weight %
Polyanionic Cellulose	Proprietary	100.00

Contains no hazardous ingredients according to GHS.

4. FIRST AID MEASURES

General advice : Do not leave the victim unattended.

If inhaled : If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.

In case of eye contact : Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

5. FIRE-FIGHTING MEASURES

Flash point : Not applicable

Autoignition temperature : Not applicable

Unsuitable extinguishing media : High volume water jet.

Special protective equipment for fire-fighters : Wear self contained breathing apparatus for fire fighting if necessary.

Further information : Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Fire and explosion : Provide appropriate exhaust ventilation at places where dust is

protection		formed.
Hazardous decomposition products	:	No data available.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Avoid dust formation.
Environmental precautions	:	Prevent further leakage or spillage if safe to do so.
Methods for cleaning up	:	Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Handling

Advice on safe handling	:	For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Dispose of rinse water in accordance with local and national regulations.
Advice on protection against fire and explosion	:	Provide appropriate exhaust ventilation at places where dust is formed.

Storage

Requirements for storage areas and containers	:	Keep container tightly closed in a dry and well-ventilated place. Electrical installations / working materials must comply with the technological safety standards.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment

Respiratory protection	:	No personal respiratory protective equipment normally required.
Hand protection	:	The suitability for a specific workplace should be discussed with the producers of the protective gloves.
Eye protection	:	Eye wash bottle with pure water. Tightly fitting safety goggles.
Skin and body protection	:	Dust impervious protective suit. Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Hygiene measures	:	Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance

Form	:	Powder
Physical state	:	Solid

Safety data

Flash point	:	Not applicable
Lower explosion limit	:	Not applicable
Upper explosion limit	:	Not applicable
Oxidizing properties	:	No
Autoignition temperature	:	Not applicable
Molecular formula	:	Proprietary
Molecular Weight	:	No data available
pH	:	Not applicable
Pour point	:	No data available
Boiling point/boiling range	:	No data available
Vapor pressure	:	Not applicable
Density	:	1.5 g/cm3
Water solubility	:	Completely Soluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity, kinematic	:	No data available
Relative vapor density	:	Not applicable
Evaporation rate	:	No data available

10. STABILITY AND REACTIVITY

Chemical stability	:	This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure

Possibility of hazardous reactions

Conditions to avoid	:	No data available.
Other data	:	Keep in a dry place. No decomposition if stored and applied as directed.

11. TOXICOLOGICAL INFORMATION

Drispac® (Regular and Superlo®) Polymer
Acute oral toxicity : LD50: > 2,500 mg/kg
Species: rat

Drispac® (Regular and Superlo®) Polymer
Acute inhalation toxicity : LC50: > 2000 MG/CMExposure time: 4 HR
Species: rat

Drispac® (Regular and Superlo®) Polymer
Acute dermal toxicity : LD50: > 2,000 mg/kg
Species: rabbit

Drispac® (Regular and Superlo®) Polymer
Aspiration toxicity : No aspiration toxicity classification.

Drispac® (Regular and Superlo®) Polymer
Further information : No data available.

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

Biodegradability : Expected to be biodegradable

Further information on ecology

Additional ecological information : No data available

13. DISPOSAL CONSIDERATIONS

The information in this MSDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product : Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

14. TRANSPORT INFORMATION

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping

description for the material. Flashpoints for the material may vary slightly between the MSDS and the bill of lading.

USDOT
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IMO / IMDG
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IATA
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADR
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

RID
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

15. REGULATORY INFORMATION

National legislation

SARA 311/312 Hazards : No SARA Hazards

EPCRA - EMERGENCY PLANNING COMMUNITY RIGHT - TO – KNOW

SARA 302 Reportable Quantity : SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Ingredients : SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

Ozone-Depletion Potential : This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

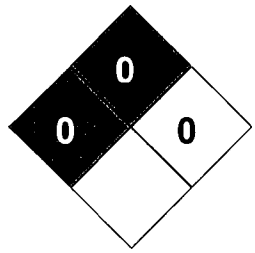
California Prop. 65 Ingredients : This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

Notification status

Europe REACH	: On the inventory, or in compliance with the inventory
United States of America US.TSCA	: On the inventory, or in compliance with the inventory
Canada DSL	: On the inventory, or in compliance with the inventory
Australia AICS	: On the inventory, or in compliance with the inventory
New Zealand NZIoC	: On the inventory, or in compliance with the inventory
Japan ENCS	: On the inventory, or in compliance with the inventory
Korea KECI	: On the inventory, or in compliance with the inventory
Philippines PICCS	: On the inventory, or in compliance with the inventory
China IECSC	: On the inventory, or in compliance with the inventory

16. OTHER INFORMATION

NFPA Classification : Health Hazard: 0
Fire Hazard: 0
Reactivity Hazard: 0



Further information

Legacy MSDS Number : 25950

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this MSDS pertains only to the product as shipped.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LOAEL	Lowest Observed Adverse Effect Level
AICS	Australia, Inventory of Chemical Substances	NFPA	National Fire Protection Agency
DSL	Canada, Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
NDSL	Canada, Non-Domestic Substances List	NTP	National Toxicology Program
CNS	Central Nervous System	NZIoC	New Zealand Inventory of Chemicals
CAS	Chemical Abstract Service	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration	NOEC	No Observed Effect Concentration

EC50	Effective Concentration 50%	OSHA	Occupational Safety & Health Administration
EINECS	European Inventory of Existing Chemical Substances	PEL	Permissible Exposure Limit
MAK	Germany Maximum Concentration Values	PICCS	Philipines Inventory of Commercial Chemical Substances
GHS	Globally Harmonized System	PRNT	Presumed Not Toxic
>=	Greater Than or Equal To	RCRA	Resource Conservation Recovery Act
IC50	Inhibition Concentration 50%	STEL	Short-term Exposure Limit
IARC	International Agency for Research on Cancer	SARA	Superfund Amendments and Reauthorization Act.
IECSC	Inventory of Existing Chemical Substances in China	TLV	Threshold Limit Value
ENCS	Japan, Inventory of Existing and New Chemical Substances	TWA	Time Weighted Average
KECI	Korea, Existing Chemical Inventory	TSCA	Toxic Substance Control Act
<=	Less Than or Equal To	UVCB	Unknown or Variable Compositon, Complex Reaction Products, and Biological Materials
LC50	Lethal Concentration 50%	WHMIS	Workplace Hazardous Materials Information System
LD50	Lethal Dose 50%		

AMBER
CHEMICAL
INCORPORATED

Safety Data Sheet

1 – Product and company identification

Product name CAP

Product number 19 **Effective date** 5/18/2010

Company USA address AMBER CHEMICAL INCORPORATED
5201 BOYLAN STREET
BAKERSFIELD, CA 93308

Telephone (661) 325-2072

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE, ACCIDENT CALL CHEMTREC DAY OR NIGHT 1-800-424-9300.

Product description: Industrial

2 - Hazards identification

Acute health effects
Causes eye irritation. May cause skin irritation. Ingestion may cause irritation. Inhalation may cause irritation of the respiratory tract and mucous membranes.

Chronic health effects
None known.

Signs/symptoms of exposure
Irritation

3 - Composition / information on ingredients

CAS-No.	Name according to EEC	%	Symbols	R-Phrases
Proprietary	Phosphoric Acid Ester Salt	25		
0000057-55-6	Propylene Glycol	,7		

Amounts specified are typical and do not represent a specification. Remaining components are proprietary, non-hazardous, and/or present at amounts below reportable limits.
Notes: No Additional Information

CAP

4 - First aid measures

If irritation or other symptoms (as noted above) occur or persist from any route of exposure, remove the affected individua from the area: see a physician/get medical attention.

Eye contact
Immediately flush eyes with plenty of clean water for an extended time, not less than fifteen (15) minutes. Flush longer if there is any indication of residual chemical in the eye. Ensure adequate flushing of the eyes by separating the eyelids with fingers and roll eyes in a circular motion. If irritation persists, call a physician.

Skin contact
Wash the affected area thoroughly with plenty of water and soap. If irritation develops, call a physician.

Inhalation
If affected, remove to fresh air.

Ingestion
Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse out mouth and have patient drink several glasses of water. Call a physician.

5 - Fire fighting measures

Fire and explosive properties
This product is not known to present any fire hazard.

Extinguishing media

Carbon dioxide, foam, dry chemical, water.

Fire fighting instructions
Wear self-contained breathing apparatus (SCBA) equipped with a full facepiece and operated in a pressure-demand mode (or other positive pressure mode) and approved protective clothing. Personnel without suitable respiratory protection must leave the area to prevent significant exposure to hazardous gases from combustion, burning or decomposition. In an enclosed or poorly ventilated area, wear SCBA during cleanup immediately after a fire as well as during the attack phase of firefighting operations.

Unusual fire/explosion hazards
None known.

6 - Accidental release measures

Containment techniques
Contain spill. If spilled in an enclosed area, ventilate.

Clean-up techniques
Wear proper personal protective clothing and equipment. Do not flush liquid into public sewer, water systems or surface waters. Soak up large spill residue and small spills with an inert absorbent. Place into labeled, closed container; store in safe location to await disposal. Change contaminated clothing and launder before reuse.

Evacuation instructions
Not Applicable

7 - Handling and storage

CAP

Handling
Use under well-ventilated conditions. Wash thoroughly after handling this product. Always wash up before eating, smoking or using the facilities. Avoid eye and skin contact. Avoid inhalation of aerosol, mist, spray, fume or vapor. Avoid drinking, tasting, swallowing or ingesting this product. Provide eyewash fountains and safety showers in the work area.

Storage
Do not store in open, unlabeled or mislabeled containers. Keep container closed when not in use. Store cool and dry, under well-ventilated conditions.

8 - Exposure controls / personal protection

Chemical Name	MAK Value	MEL / OES
Phosphoric Acid Ester Salt	N/E	N/E
Propylene Glycol	N/E	474.00 mg/m3

Notes: No Additional Information

Engineering controls
Always provide effective general and, when necessary, local exhaust ventilation to draw fumes, vapors and/or dust away from workers to prevent routine inhalation. Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in the MSDS.

Eye/face protection
Wear chemical safety goggles or equivalent eye protection.

Skin protection
Wear protective gloves.

Respiratory protection
Wear an approved respirator (e.g., an organic vapor respirator, a full face air purifying respirator for organic vapors, or a self-contained breathing apparatus) whenever exposure to aerosol, mist, spray, fume or vapor exceed the exposure limit (s) of any chemical substance listed in this MSDS.

General protection
No Additional Information

9 - Physical and Chemical Properties

Form	Viscous liquid	**pH**	6.6 - 7.5 (10%)
Appearance	Amber	**% Volatile by weight**	APPROXIMATELY 80%
Odor	Not Available	**Specific gravity**	1.09
Solubility in water	Soluble	**VOC**	Not Available
Evaporation rate	Nil	**Flash point**	>212°F (>100°C)
Vapour pressure	<1	**Boiling Point °F** **Boiling Point °C**	Not Available Not Available
Partition coefficient	Not Available		
Vapour density	> 1	**Explosive range**	**LEL** Not Available **UEL** Not Available
Viscosity	Not Available	**Autoignition temperature**	Not Available

CAP

Melting point Not Available

Notes: Amounts specified are typical and do not represent a specification.

10 - Stability and reactivity

Conditions to avoid
None known.

Incompatibility with other materials
Avoid contact with strong oxidizing agents.

Hazardous decomposition products

Carbon dioxide and carbon monoxide. Oxides of Phosphorous.

Additional reactivity / stability information
None known.

Thermal processing emissions
Not Applicable

11 - Toxicological information

Caution must be exercised through the prudent use of protective equipment and handling procedures to minimize exposure.

Chemical Name	LC50 Inhalation	Species	LD50 Oral	Species	LD50 Skin	Species
Phosphoric Acid Ester Salt	N/E		N/E		N/E	
Propylene Glycol	65.80 ppm (8h)	Rat/ adult	> 21.00 g/kg	Rat/ adult	20.80 g/kg	Rabbit/ adult

Chemical Name	LC50 Inhalation	Species	LD50 Oral	Species	LD50 Skin	Species
Phosphoric Acid Ester Salt	N/E		N/E		N/E	
Propylene Glycol	N/E		22mg/kg	Mouse	N/E	

No toxicity studies have been conducted on this product.

12 - Ecological information

No ecological testing has been conducted on this product.
Freshwater algae: 96 hr EC50 Selenastrum capricornutum--19g/L. Freshwater fish: 96 hr LC50 Oncorhynchus mykiss--51.6g/L. Water flea: 48hr EC50--10g/L. Microtox: 30 min. EC50 Photobacterium phosphoreum--710 mg/L.

Notes: No Additional Information

13 - Disposal information

Liquids cannot be disposed of in a landfill. Dispose of waste at a licensed waste disposal company in accordance with local regulations.

14 - Transportation information

CAP

UN/NA Number:	N/A	**Hazard Class:**	N/A	**IMDG Class:**	N/A
Packing Group:	N/A	**ICAO/IATA Class:**	N/A	**TDG Class:**	N/A
ADR/RID Class:	N/A				

Name of Material: Not regulated - See Bill of Lading for Details

Notes: No Additional Information

15 - Regulatory information

EU Classification:

Categories of Danger: This material is not subject to classification according to European Union Directives 67/548 and its amendments including 92/32/EEC, 1999/45/EC, and 2001/58/EC.

Indication(s) of Danger:

EU R phrases:
Not Applicable

EU S phrases:
Not Applicable

(EINECS / ELINCS):
Compliant

Water hazard classification (Germany):
Not assessed

U.S. Toxic Substances Control Act (TSCA):
All components of this product are either listed on the U.S. Toxic Substances Control Act (TSCA) inventory of chemicals or are otherwise compliant with TSCA regulations.

Canadian Domestic Substance List (DSL):
All components in this product are on the Canadian Domestic Substances List (DSL) or are exempt from listing.

Notes: No Additional Information

16 - Other Information

Risk phrases:

Reason for revision

CAP

Changes in Section(s): Not Applicable

Notes: No Additional Information

Legend:

CAS No:	Chemical Abstract Service Registry Number
COSHH:	Control of Substances Hazardous to Health (United Kingdom)
IARC:	International Agency for Research on Cancer
MAK:	Maximale Arbeitsplatz-Konzentration (Maximum Workplace Concentration) (Germany)
MEL:	Maximum Exposure Limit (COSHH)
N/A:	Not Applicable
N/E:	None Established
OES:	Occupational Exposure Standard (COSHH)
S:	Can be absorbed through the skin
STEL:	Short Term Exposure Limit (COSHH)
TWA:	Time Weighted Average (exposure for 8-hour workday)
IIIA1:	Substances shown to induce malignant tumors in humans
IIIA2:	Substances shown to be clearly carcinogenic only in animal studies but under conditions indicative of carcinogenic potential at the workplace
IIIB:	Substances which are suspected of possessing significant carcinogenic potential which urgently needs further clarification

Users Responsibility/Disclaimer of Liability
The information set forth herein is based on our current knowledge, and is intended to describe the product solely with respect to health, safety and the environment. As such, it must not be interpreted as a guarantee of any specific property of the product. As a result, the customer shall be solely responsible for deciding whether said information is suitable and beneficial.

Safety Data Sheet Preparer:
Health, Safety and Environmental Department
Lubrizol Advanced Materials
9911 Brecksville Road
Cleveland, Ohio 44141 U.S.A.

HASA CHLORINATING GRANULES

Material Safety Data Sheet

Emergency 24 Hour Telephone: CHEMTREC 800 424 9300

Corporate Headquarters: Hasa Inc.
23119 Drayton Street
Saugus, California 91350
Telephone • 661.259.5848
Fax • 661.259.1538

IDENTIFICATION OF PRODUCT	
Product Name:	HASA CHLORINATING GRANULES
Common Chemical Names:	Dry Chlorinating Compound; Granular Chlorinating Compound; DICHLOR; Sodium Dichloroisocyanuric Acid; Dichloroisocyanuric Acid; Sodium Salt; Sodium Dichloro-s-triazinetrione;
Chemical Names of Ingredients:	Sodium dichloroisocyanurate, anhydrous
Chemical Family:	Halogenated triazines
CAS Registry Number:	2893-78-9
Empirical Formula:	$C_3N_3O_3Cl_2Na$

PHYSICAL AND CHEMICAL PROPERTIES			
Vapor Pressure:	Very small. Impossible to measure.	**Flash Point:**	Not Applicable.
Weight/Gallon:	Not Applicable.	**pH:**	6.8-7.1 [1% solution]
Density [liquid]:	Not Applicable.	**Odor:**	Slight Chlorine
Bulk Density:	0.92-0.95 g/ml [57-59 lbs/ft^3]	**Boiling Point:**	Not Applicable.
Melting Point:	225-250°C	**Freezing Point:**	Not Applicable.
Physical State:	Crystalline Solid	**Color:**	White
Solubility in Water:	24.8 g/100 g H_2O at 26.8°C	**Stability:**	Stable

PHYSICAL HAZARDS	
Potential for Fire:	Addition of this product to a dispensing device containing other products or contamination with organic matter, moisture, or other chemicals may cause a violent reaction leading to fire or explosion.
Potential for Explosion:	Addition of this product to a dispensing device containing other products or contamination with organic matter, moisture, or other chemicals may cause a violent reaction leading to fire or explosion.

PHYSICAL HAZARDS	
Reactivity:	Contamination with organic matter, moisture, or other chemicals may start a chemical reaction with the liberation of hazardous gases, including chlorine, nitrogen oxides, and cyanide, and possible generation of fire or explosion.
Extinguishing Media:	Water in excess.
Fire Fighting Procedures:	SCBA plus protective clothing.

HEALTH HAZARDS	
Signs and Symptoms of Exposure:	Eye and skin irritation.
Medical Conditions Aggravated by Exposure:	No data available.
Oral [ingestion] LD_{50}:	No data available.
Dermal [skin absorption] LD_{50}:	500 mg/24H [Mild]
Inhalation [breathing] LC_{50}:	No data available.
Eye Irritation:	Severe 10 mg/24hr
Skin Irritation:	Mild. Not a skin sensitizer.
OSHA PEL:	None Established
ACGIH TLV/TWA:	None Established.

POTENTIAL ROUTE [S] OF ENTRY	
Inhalation [Breathing]:	Dust may cause irritation to upper respiratory tract.
Dermal [Skin]:	Contact with broken skin may cause burning, blistering, and tissue destruction.
Eyes:	Irritating to eyes. Corrosive. May cause permanent eye damage.
Ingestion:	Not anticipated.

CARCINOGENIC [CANCER POTENTIAL] INFORMATION	
National Toxicological Program [NTP] ***Sixth Annual Report on Carcinogens:***	Not listed.
International Agency for Research on Cancer [IARC] Monographs**, V. 1-53, Supps. 1-8**	Not listed.
Listed by Federal OSHA as Carcinogens:	Not listed.

Safe Drinking Water and Toxic Enforcement Act of 1986 **[Proposition 65, California only]:**

Small quantities – less than 100 ppm (parts per million) – of impurities, including bromates, may be found in all chlorinating products, including this product. Bromates are derived from bromides, which are present in sodium chloride (table salt) from which chlorine is manufactured. Additional small quantities of bromates may be generated during the disinfection process. Bromates are known by the State of California to cause cancer when administered by the oral (drinking or ingesting) route Read and follow label directions and use care when handling or using this product. The US Environmental Protection Agency has established a maximum contaminant level (MCL) for bromates in drinking water at 10 ppb (parts per billion). Application of this product in accordance with label directions at use dilution will not exceed this level

This warning is provided pursuant to Proposition 65, the Safe Drinking Water and Toxic Enforcement act of 1986, Chapter 6.6 of the California Health and Safety Code, which requires the Governor of California to publish a list of chemicals "known to the state to cause cancer or reproductive toxicity." This list is compiled in accordance with the procedures established under the proposition, and can be obtained on the internet from California's Office of Environmental Health Hazard Assessment at http://www oehha ca gov There are over 700 chemical substances on this list

GENERAL PRECAUTIONS FOR SAFE USE AND HANDLING
Mix only with water. Do not mix with other chemicals. Use clean, dry utensils when mixing. Do not add this product to any dispensing device containing remnants of other products. A violent reaction or explosion may result when chemicals are mixed. Do not contaminate with moisture, other chemicals, or human wastes.

PERSONAL PROTECTION AND HYGIENE
Wear goggles or face shield and rubber gloves when handling. Avoid breathing dust. Remove and wash contaminated clothing before reuse. Wash hands after handling.

CLEAN-UP OF SPILLS
Granules should be kept in tightly closed container in a cool, dry, ventilated area. Spilled materials should be picked up and placed in a dry container. If granules are contaminated by water or other chemicals, or human waste, place in bucket with lots of clean water. Dissolved granules may be used on-site in pool or spa for disinfection or disposed of in an approved landfill. Small quantities of granules or solution made from granules may be discharged into a sanitary sewer. Granules must be disposed of in accordance with Federal, State, and/or local laws and regulations. Read the label for additional information. Contact HASA, Inc. for guidance.

FIRST AID	
Eye Contact:	Flush with water. Remove contact lenses [if applicable]. Hold eyelids open. Continue flushing with water for 15 minutes. Get prompt medical attention.
Skin Contact:	Brush off any residue. Wash affected area with water for 15 minutes. If irritation persists, get medical attention.
Ingestion [swallowing]:	Feed bread soaked in milk followed by olive oil or other cooking oil. Call a physician immediately.
Inhalation:	Remove to fresh air. Call a physician.

FEDERAL/STATE LISTS/REGISTRATION/S/REPORTING REQUIREMENTS	
CERCLA Hazardous Substance [Section 1010 [4], P.L. 96-510]:	Not listed.
Extremely Hazardous Substance [40 CFR 355, Appendix A]:	Not listed.
Pesticide Product 7 U.S.C. 136 et seq.:	Registered as Pesticide Product by Federal EPA.
Toxic Substance under TSCA:	Not reported.
Pesticide Product [various State Laws]:	Registered as Pesticide Product.

MATERIAL CLASSIFICATION	
OSHA Hazard Communication Standard, Department of Labor, Occupational Safety and Health Division, 29 CFR 1910.1200:	Oxidizer

Hazardous Materials Transportation Regulations, Department of Transportation (Federal) 49 CFR 172.101	
Material Class [Division]: 5.1	Packaging Group: II
UN/NA Number:	2465
Label / Placard:	Oxidizer 5.1
Proper Shipping Name:	Dichloroisocyanuric acid, sodium salt

National Fire Protection Association NFPA 704 [1990]:	2-0-1-OX
BOCA National Fire Prevention Code/National Building Code [1999 editions]:	Oxidizer Class 2: Unstable [reactive] Class 1
Standard Fire Prevention Code/Standard Building Code [1997 editions]:	Oxidizer Class 2: Unstable [reactive] Class 1
Uniform Fire Code/Uniform Building Code [1997 editions]:	Oxidizer Class 2; Unstable [reactive] Class 1
Uniform Fire Code Standards 79-3, Uniform Fire Code, V. II [1997 edition]:	2-0-1-OX

Please Note: The information contained herein, while not guaranteed, was prepared by competent technical personnel and is true and accurate to the best of our knowledge and belief. NO WARRANTY OR GUARANTEE, expressed or implied, is made regarding the product performance, product stability, or as to any other condition of use, handling, transportation, and storage. Customer use, handling, transportation, and storage may involve additional safety and/or performance considerations. Our technical personnel will be happy to respond to questions regarding safe handling, storage, transportation and use procedures. The safe handling, storage, transportation and use procedures remain the sole responsibility of the customer. No suggestions for handling, storage, transportation or use are intended as or to be construed as recommendations which may infringe on any existing patents or violate any Federal, State, and/or local law and/or regulation, ordinance, standard, etc.. This Material Safety Data Sheet has been prepared by HASA, Inc staff from test reports and other information available in the public domain

MATERIAL SAFETY DATA SHEET
LIGNITE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

TRADE NAME: LIGNITE

APPLICATIONS: Oil well drilling fluid additive. Dispersant

EMERGENCY TELEPHONE: 281-561-1600

SUPPLIER: Supplied by a Business Unit of
M-I L.L.C.
P.O. Box 42842, Houston, Texas 77242-2842
See cover sheet for local supplier.

TELEPHONE: 281-561-1509
FAX: 281-561-7240

CONTACT PERSON: Sam Hoskin - Manager, Occupational Health

2. COMPOSITION, INFORMATION ON INGREDIENTS

INGREDIENT NAME:	CAS No.:	CONTENTS :	EPA RQ:	TPQ:
Silica, crystalline, quartz	14808-60-7	0-5 %		
Lignite	1415-93-6	95-100 %		

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

CAUTION! MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION. Avoid contact with eyes, skin and clothing. Avoid breathing airborne product. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

This product is a/an black powder. May form explosive dust-air mixtures. Slippery when wet.

ACUTE EFFECTS:

HEALTH HAZARDS, GENERAL:

Particulates may cause mechanical irritation to the eyes, nose, throat and lungs. Particulate inhalation may lead to pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma. Dermatitis and asthma may result from short contact periods.

INHALATION: May be irritating to the respiratory tract if inhaled.

INGESTION: May cause gastric distress, nausea and vomiting if ingested.

SKIN: May be irritating to the skin.

EYES: May be irritating to the eyes.

CHRONIC EFFECTS:

CARCINOGENICITY:
IARC: Not listed. OSHA: Not regulated. NTP: Not listed.

ATTENTION! CANCER HAZARD. CONTAINS CRYSTALLINE SILICA WHICH CAN CAUSE CANCER. Risk of cancer depends on duration and level of exposure.

IARC Monographs, Vol. 68, 1997, concludes that there is sufficient evidence that inhaled crystalline silica in the form of quartz or cristobalite from occupational sources causes cancer in humans. IARC classification Group 1.

ROUTE OF ENTRY:
Inhalation. Skin and/or eye contact.

TARGET ORGANS:
Respiratory system, lungs. Skin. Eyes.

4. FIRST AID MEASURES

GENERAL: Persons seeking medical attention should carry a copy of this MSDS with them.

INHALATION: Move the exposed person to fresh air at once. Perform artificial respiration if breathing has stopped. Get medical attention.

INGESTION: Drink a couple of glasses water or milk. Do NOT induce vomiting unless directed to do so by a physician. Never give anything by mouth to an unconscious person. Get medical attention.

SKIN: Wash skin thoroughly with soap and water. Remove contaminated clothing. Get medical attention if any discomfort continues.

EYES: Promptly wash eyes with lots of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

5. FIRE FIGHTING MEASURES

FLASH POINT (?F):	309	METHOD: PM Closed cup.
AUTO IGNITION TEMP. (?F):	N/D	
FLAMMABILITY LIMIT - LOWER(%):	N/D	
FLAMMABILITY LIMIT - UPPER(%):	N/D	

EXTINGUISHING MEDIA:
Carbon dioxide (CO2). Dry chemicals. Foam. Water spray, fog or mist.

SPECIAL FIRE FIGHTING PROCEDURES:
No specific fire fighting procedure given.

UNUSUAL FIRE & EXPLOSION HAZARDS:
Dust in high concentrations may form explosive mixtures with air.

HAZARDOUS COMBUSTION PRODUCTS:
Irritating gases/vapors/fumes. Oxides of: Carbon.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:
Wear proper personal protective equipment (see MSDS Section 8).

SPILL CLEAN-UP PROCEDURES:
Avoid generating and spreading of dust. Shovel into dry containers. Cover and move the containers. Flush the area with water. Do not contaminate drainage or waterways. Repackage or recycle if possible.

7. HANDLING AND STORAGE

HANDLING PRECAUTIONS:

Avoid handling causing generation of dust. Wear full protective clothing for prolonged exposure and/or high concentrations. Eye wash and emergency shower must be available at the work place. Wash hands often and change clothing when needed. Provide good ventilation. Mechanical ventilation or local exhaust ventilation is required.

STORAGE PRECAUTIONS:

Store at moderate temperatures in dry, well ventilated area. Keep in original container.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

		OSHA PEL:		ACGIH TLV:		OTHER:		
INGREDIENT NAME:	**CAS No.:**	**TWA:**	**STEL:**	**TWA:**	**STEL:**	**TWA:**	**STEL:**	**UNITS:**
Silica, crystalline, quartz	14808-60-7	*		0.1				mg/m3 resp.dust
Lignite	1415-93-6	*		2 *				mg/m3 resp.dust

INGREDIENT COMMENTS:

* OSHA PELs for Mineral Dusts containing crystalline silica are 10 mg/m3 / (%SiO2+2) for quartz and 1/2 the calculated quartz value for cristobalite and tridymite.

PROTECTIVE EQUIPMENT:

ENGINEERING CONTROLS:

Use appropriate engineering controls such as, exhaust ventilation and process enclosure, to reduce air contamination and keep worker exposure below the applicable limits.

VENTILATION: Supply natural or mechanical ventilation adequate to exhaust airborne product and keep exposures below the applicable limits.

RESPIRATORS: Use at least a NIOSH-approved N95 half-mask disposable or reuseable particulate respirator. In work environments containing oil mist/aerosol use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator. For exposures exceeding 10 x PEL use a NIOSH-approved N100 Particulate Respirator.

PROTECTIVE GLOVES:

Use suitable protective gloves if risk of skin contact.

EYE PROTECTION:

Wear dust resistant safety goggles where there is danger of eye contact.

PROTECTIVE CLOTHING:

Wear appropriate clothing to prevent repeated or prolonged skin contact.

HYGIENIC WORK PRACTICES:

Wash promptly with soap and water if skin becomes contaminated. Change work clothing daily if there is any possibility of contamination.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE/PHYSICAL STATE: Powder, dust.

COLOR:	Black.	
ODOR:	Earthy.	
SOLUBILITY DESCRIPTION:	Insoluble in water.	
DENSITY/SPECIFIC GRAVITY (g/ml):	1.6 - 1.8	TEMPERATURE (?F): 68
BULK DENSITY:	40 lb/ft3; 641 kg/m3	
VAPOR DENSITY (air=1):	N/D	
pH-VALUE, DILUTED SOLUTION:	4.5	CONCENTRATION (%,M): 1%

10. STABILITY AND REACTIVITY

STABILITY: Normally stable.

CONDITIONS TO AVOID:
Avoid heat.

HAZARDOUS POLYMERIZATION:
Will not polymerize.

POLYMERIZATION DESCRIPTION:
Not relevant.

MATERIALS TO AVOID:
N/D

HAZARDOUS DECOMPOSITION PRODUCTS:
No specific hazardous decomposition products noted.

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION:
No toxicological data is available for this product.

12. ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION:
Contact M-I Environmental Affairs for ecological information.

13. DISPOSAL CONSIDERATIONS

WASTE MANAGEMENT:
This product does not meet the criteria of a hazardous waste if discarded in its purchased form. Under RCRA, it is the responsibility of the user of the product to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous.
Empty containers retain residues. All labeled precautions must be observed.

DISPOSAL METHODS:
Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that containers are empty by RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

PRODUCT RQ: N/A

U.S. DOT:
U.S. DOT CLASS: Not regulated.

CANADIAN TRANSPORT:
TDGR CLASS: Not regulated.

SEA TRANSPORT:
IMDG CLASS: Not regulated.

AIR TRANSPORT:
ICAO CLASS: Not regulated.

15. REGULATORY INFORMATION

REGULATORY STATUS OF INGREDIENTS:

NAME:	CAS No:	TSCA:	CERCLA:	SARA 302:	SARA 313:	DSL(CAN):
Silica, crystalline, quartz	14808-60-7	Yes	No	No	No	Yes
Lignite	1415-93-6	Yes	No	No	No	Yes

US FEDERAL REGULATIONS:
WASTE CLASSIFICATION: Not a hazardous waste by U.S. RCRA criteria. See Section 13.

REGULATORY STATUS: This Product or its components, if a mixture, is subject to following regulations (Not meant to be all inclusive - selected regulations represented):

SECTION 313: This product does not contain toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372.

SARA 311 Categories:
1: Immediate (Acute) Health Effects.
2. Delayed (Chronic) Health Effects.
The components of this product are listed on or are exempt from the following international chemical registries:

TSCA (U.S.)
DSL (Canada)

STATE REGULATIONS:
STATE REGULATORY STATUS: This product or its components, if a mixture, is subject to following regulations (Not meant to be all inclusive - selected regulations represented):.
Pennsylvania Right-to-Know.
Illinois Right-to-Know.
New Jersey Right-to-Know.

PROPOSITION 65: This product contains the following chemical(s) considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer or reproductive toxicity, and for which warnings are now required:
Silica, crystalline

CANADIAN REGULATIONS:

10612 - LIGNITE

LABELS FOR SUPPLY:

REGULATORY STATUS: This Material Safety Data Sheet has been prepared in compilance with the Controled Product Regulations.

Canadian WHMIS Classification: D2A - Other Toxic Effects: Very Toxic Material

16. OTHER INFORMATION

NPCA HMIS HAZARD INDEX: * 1 Slight Hazard
FLAMMABILITY: 2 Moderate Hazard
REACTIVITY: 0 Minimal Hazard
NPCA HMIS PERS. PROTECT. INDEX: E - Safety Glasses, Gloves, Dust Respirator

USER NOTES: N/A = Not applicable N/D = Not determined

INFORMATION SOURCES: OSHA Permissible Exposure Limits, 29 CFR 1910, Subpart Z, Section 1910.1000, Air Contaminants.
ACGIH Threshold Limit Values and Biological Exposure Indices for Chemical Substances and Physical Agents (latest edition).
Sax's Dangerous Properties of Industrial Materials, 9th ed., Lewis, R.J. Sr., (ed.), VNR, New York, New York, (1997).
IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Silica, Some Silicates, Coal Dust, and para-Aramid Fibrils, Vol. 68, World Health Organization, Lyon, France, 1997.
Product information provided by the commercial vendor(s).

PREPARED BY: Sam Hoskin/bb

REVISION No./Repl. MSDS of: 2/May 18, 1999

MSDS STATUS: Approved.

DATE: February 5, 2002

MATERIAL SAFETY DATA SHEET
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C O S

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE, ACCIDENT CALL CHEMTREC-DAY OR NIGHT 1-800-424-9300.

MSDS Date: December 10, 2008

SECTION I

PRODUCT NAME: COS
SYNONYMS: Ammonium Hydrogen Sulfite Solution
CHEMICAL NAME: Ammonium Bisulfite Solution **CHEMICAL FAMILY:** Bisulfite

DOT SHIPPING INFORMATION: Bisulfites, Inorganic, Aqueous Solution, 8, UN 2693, PG III RQ = 5000 lbs

SECTION II - HAZARDOUS INGREDIENTS

HAZARDOUS MATERIAL	CAS NUMBER	%	EXPOSURE LIMITS IN AIR
Ammonium Bisulfite	10192-30-0	---	None known

SECTION III - HEALTH HAZARD DATA

NFPA HAZARDOUS RATING: Health = Flammability = Reactivity =

Carcinogenic Listing:

NTP	IARC MONOGRAPHS	OSHA 29 CFR 1910
yes [X] no	yes [X] no	yes [X] no

ENTRY ROUTES & EFFECTS OF OVEREXPOSURE:

Contact: Can cause irritation and burns to skin and eyes.

Ingestion: Can cause irritation and burns to the gastrointestinal tract.

AMBER CHEMICAL INC. 5201 BOYLAN STREET, BAKERSFIELD, CA 93308
(661) 325-2072

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PRODUCT NAME: COS

SECTION III - HEALTH HAZARD DATA (Cont'd)

STATEMENT OF PRACTICAL TREATMENT:

Contact: Flush exposed area thoroughly with water. For eyes, flush with cool water for at least 15 minutes and obtain prompt medical attention.

Ingestion: If conscious, give several glasses of water or milk and call a physician immediately. Do not induce vomiting.

SECTION IV - FIRE AND EXPLOSION DATA

FLASH POINT: nonflammable

FLAMMABLE LIMITS:
Lel: N/A Uel: N/A

EXTINGUISHING MEDIA:
Use any.

SPECIAL FIRE-FIGHTING PROCEDURES:
None.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
None.

SECTION V - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:
None required.

VENTILATION:
Maintain adequate ventilation.

EYE PROTECTION:
Chemical splash goggles.

SKIN PROTECTION:
Rubber gloves.

OTHER PROTECTIVE EQUIPMENT:
As needed to prevent contact with the liquid.

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PRODUCT NAME: COS

SECTION VI - SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:
Do not let the product come in contact with skin or eyes. Do not take internally.

SECTION VII - PHYSICAL DATA

BOILING POINT: Unknown **SPECIFIC GRAVITY:** 1.38

VAPOR PRESSURE (mm Hg): essentially water **% VOLATILE, BY VOLUME:** abt 30%

VAPOR DENSITY (air = 1): essentially water **EVAPORATION RATE:** Unknown

SOLUBILITY IN WATER: Complete

APPEARANCE AND ODOR: Clear, pale yellow solution with sulfur dioxide odor.

SECTION VIII - REACTIVITY DATA

STABILITY:
|x| Stable | | Unstable

HAZARDOUS POLYMERIZATION:
|x| Will not occur | | Will occur

CONDITIONS OR MATERIALS TO AVOID:
Avoid contact with acids.

HAZARDOUS DECOMPOSITION PRODUCTS:
Contact with acids will release sulfur dioxide.

SECTION IX - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL SPILLS OR LEAKS:
Wear safety equipment. For small spills, absorb on sand or other non-combustible absorbent , and sweep into drums. For larger spills, dike the spill and put the material into drums. Flush residue to the drain with plenty of water.

WASTE DISPOSAL METHOD:
Dispose of in landfill or other suitable disposal site. Comply with all local, state and federal regulations.

MATERIAL SAFETY DATA SHEET
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PRODUCT NAME: COS

ACGIH = American Conference of Governmental Industrial Hygienists
CL = Ceiling Level
IARC = International Agency for Research on Cancer: Monographs
OSHA = Occupational Safety and Health Administration
N/A = Not Applicable
NTP = National Toxicology Program: Annual Report on Carcinogens
PEL = Permissible Exposure Level (OSHA)
TLV = Threshold Limit Value (ACGIH)
TWA = Time Weighted Average over 8 Hours

This information is, to the best of our knowledge, accurate but may not be complete. AMBER CHEMICAL furnishes this information in good faith, but without warranty, representation or guarantee of its accuracy, completeness, or reliability.

SDS no. 10190
Version 10
Revision date 20/Oct/2015
Supersedes date 21/Jul/2014

Safety Data Sheet
POLYPAC† R

1. Identification

1.1 Product identifier

Product name POLYPAC† R

Product code 10190

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Drilling fluid additive. Fluid loss reducer.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

M-I SWACO, A Schlumberger Company
200 - 125, 9th Avenue SE
Calgary, Alberta T2G 0P6, Canada
Telephone: 1-780-962-8221

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Bethicia Prasek

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards	
Combustible dust	-

2.2 Label elements

Signal word
WARNING

Hazard statements
May form combustible dust concentrations in air

Precautionary statements
P240 - Ground/bond container and receiving equipment
P243 - Take precautionary measures against static discharge

P241 - Use explosion-proof electrical/ ventilating/ lighting/ equipment

Unknown acute toxicity Not Applicable.

3. Composition/information on Ingredients

3.1 Substances

Component	CAS-No	Weight % - range
Carboxymethylcellulose sodium salt	9004-32-4	60-100

3.2 Mixtures

Not Applicable

Comments
No Comments

4. First aid measures

4.1 First-Aid Measures

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Ingestion Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

Skin contact Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.

Eye contact Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

General advice	The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.
Main symptoms	
Inhalation	Please see Section 11. Toxicological Information for further information.
Ingestion	Please see Section 11. Toxicological Information for further information.
Skin contact	Please see Section 11. Toxicological Information for further information.
Eye contact	Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
Suspended dust may present a dust explosion hazard.

Hazardous combustion products
Carbon oxides (COx).

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Evacuate personnel to safe areas. Use personal protective equipment. See also section 8. If spilled, take caution, as material can cause surfaces to become very slippery.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water. Material becomes slippery when wet. Use caution if wet.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation.

Hygiene measures
Use good work and personal hygiene practices to avoid exposure. Do not eat, drink or smoke when using this product.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions — Ensure adequate ventilation. Provide appropriate exhaust ventilation at places where dust is formed. Keep airborne concentrations below exposure limits.

Storage precautions — Keep away from open flames, hot surfaces and sources of ignition. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls/personal protection

8.1 Control parameters

Exposure limits — **Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m³ (Inhalable); 3 mg/m³ (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m³ (Total); 5 mg/m³ (Respirable).**

Component	ACGIH TLV	OSHA PEL
Carboxymethylcellulose sodium salt 9004-32-4 (60-100)	Not Determined	Not Determined

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection — Safety glasses with side-shields.
Hand protection — Wear chemical resistant gloves such as nitrile or neoprene.

Respiratory protection	All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent. If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator. If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.
Skin and body protection	Wear suitable protective clothing.
Hygiene measures	Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid powder
Appearance	Opaque
Color	Off-white - Tan
Odor	Mild Odorless
Odor threshold	Not applicable

Property	Values	Remarks
pH	No information available	
pH @ dilution	6.5-8.0 @ 1% in H2O	
Melting/freezing point	No information available	
Boiling point/range	No information available	
Flash point	Does not flash	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	0 mmHg	
Vapor density	Not applicable	
Specific gravity	1.5 - 1.6	
Bulk density	No information available	
Water solubility	Gels on contact with water	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	Not determined	

Explosive properties	Suspended dust may present a dust explosion hazard
Oxidizing properties	None known.

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	None
Density	No information available

10. Stability and reactivity

10.1 Reactivity

Dust may form explosive mixture in air.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
None known.

10.4 Conditions to avoid

Heat, flames and sparks.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Carbon oxides (COx).

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation — Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.

Eye contact — Dust may cause mechanical irritation.

Skin contact — Repeated exposure may cause skin dryness or cracking.

Ingestion — Irritant; may cause pain or discomfort to mouth, throat and stomach.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Carboxymethylcellulose sodium salt	= 27000 mg/kg (Rat)	> 2 g/kg (Rabbit)	> 5800 mg/m³ (Rat) 4 h

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Carboxymethylcellulose sodium salt	No data available	No data available	No data available	No data available

Sensitization — This product does not contain any components suspected to be sensitizing.

Mutagenic effects — This substance has no evidence of mutagenic properties.

Carcinogenicity — This substance has no evidence of carcinogenic properties.

Reproductive toxicity	None known.
Developmental toxicity	Not known to cause birth defects or have a deleterious effect on a developing fetus.
Routes of exposure	Inhalation. Skin contact. Eye contact.
Routes of entry	Inhalation.
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.
Aspiration hazard	Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Carboxymethylcellulose sodium salt	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating or toxic (PBT)
This substance is not considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known. Check for additional information in sect. 7.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method Disposal should be made in accordance with federal, state and local regulations.

Contaminated packaging Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

UN No. (DOT)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

The product is not covered by international regulation on the transport of dangerous goods

14.3 Hazard class(es)

DOT Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

No

14.6 Special precautions

Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies
European Union (EINECS and ELINCS)	Complies
Philippines (PICCS)	Complies
Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Not a SARA 311/312 hazard.

SARA 302/304, 313, CERCLA RQ, California Proposition 65
Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Carboxymethylcellulose sodium salt	N/A	N/A	N/A

State Comments
Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

Canadian Classification

This Safety Data Sheet has been prepared in compliance with the Hazardous Products Regulations.

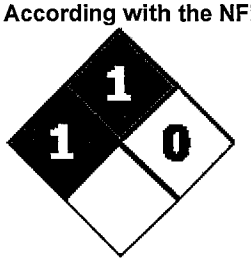
16. Other information

Supersedes date	21/Jul/2014
Revision date	20/Oct/2015
Version	10
The following sections have been revised:	1, 2, 3, 8, 9, 10, 11, 14, 15, 16.

HMIS classification

Health	1
Flammability	1
Physical hazard	0

According with the NFPA 704/STPS 018



N/A - Not Applicable, N/D - Not Determined.

†A mark of M-I L.L.C.

Disclaimer

The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

SDS no. 10780
Version 5
Revision date 14/Jul/2015
Supersedes date 29/Sep/2014

A Schlumberger Company

Safety Data Sheet
GELITE†

1. Identification

1.1 Product identifier

Product name GELITE†

Product code 10780

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Drilling fluid additive.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Bethicia Prasek

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards

Carcinogenicity	Category 1A

Environmental hazards Not classified

Physical Hazards Not classified

2.2 Label elements

Signal word
DANGER

Hazard statements
H350 - May cause cancer

Precautionary statements
P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P281 - Use personal protective equipment as required
P308 + P313 - IF exposed or concerned: Get medical advice/ attention
P501 - Dispose of contents/ container to an approved waste disposal plant

Unknown acute toxicity 0% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Component	CAS-No	Weight % - range
Silica, crystalline, quartz	14808-60-7	1 - 5

Comments
The product contains other ingredients which do not contribute to the overall classification.

4. First aid measures

4.1 First-Aid Measures

Inhalation Move to fresh air. If breathing is difficult, (trained personnel should) give oxygen. Get medical attention immediately if symptoms occur.

Ingestion Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

Skin contact Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if irritation persists.

Eye contact Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

Main symptoms

Inhalation	Please see Section 11. Toxicological Information for further information.
Ingestion	Please see Section 11. Toxicological Information for further information.
Skin contact	Please see Section 11. Toxicological Information for further information.
Eye contact	Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
None known.

Hazardous combustion products
Silicon oxide.

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear suitable protective equipment. Evacuate personnel to safe areas. Prevent further leakage or spillage if safe to do so. Avoid dust formation.

6.2 Environmental precautions

Do not allow material to contaminate ground water system.

Environmental exposure controls
No information available.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Cover powder spill with plastic sheet or tarp to minimize spreading.

Methods for cleaning up
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).

6.4 Reference to other sections

No information available.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Avoid breathing dust; if exposed to high dust concentration, leave area immediately. Avoid contact with skin, eyes and clothing.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation. Avoid dust formation.

Storage precautions Protect from moisture Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

8. Exposure controls/personal protection

8.1 Control parameters

Component Information

Component	ACGIH TLV	OSHA PEL
Silica, crystalline, quartz	0.025 mg/m³	see Table Z-3

Silica, crystalline, quartz
OSHA - Final PELs - Table Z-3 Mineral Dusts
(30)/(%SiO2 + 2) mg/m³ TWA, total dust; (250)/(%SiO2 + 5) mppcf TWA, respirable fraction; (10)/(%SiO2 + 2) mg/m³ TWA, respirable fraction

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye protection Tightly fitting safety goggles.

Hand protection Wear chemical resistant gloves such as nitrile or neoprene.

Respiratory protection All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne particles of this product use at least a NIOSH-approved N95 half-mask disposable or re-useable particulate respirator. In work environments containing oil mist/aerosol use at least a NIOSH-approved P95 half-mask disposable or re-useable particulate respirator.

Skin and body protection Wear suitable protective clothing and gloves.

Hygiene measures	Exercise reasonable care and cleanliness, Wash hands before breaks and immediately after handling the product.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid
Appearance	Opaque
Color	White
Odor	Odorless
Odor threshold	Not applicable

Property	Values	Remarks
pH	Not applicable	
pH @ dilution		
Melting/freezing point		
Boiling point/range	No information available	
Flash point	No information available	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	2.0 - 2.4	
Bulk density	No information available	
Water solubility	Insoluble in water	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	No information available
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable. Hazardous polymerization does not occur.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
None known.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

Hydrofluoric acid (HF).

10.6 Hazardous decomposition products

Silicon oxide.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation — Inhalation of dust in high concentration may cause irritation of respiratory system. Repeated or prolonged inhalation of crystalline silica dust can cause delayed lung injury, and other diseases, including silicosis and lung cancer.

Eye contact — Dust contact with the eyes can lead to mechanical irritation.

Skin contact — Repeated exposure may cause skin dryness or cracking.

Ingestion — Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Silica, crystalline, quartz	= 500 mg/kg (Rat)	No data available	No data available

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Silica, crystalline, quartz	Group 1; Monograph 100C [in preparation] Group 1; Monograph 68 [1997] Monograph 100C [in preparation] (listed under Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources); Monograph 68 [1997]	A2 Suspected Human Carcinogen	Present	Known Human Carcinogen

Sensitization — This product does not contain any components suspected to be sensitizing.

Mutagenic effects — No evidence of mutagenic properties.

Carcinogenicity — Contains a known or suspected carcinogen. Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled.

Reproductive toxicity	No evidence of toxicity to reproduction.
Developmental toxicity	Not known to cause birth defects or have a deleterious effect on a developing fetus.
Routes of exposure	Skin contact. Inhalation. Eye contact.
Routes of entry	Inhalation.
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.
Target organ effects	Respiratory system. Lungs.
Aspiration hazard	Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Silica, crystalline, quartz 14808-60-7 (1 - 5)	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No product level data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

UN No. (DOT)	Not regulated
UN No. (TDG)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

The product is not covered by international regulation on the transport of dangerous goods

14.3 Hazard class(es)

DOT Hazard class	Not regulated
TDG Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
TDG Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

Marine pollutant	No

14.6 Special precautions

Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Does not Comply
European Union (EINECS and ELINCS)	Complies
Philippines (PICCS)	Does not Comply
Japan (ENCS)	Does not Comply
China (IECSC)	Complies

Australia (AICS)	Does not Comply
Korean (KECL)	Does not Comply
New Zealand (NZIoC)	Complies

IMPORTS, Canada
Any import of the product to Canada is restricted or requires an appropriate notification.

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Delayed (chronic) health hazard.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Silica, crystalline, quartz	N/A	N/A	N/A

State Comments
Proposition 65: This product contains chemical(s) considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 to cause cancer and/or reproductive toxicity. See table under U.S. Federal and State Regulations for the specific chemicals.

Silica, crystalline, quartz
carcinogen

Canadian Classification

This product may not be distributed or used in Canada.

16. Other information

Supersedes date	29/Sep/2014
Revision date	14/Jul/2015
Version	5
The following sections have been revised:	All sections. Updated according to GHS/CLP.

HMIS classification

Health	1*
Flammability	0
Physical hazard	0
PPE	E

N/A - Not Applicable, N/D - Not Determined.

Disclaimer
The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

SDS no. 13357
Version 2
Revision date 02/Feb/2015
Supersedes date 12/May/2011

Safety Data Sheet
G-SEAL† PLUS COARSE

1. Identification

1.1 Product identifier

Product name G-SEAL† PLUS COARSE

Product code 13357

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Drilling fluid additive.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Mike McDowell

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

(Bad file name)

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards
Combustible dust

2.2 Label elements

Signal word
WARNING

Hazard statements
May form combustible dust concentrations in air

Precautionary statements

P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical/ ventilating/ lighting/ equipment
P243 - Take precautionary measures against static discharge

Unknown acute toxicity 0% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Component	CAS-No	Weight % - range
Coke, petroleum, calcined	64743-05-1	60 - 100
Graphite	7782-42-5	10 - 30

Comments
The product contains other ingredients which do not contribute to the overall classification.

4. First aid measures

4.1 First-Aid Measures

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Ingestion Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

Skin contact Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.

Eye contact Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

Main symptoms

Inhalation Please see Section 11. Toxicological Information for further information.

Ingestion Please see Section 11. Toxicological Information for further information.

Skin contact Please see Section 11. Toxicological Information for further information.

Eye contact Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
Suspended dust may present a dust explosion hazard.

Hazardous combustion products
Carbon oxides (COx).

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Suspended dust may present a dust explosion hazard. Evacuate non-essential personnel. Use personal protective equipment identified in Section 8. Avoid dust formation. Do not breathe dust.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so. Cover powder spill with plastic sheet or tarp to minimize spreading.

Methods for cleaning up
Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Keep away from open flames, hot surfaces and sources of ignition. Avoid contact with skin and eyes. Avoid dust formation.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation. Provide appropriate exhaust ventilation at places where dust is formed. Keep airborne concentrations below exposure limits.

Storage precautions Keep away from open flames, hot surfaces and sources of ignition. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls/personal protection

8.1 Control parameters

Component	ACGIH TLV	OSHA PEL
Coke, petroleum, calcined	Not Determined	Not Determined
Graphite	2 mg/m³ (respirable fraction) (all forms except graphite fibers)	15 mppcf, Table Z-3

Graphite
OSHA - Final PELs - Table Z-3 Mineral Dusts
15 mppcf TWA (natural)

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection Tightly fitting safety goggles.

Hand protection Repeated or prolonged contact:, Use protective gloves made of:, Nitrile, Neoprene gloves.

Respiratory protection All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator. If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.

Skin and body protection Wear suitable protective clothing.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid powder
Appearance	Opaque
Color	Black - Gray
Odor	Odorless
Odor threshold	Not applicable

Property	Values	Remarks
pH		
pH @ dilution		
Melting/freezing point		
Boiling point/range	No information available	
Flash point	Does not flash	
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	0 mmHg	
Vapor density	Not applicable	
Specific gravity	2.1 @20°C	
Bulk density	No information available	
Water solubility	Insoluble in water	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	No information available	
Explosive properties	Not Applicable	
Oxidizing properties	None known.	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	None
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
Hazardous polymerization does not occur.

10.4 Conditions to avoid

Heat, flames and sparks.

10.5 Incompatible materials

Strong oxidizing agents. Acids. Bases. Sodium sulfide. Chlorinated paraffins.

10.6 Hazardous decomposition products

Carbon oxides (COx).

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.

Eye contact Dust may cause mechanical irritation.

Skin contact Repeated exposure may cause skin dryness or cracking.

Ingestion Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Coke, petroleum, calcined	No data available	No data available	No data available
Graphite	No data available	No data available	No data available

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Coke, petroleum, calcined	No data available	No data available	No data available	No data available
Graphite	No data available	No data available	No data available	No data available

Sensitization This product does not contain any components suspected to be sensitizing.

Mutagenic effects This substance has no evidence of mutagenic properties.

Carcinogenicity This substance has no evidence of carcinogenic properties.

Reproductive toxicity None known.

Developmental toxicity Not known to cause birth defects or have a deleterious effect on a developing fetus.

Routes of exposure Inhalation. Skin contact. Eye contact.

Routes of entry No route of entry noted.

Specific target organ toxicity (single exposure) Not classified

Specific target organ toxicity (repeated exposure) Not classified.

Neurological effects	None known.
Target organ effects	None known.
Aspiration hazard	Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Coke, petroleum, calcined 64743-05-1 (60 - 100)	No information available	No information available	No information available
Graphite 7782-42-5 (10 - 30)	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

Not regulated

UN No. (DOT)	Not regulated
UN No. (TDG)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

Not regulated for transportation by DOT, TDG, IMDG and ICAO/IATA.

14.3 Hazard class(es)

DOT Hazard class	Not regulated
TDG Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
TDG Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

Marine pollutant	No

14.6 Special precautions

Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies
European Union (EINECS and ELINCS)	Complies
Philippines (PICCS)	Does not Comply
Japan (ENCS)	Does not Comply
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

-

SARA 311/312 Hazard Categories
Not a SARA 311/312 hazard.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Coke, petroleum, calcined	N/A	N/A	N/A
Graphite	N/A	N/A	N/A

State Comments
Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

16. Other information

Supersedes date	12/May/2011
Revision date	02/Feb/2015
Version	2
The following sections have been revised	All sections. Updated according to GHS/CLP.

HMIS classification

Health	1
Flammability	1
Physical hazard	0
PPE	E

N/A - Not Applicable, N/D - Not Determined.

†A mark of M-I L.L.C.

Disclaimer
The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

Material Safety Data Sheet

GEO Drilling Fluids, Inc.
1431 Union Ave.
Bakersfield, CA 93305
Phone: (661) 325 5919; email: geodf@geodf.com

Date of Revision: 3/2005 **GEO ZAN**

Section 1 - Chemical Product and Company Identification

Product/Chemical Name: GEO ZAN, Xanthan Gum
Chemical Formula:
CAS Number: 11138-66-2
Other Designations:
Derivation:
General Use:
Emergency Telephone: 1-800-424-9300 (Chemtrec)

Section 2 - Composition / Information on Ingredients

Ingredient Name	CAS Number	EINECS/ELINCS	% wt *or* % vol
Xanthan Gum	11138-66-2	234-394-2	98.0 - 100

Trace Impurities:

	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH
Ingredient	**TWA**	**STEL**	**TWA**	**STEL**	**TWA**	**STEL**	**IDLH**
Xanthan Gum	10 mg/m^3	none estab.	15 mg/m^3	none estab.	none estab.	none estab.	none estab.

Section 3 - Hazards Identification

Emergency Overview

This material can form dust that may cause skin or mucous membrane irritation. Symptoms may include redness, burning, and swelling. Although they may cause respiratory tract irritation, nuisance dusts do not form scar tissue or affect the structure of air spaces in the lungs. Their effects on the tissues are potentially reversible.

HMIS	
H	1
F	0
R	0
PPE†	
†Sec. 8	

Potential Health Effects

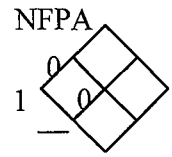
Primary Entry Routes: Inhalation, Skin contact, Eye contact.
Target Organs: none
Acute Effects
Inhalation: This material is a dust or may produce dust. Breathing small amounts of this material is not likely to be harmful.
Eye: Dust can cause eye irritation. Symptoms include stinging, tearing, redness, and swelling of eyes.
Skin: Unlikely to cause skin irritation or injury.
Ingestion: Swallowing this material is not likely to be harmful.
Carcinogenicity: IARC, NTP, and OSHA do not list Xanthan Gum as a carcinogen.
Medical Conditions Aggravated by Long-Term Exposure: None known.
Chronic Effects: None known.

Section 4 - First Aid Measures

Inhalation: If symptoms develop, move individual away from exposure and into fresh air. If symptoms persist, seek medical attention. If breathing is difficult, administer oxygen. Keep person warm and quiet; seek immediate medical attention.
Eye Contact: If symptoms develop, immediately move individual away from exposure and into fresh air. Flush eyes gently with water for at least 15 minutes while holding eyelids apart; seek immediate medical attention.
Skin Contact: First aid is not normally required. However, it is recommended that exposed areas be cleaned by washing with soap and water.
Ingestion: First aid is not normally required. If symptoms develop, seek medical attention.
After first aid, get appropriate in-plant, paramedic, or community medical support.
Note to Physicians:

Special Precautions/Procedures:

Section 5 - Fire-Fighting Measures



Flash Point: N/A
Flash Point Method: N/A
Autoignition Temperature: N/A
LEL: N/A
UEL: N/A
Flammability Classification:
Extinguishing Media: regular foam, water fog, carbon dioxide, sand.
Unusual Fire or Explosion Hazards: Organic dusts can form explosive mixtures in air.
Hazardous Combustion Products: May form: carbon dioxide and carbon monoxide.
Fire-Fighting Instructions: Do not release runoff from fire control methods to sewers or waterways.
Fire-Fighting Equipment: Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode.

Section 6 - Accidental Release Measures

Spill /Leak Procedures:
Small Spills: Sweep up material for disposal or recovery.
Large Spills
Containment: For large spills, dike far ahead of spill for later disposal. Shovel material into containers. Do not release into sewers or waterways.
Cleanup: Thoroughly sweep area of spill to clean up any residual material.
Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Use good personal hygiene practices. All hazard precautions given in the data sheet must be observed.
Storage Requirements: Store in a cool, dry place at 75 °F or lower.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls:
Ventilation: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.
Administrative Controls:
Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.
Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.
Safety Stations: Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.
Contaminated Equipment: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.
Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Section 9 - Physical and Chemical Properties

Physical State: solid
Appearance and Odor: beige powder/bland odor
Odor Threshold:
Vapor Pressure:
Vapor Density (Air=1):
Formula Weight:
Density:
Specific Gravity (H_2O=1, at 4 °C): 1.5 @ 77 °F
pH: no data
Water Solubility: soluble
Other Solubilities:
Boiling Point: no data
Freezing/Melting Point: no data
Viscosity: no data
Refractive Index:
Surface Tension:
% Volatile:
Evaporation Rate:

Section 10 - Stability and Reactivity

Stability: Xanthan Gum is stable at room temperature in closed containers under normal storage and handling conditions.
Polymerization: Hazardous polymerization cannot occur.
Chemical Incompatibilities: Strong oxidizing agents.
Conditions to Avoid: Protect from moisture.
Hazardous Decomposition Products: Thermal oxidative decomposition of Xanthan Gum can produce carbon dioxide and carbon monoxide.

Section 11- Toxicological Information

Toxicity Data:*

Acute Oral Effects:
Rat, oral, LD_{50}: mg/kg
Chronic Effects: no data available
Carcinogenicity: : no data available
Mutagenicity: : no data available
Teratogenicity: : no data available

* See NIOSH, *RTECS*, for additional toxicity data.

Section 12 - Ecological Information

Ecotoxicity: no data available
Environmental Fate: no data available
Environmental Degradation: no data available
Soil Absorption/Mobility: no data available

Section 13 - Disposal Considerations

Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.
Disposal Regulatory Requirements:

Section 14 - Transport Information

DOT Transportation Data (49 CFR 172.101): Not Regulated.

Shipping Name:
Shipping Symbols:
Hazard Class:
ID No.:
Packing Group:
Label:
Special Provisions (172.102):

Packaging Authorizations
a) Exceptions:
b) Non-bulk Packaging:
c) Bulk Packaging:

Quantity Limitations
a) Passenger, Aircraft, or Railcar:
b) Cargo Aircraft Only:

Vessel Stowage Requirements
a) Vessel Stowage:
b) Other:

Section 15 - Regulatory Information

US Federal Regulations
TSCA (Toxic Substances Control Act) Status
TSCA (UNITED STATES) The intentional ingredients of this product are listed.
CERCLA RQ - 40 CFR 302.4(a): None listed
CERCLA RQ - 40 CFR 302.4(b)

Materials without a "listed" RQ may be reportable as an "unlisted hazardous substance". See 40 CFR 302.5 (b).
SARA 302 Components - 40 CFR 355 Appendix A: None
Section 311/312 Hazard Class - 40 CFR 370.2
Immediate( ) Delayed( ) Fire( ) Reactive( ) Sudden
Release of Pressure( )
SARA 313 Components - 40 CFR 372.65: None
International Regulations - Inventory Status: Not determined
State and Local Regulations - California Proposition 65: None

Section 16 - Other Information

Disclaimer: All information, recommendations and suggestions appearing herein are based upon sources believed to be reliable: However, it is the users responsibility to determine the safety, toxicity and suitability for its own use of this product. WEGO CHEMICAL & MINERAL CORP. DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE USE BY OTHERS OF THIS PRODUCT.

SDS no. 10029
Version 6
Revision date 13/Jun/2014
Supersedes date 10/Dec/2013

A Schlumberger Company

Safety Data Sheet
FLO-VIS†

1. Identification

1.1 Product identifier

Product name FLO-VIS†

Product code 10029

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Viscosifier.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals)

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards

Combustible dust

2.2 Label elements

Signal word
WARNING

May form combustible dust concentrations in air

Precautionary statements
P240 - Ground/bond container and receiving equipment
P243 - Take precautionary measures against static discharge

P241 - Use explosion-proof electrical/ ventilating/ lighting/ equipment

Unknown acute toxicity 0% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

Component	CAS-No	Weight % - range
Xanthan gum	11138-66-2	60 - 100

3.2 Mixtures

Not Applicable

Comments
The exact percentage (concentration) of composition has been withheld as a trade secret

4. First aid measures

4.1 First-Aid Measures

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Ingestion Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

Skin contact Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.

Eye contact Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

General advice The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

Main symptoms

Inhalation Please see Section 11. Toxicological Information for further information.

Ingestion	Please see Section 11. Toxicological Information for further information.
Skin contact	Please see Section 11. Toxicological Information for further information.
Eye contact	Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
Suspended dust may present a dust explosion hazard.

Hazardous combustion products
Carbon oxides (COx).

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Evacuate personnel to safe areas. Use personal protective equipment. See also section 8. If spilled, take caution, as material can cause surfaces to become very slippery.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water. Material becomes slippery when wet. Use caution if wet.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation.

Hygiene measures
Use good work and personal hygiene practices to avoid exposure. Do not eat, drink or smoke when using this product.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation. Provide appropriate exhaust ventilation at places where dust is formed. Keep airborne concentrations below exposure limits.

Storage precautions Keep away from open flames, hot surfaces and sources of ignition. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls/personal protection

8.1 Control parameters

Component	ACGIH TLV	OSHA PEL
Xanthan gum 11138-66-2 (60 - 100)	Not Determined	Not Determined

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection It is good practice to wear goggles when handling any chemical. Tightly fitting safety goggles.

Hand protection Repeated or prolonged contact:, Use protective gloves made of:, Nitrile, Neoprene gloves.

Respiratory protection All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator. If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.

Skin and body protection Wear suitable protective clothing.

Hygiene measures	Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid powder
Appearance	Opaque
Color	Off-white - Tan
Odor	Mild Odorless
Odor threshold	Not applicable

Property	**Values**	**Remarks**
pH		
pH @ dilution	5.4 - 8.6 @1%	
Melting/freezing point		
Boiling point/range	No information available	
Flash point	Does not flash	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	0 mmHg	
Vapor density	Not applicable	
Specific gravity	1.5	
Bulk density	No information available	
Water solubility	Gels on contact with water Insoluble in water	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	Not determined	
Explosive properties	Not Applicable	
Oxidizing properties	None known.	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	None
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
None known.

10.4 Conditions to avoid

Heat, flames and sparks.

10.5 Incompatible materials

Strong oxidizing agents. Acids. Bases.

10.6 Hazardous decomposition products

See also section 5.2.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation — Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.

Eye contact — Dust may cause mechanical irritation.

Skin contact — Repeated exposure may cause skin dryness or cracking.

Ingestion — Irritant; may cause pain or discomfort to mouth, throat and stomach.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Xanthan gum	No data available	No data available	No data available

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Xanthan gum	No data available	No data available	No data available	No data available

Sensitization — This product does not contain any components suspected to be sensitizing.

Mutagenic effects — This substance has no evidence of mutagenic properties.

Carcinogenicity — This substance has no evidence of carcinogenic properties.

Reproductive toxicity — None known.

Developmental toxicity — Not known to cause birth defects or have a deleterious effect on a developing fetus.

Routes of exposure — Inhalation. Skin contact. Eye contact.

Routes of entry — None known.

Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.
Aspiration hazard	No hazard from product as supplied.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Xanthan gum	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

Not determined

12.6 Other adverse effects.

None known. Check for additional information in sect. 7.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

UN No. (DOT)	Not regulated
UN No. (TDG)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

Not regulated for transportation by DOT, TDG, IMDG and ICAO/IATA.

14.3 Hazard class(es)

DOT Hazard class	Not regulated
TDG Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
TDG Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

14.6 Special precautions

Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies
European Union (EINECS and ELINCS)	Complies
Philippines (PICCS)	Complies
Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories

Not a SARA 311/312 hazard.

SARA 302/304, 313, CERCLA RQ, California Proposition 65

Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Xanthan gum	N/A	N/A	N/A

State Comments
Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

This product has been classified in accordance with the hazard criteria of the CPR and the SDS contains all the information required by the CPR.

16. Other information

Supersedes date 10/Dec/2013

Revision date 13/Jun/2014

Version 6

HMIS classification

Health	2
Flammability	1
Physical hazard	0
PPE	E

N/A - Not Applicable, N/D - Not Determined.

†A mark of M-I L.L.C.

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SDS no. 10265
Version 7
Revision date 23/Sep/2014
Supersedes date 14/Sep/2011

A Schlumberger Company

Safety Data Sheet
FLO-VIS† PLUS

1. Identification

1.1 Product identifier

Product name FLO-VIS† PLUS

Product code 10265

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Drilling fluid additive. Viscosifier.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Bethicia Prasek

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards

Skin sensitization	Category 1

Environmental hazards Not classified

Physical Hazards

Combustible dust

2.2 Label elements

Signal word
WARNING

Hazard statements
H317 - May cause an allergic skin reaction
May form combustible dust concentrations in air

Precautionary statements
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P233 - Keep container tightly closed
P240 - Ground/bond container and receiving equipment
P280 - Wear eye protection/ face protection
P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction
P403 + P235 - Store in a well-ventilated place. Keep cool

P241 - Use explosion-proof electrical/ ventilating/ lighting/ equipment
P242 - Use only non-sparking tools
P243 - Take precautionary measures against static discharge
P261 - Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray
P272 - Contaminated work clothing should not be allowed out of the workplace
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P333 + P313 - If skin irritation or rash occurs: Get medical advice/ attention
P363 - Wash contaminated clothing before reuse
P501 - Dispose of contents/ container to an approved waste disposal plant

Unknown acute toxicity 99.1% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Component	CAS-No	Weight % - range
Xanthan gum	11138-66-2	60 - 100
Glyoxal	107-22-2	0.1 - 1

Comments
The exact percentage (concentration) of composition has been withheld as a trade secret

4. First aid measures

4.1 First-Aid Measures

Inhalation — If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Ingestion — Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

Skin contact — Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.

Eye contact — Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

General advice — The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

Main symptoms

Inhalation — Please see Section 11. Toxicological Information for further information.

Ingestion — Please see Section 11. Toxicological Information for further information.

Skin contact — Please see Section 11. Toxicological Information for further information.

Eye contact — Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician — Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
Suspended dust may present a dust explosion hazard.

Hazardous combustion products
Carbon oxides (COx).

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. See also section 8.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Use personal protective equipment as required. Avoid dust formation in confined areas. Fine dust dispersed in air may ignite. If spilled, take caution, as material can cause surfaces to become very slippery.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation.

Storage precautions Keep container/package tightly closed and in a well-ventilated place.

8. Exposure controls/personal protection

8.1 Control parameters

Exposure limits **Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m³ (Inhalable); 3 mg/m³ (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m³ (Total); 5 mg/m³ (Respirable).**

Component	ACGIH TLV	OSHA PEL
Xanthan gum	Not Determined	Not Determined
Glyoxal	0.1 mg/m³	Not Determined

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection	It is good practice to wear goggles when handling any chemical. Tightly fitting safety goggles.
Hand protection	Wear chemical resistant gloves such as nitrile or neoprene.
Respiratory protection	All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent. If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator. If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.
Skin and body protection	Wear suitable protective clothing.
Hygiene measures	Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid powder
Appearance	Opaque
Color	White - Tan
Odor	Odorless
Odor threshold	Not applicable

Property	Values	Remarks
pH		
pH @ dilution	6.0-8.5	1% in water
Melting/freezing point	No information available	
Boiling point/range	No information available	
Flash point	Does not flash	PMCC
Evaporation rate (BuAc =1)	No information available 0	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	0 mmHg	
Vapor density	Not applicable	
Specific gravity	1.5	
Bulk density	No information available	
Water solubility	Gels on contact with water	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	

Dynamic viscosity	No information available
Log Pow	No information available
Explosive properties	Suspended dust may present a dust explosion hazard
Oxidizing properties	None known.

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	None
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
Hazardous polymerization does not occur.

10.4 Conditions to avoid

Heat, flames and sparks.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Carbon oxides (COx).

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation	Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.
Eye contact	Dust may cause mechanical irritation.
Skin contact	Repeated exposure may cause skin dryness or cracking. May cause sensitization by skin contact.
Ingestion	Irritant; may cause pain or discomfort to mouth, throat and stomach.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Xanthan gum	No data available	No data available	No data available
Glyoxal	= 3300 mg/kg (Rat)	No data available	No data available

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Xanthan gum	No data available	No data available	No data available	No data available
Glyoxal	No data available	A4 Not Classifiable as a Human Carcinogen	No data available	No data available

Sensitization May cause sensitization by skin contact.

Mutagenic effects This substance has no evidence of mutagenic properties.

Carcinogenicity This substance has no evidence of carcinogenic properties.

Reproductive toxicity None known.

Developmental toxicity Not known to cause birth defects or have a deleterious effect on a developing fetus.

Routes of exposure Inhalation. Skin contact. Eye contact.

Routes of entry None known.

Specific target organ toxicity (single exposure) Not classified

Specific target organ toxicity (repeated exposure) Not classified.

Aspiration hazard Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Xanthan gum 11138-66-2 (60 - 100)	No information available	No information available	No information available
Glyoxal 107-22-2 (0.1 - 1)	460 - 680 mg/L LC50 (Leuciscus idus) = 96 h 215 mg/L LC50 (Pimephales promelas) = 96 h	500 mg/L EC50 (Desmodesmus subspicatus) = 72 h 500 mg/L EC50 (Desmodesmus subspicatus) = 96 h 348.59 mg/L EC50 (Pseudokirchneriella subcapitata) = 96 h	404 mg/L EC50 (Daphnia magna) = 48 h

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

Not determined

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

The product is not covered by international regulation on the transport of dangerous goods (IMDG, IATA,ADR/RID/ADG).

14.1 UN Number

Not regulated

UN No. (DOT)	Not regulated
UN No. (TDG)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

Not regulated for transportation by DOT, TDG, IMDG and ICAO/IATA.

14.3 Hazard class(es)

DOT Hazard class	Not regulated
TDG Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
TDG Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated

ICAO Packing group Not regulated

14.5 Environmental hazard
No

14.6 Special precautions
Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies
European Union (EINECS and ELINCS)	Complies
Philippines (PICCS)	Complies
Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Delayed (chronic) health hazard.

SARA 302/304, 313, CERCLA RQ, California Proposition 65
Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Xanthan gum	N/A	N/A	N/A
Glyoxal	N/A	N/A	N/A

State Comments
Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

Canadian Classification

16. Other information

Supersedes date 14/Sep/2011

Revision date 23/Sep/2014

Version	7

HMIS classification

Health	2
Flammability	1
Physical hazard	0
PPE	E

N/A - Not Applicable, N/D - Not Determined.

†A mark of M-I L.L.C.

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SDS no. PID13503
Version 5
Revision date 23/Oct/2015
Supersedes date 19/Oct/2015

Safety Data Sheet
M-I WATE† (ALL GRADES)

1. Identification

1.1 Product identifier

Product name M-I WATE† (ALL GRADES)

Product code PID13503

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Drilling fluid additive. Weighting agent.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

M-I SWACO, A Schlumberger Company
200 - 125, 9th Avenue SE
Calgary, Alberta T2G 0P6, Canada
Telephone: 1-780-962-8221

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Bethicia Prasek

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards

Carcinogenicity	Category 1A

Environmental hazards Not classified

Physical Hazards Not classified

2.2 Label elements

Signal word
DANGER

Hazard statements
H350 - May cause cancer

Precautionary statements
P201 - Obtain special instructions before use
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P281 - Use personal protective equipment as required
P308 + P313 - IF exposed or concerned: Get medical advice/ attention

Supplementary precautionary statements
P202 - Do not handle until all safety precautions have been read and understood
P314 - Get medical advice/attention if you feel unwell
P501 - Dispose of contents/ container to an approved waste disposal plant

Unknown acute toxicity 0% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Component	CAS-No	Weight % - range
Crystalline silica (impurity)	14808-60-7	1-5

3.2 Mixtures

Not Applicable

Comments
Crystalline silica is the most widely occurring of all minerals. The most common form of silica is sand. The International Agency for Research on Cancer (IARC) has designated crystalline silica in the form of quartz or cristobalite a Group 1 (carcinogenic to humans). This designation was based on an increased risk of lung cancer among crystalline silica exposed workers. IARC did note that carcinogenicity of crystalline silica in humans was not detected in all industrial circumstances studied. Further, carcinogenicity of crystalline silica may be dependent on inherent characteristics of the crystalline silica or external factors affecting its biological activity or distribution of polymorphs. (IARC Vol. 68, 1997, p. 41). The National Toxicology Program (NTP) classifies crystalline silica as "reasonably anticipated to cause cancer in humans" (6th Annual Report on Carcinogens, 1991). Long term inhalation of crystalline silica can also result in the lung disease, silicosis. Symptoms of this disease include coughing and shortness of breath. (NJ HSFS, January 1996)

4. First aid measures

4.1 First-Aid Measures

Inhalation Move to fresh air. If breathing is difficult, (trained personnel should) give oxygen. Get medical attention immediately if symptoms occur.

Ingestion Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

Skin contact Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if irritation persists.

Eye contact Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

Main symptoms

Inhalation Please see Section 11. Toxicological Information for further information.

Ingestion Please see Section 11. Toxicological Information for further information.

Skin contact Please see Section 11. Toxicological Information for further information.

Eye contact Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
None known.

Hazardous combustion products
None under normal use conditions.

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear suitable protective equipment. Evacuate personnel to safe areas. Prevent further leakage or spillage if safe to do so. Avoid dust formation.

6.2 Environmental precautions

Do not allow material to contaminate ground water system.

Environmental exposure controls
No information available.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Cover powder spill with plastic sheet or tarp to minimize spreading.

Methods for cleaning up
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).

6.4 Reference to other sections

No information available.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Avoid breathing dust; if exposed to high dust concentration, leave area immediately. Avoid contact with skin, eyes and clothing.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation.

Storage precautions Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

8. Exposure controls/personal protection

8.1 Control parameters

Component Information

Component	ACGIH TLV	OSHA PEL
Crystalline silica (impurity) 14808-60-7 (1-5)	0.025 mg/m³	Not Determined

Crystalline silica (impurity)
OSHA - Final PELs - Table Z-3 Mineral Dusts
(30)/(%SiO2 + 2) mg/m³ TWA, total dust; (250)/(%SiO2 + 5) mppcf TWA, respirable fraction; (10)/(%SiO2 + 2) mg/m³ TWA, respirable fraction

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye protection	Tightly fitting safety goggles.
Hand protection	Wear chemical resistant gloves such as nitrile or neoprene.
Respiratory protection	All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent. Use NIOSH approved respirator with dust and mist protection (3M 8210). If dust concentration exceeds 5 times the exposure limit, wear an approved HEPA respirator
Hygiene measures	Wash hands before breaks and immediately after handling the product, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid
Appearance	Opaque
Color	Tan - Gray
Odor	Odorless
Odor threshold	Not applicable

Property	Values	Remarks
pH	Not applicable	
pH @ dilution	No information available	
Melting/freezing point	No information available	
Boiling point/range	No information available	
Flash point	Not Applicable	
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	4.1	
Bulk density	No information available	
Water solubility	Insoluble in water	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	No information available
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable. Hazardous polymerization does not occur.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
None known.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

No materials to be especially mentioned.

10.6 Hazardous decomposition products

See Section 5.2.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation — Inhalation of dust in high concentration may cause irritation of respiratory system. Repeated or prolonged inhalation of crystalline silica dust can cause delayed lung injury, and other diseases, including silicosis and lung cancer.

Eye contact — Dust contact with the eyes can lead to mechanical irritation.

Skin contact — Repeated exposure may cause skin dryness or cracking.

Ingestion — Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Crystalline silica (impurity)	= 500 mg/kg (Rat)	No data available	No data available

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP

Crystalline silica (impurity)	Group 1; Monograph 100C [in preparation] Group 1; Monograph 68 [1997] Monograph 100C [in preparation] (listed under Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources); Monograph 68 [1997]	A2 Suspected Human Carcinogen	Present	Known Human Carcinogen

Sensitization This product does not contain any components suspected to be sensitizing.

Mutagenic effects No evidence of mutagenic properties.

Carcinogenicity Contains a known or suspected carcinogen. Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled.

Reproductive toxicity No evidence of toxicity to reproduction.

Developmental toxicity Not known to cause birth defects or have a deleterious effect on a developing fetus.

Routes of exposure Skin contact. Inhalation. Eye contact.

Routes of entry Inhalation.

Specific target organ toxicity (single exposure) Not classified

Specific target organ toxicity (repeated exposure) Not classified.

Target organ effects Respiratory system. Lungs.

Aspiration hazard Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Crystalline silica (impurity)	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No product level data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

UN No. (DOT)	Not regulated
UN No. (TDG)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

The product is not covered by international regulation on the transport of dangerous goods

14.3 Hazard class(es)

DOT Hazard class	Not regulated
TDG Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
TDG Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

No

14.6 Special precautions
Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies
European Union (EINECS and ELINCS)	Complies
Philippines (PICCS)	Complies
Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Delayed (chronic) health hazard.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Crystalline silica (impurity)	N/A	N/A	N/A

State Comments
Proposition 65: This product contains chemical(s) considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 to cause cancer and/or reproductive toxicity. See table under U.S. Federal and State Regulations for the specific chemicals.

Crystalline silica (impurity)
carcinogen

Canadian Classification

This Safety Data Sheet has been prepared in compliance with the Hazardous Products Regulations.

16. Other information

Supersedes date	19/Oct/2015
Revision date	23/Oct/2015
Version	5
The following sections have been revised:	1, 2, 5, 9, 11, 16.

HMIS classification

Health	1*
Flammability	0
Physical hazard	0

N/A - Not Applicable, N/D - Not Determined.

Disclaimer

The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

FERRO

MATERIAL SAFETY DATA SHEET

Ferro Corporation, Polymer Additives Division
Cleveland Operation
1636 Wayside Road
Cleveland, Ohio 44112 USA

Emergency telephone number
CHEMTREC: 1-800-424-9300
CHEMTREC (outside U.S.): 1-703-527-3887
Plant Number: 1-216-531-6010

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product Name: **Al Stearate R 40x25 Lb Bag**
Date of Preparation: 04/11/2007

Chemical Family: Stearate
Chemical Name: Aluminum Stearate
Synonyms: Aluminum Distearate.
Formula: C36H71Al4
CAS-No.: 300-92-5
Product code: 1035965

2. HAZARD IDENTIFICATION

Emergency Overview
CAUTION
May cause irritation of respiratory tract. May cause eye/skin irritation.

Colour: White
Physical state: Powder
Odour: Mild

NFPA 704

Health:	1
Fire:	1
Instability:	0

Potential Health Effects

Principle routes of exposure: Eye contact. Skin contact. Inhalation.

Eye contact: Contact with eyes may cause irritation.

Skin contact: Prolonged skin contact may cause skin irritation.

Inhalation: Over-exposure by inhalation may cause respiratory irritation.

Ingestion: May irritate digestive tract.

Chronic toxicity: No known effects under normal conditions of use.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Weight %
Aluminum stearate	300-92-5	100

4. FIRST AID MEASURES

Eye contact: Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a physician.

Skin contact: Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If symptoms persist, call a physician.

Ingestion: Drink 1 or 2 glasses of water. Do not induce vomiting without medical advice. Consult a physician.

Notes to physician: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flash point (°C): 260 °C (500°F) Method: PMCC

Suitable extinguishing media: Use dry chemical, CO2, water spray or "alcohol" foam. Do not use a solid water stream as it may scatter and spread fire.

Hazardous decomposition products: Carbon oxides. Al2O3.

Special protective equipment for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH (approved or equivalent) and full protective gear.

Unusual hazards: None known.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Avoid contact with skin, eyes and clothing. Use personal protective equipment. Ensure adequate ventilation. Avoid dust formation. Do not breathe vapors/dust.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not allow material to contaminate ground water system. Do not let product enter drains.

Methods for cleaning up: Pick up and transfer to properly labelled containers. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Handling: Avoid dust formation. Do not breathe vapours/dust. Avoid contact with skin and eyes. Provide appropriate exhaust ventilation at places where dust is formed. Wear personal protective equipment.

Storage: Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limits

Components	OSHA	ACGIH
Aluminum stearate	Not established	10 mg/m³ TWA

Engineering measures: Provide appropriate exhaust ventilation at places where dust or fume is formed. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Eye protection: Safety glasses with side-shields. Avoid contact with eyes.

Skin and body protection: Lightweight protective clothing.

Hand protection: Impervious gloves.

Respiratory protection: In case of insufficient ventilation wear suitable respiratory equipment.

9. PHYSICAL AND CHEMICAL PROPERTIES

Colour:	White	**Physical state:**	Powder
Odour:	Mild	**Molecular weight:**	No data available
Boiling point/range (°C):	No data available	**pH:**	No data available
Melting point/range (°C):	145 - 165	**Freezing point/range (°C):**	145.0 - 165.0
Specific gravity (Water =1):	> 1.000	**Vapor pressure (mmHg):**	No data available
Evaporation rate (Water =1):	No data available	**Water solubility (mg/l):**	Insoluble
VOC content (%)	No data available		

10. STABILITY AND REACTIVITY

10. STABILITY AND REACTIVITY

Stability: Stable at normal conditions

Polymerization: None under normal processing

Hazardous decomposition products: Carbon oxides. Heavy metal compounds.

Materials to avoid: Strong oxidizing agents.

Conditions to avoid: Avoid dust formation.

11. TOXICOLOGICAL INFORMATION

Acute toxicity: No data is available on the product itself

12. ECOLOGICAL INFORMATION

Aquatic toxicity: Not determined

Persistence and degradability: Not determined

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products: Dispose of according to all federal, state and local applicable regulations. Where possible recycling is preferred to disposal or incineration.

14. TRANSPORT INFORMATION

DOT (U.S.)
Proper shipping name: Not regulated.

TDG (Canada)
Proper shipping name: Not regulated.

15. REGULATORY INFORMATION

U.S. Regulations:
Not subject to the provisions of SARA 313 Title III

Not subject to TSCA 12(b) Export Notification

State Regulations
This product or its ingredients have been evaluated for New Jersey, Pennsylvania, and California Prop 65 supplier notification requirements. Substances that are subject to notification requirements, if any, are listed below.

Canadian WHMIS
WHMIS hazard class: Non-controlled.

Canadian Ingredient Disclosure List (IDL): Not Listed.

International Inventories
TSCA 8(b): Listed or exempt.
Canadian DSL: Listed or exempt.
EINECS: Listed or exempt.
Phillipines (PICCS): Listed.
Japan (ENCS): Listed or exempt.
Korea (KECL): Listed.
China (IECS): Listed.
Australia (AICS): Listed.

16. OTHER INFORMATION

For Industrial Use Only

HMIS
Health: 1
Fire: 1
Physical hazard: 0
PPE: E

Prepared by: Ferro Technical Center

The information and recommendations contained in this Material Safety Data Sheet have been compiled from sources believed to be reliable and to represent the most reasonable current opinion on the subject when the MSDS was prepared. No warranty, guaranty or representation is made as to the correctness or sufficiency of the information. The user of this product must decide what safety measures are necessary to safely use this product, either alone or in combination with other products, and determine its environmental regulatory compliance obligations under any applicable federal or state laws.

End of Safety Data Sheet

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Material Safety Data Sheet

penreco

CONOSOL C-200

MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

CONOSOL C-200

MSDS Number: PEN13498 Version Date: 04/06/2001

Product Name: CONOSOL C-200 Reauthorized: 5/10/2007

Manufacturer
Penreco
PO Box 4274
Houston, TX 77210
USA

Phone Numbers
Medical Emergency: 1-800-342-5119 or 1-281-493-2767
Transport Emergency
CHEMTREC(USA): 1-800-424-9300
CHEMTREC(International): 1-703-527-3887
MSDS Assistance: 1-281-293-5550
Internet Address: www.conoco.com

2. COMPONENT INFORMATION

COMPONENT	CAS No.	Wt. %
Hydrotreated light distillate	64742-47-8	100

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

APPEARANCE/ODOR
Clear, colorless liquid / Negligible odor

OSHA REGULATORY STATUS
This product is NOT HAZARDOUS according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

HMIS Ratings: Health 1; Flammability 1; Reactivity 0.

PRIMARY ROUTE OF EXPOSURE: Skin, inhalation

HEALTH EFFECT INFORMATION
The product may cause irritation to the eyes, nose, throat, lungs, and skin after prolonged or repeated exposure. Extreme overexposure or aspiration into the lungs may cause lung damage or death. Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness, and other nervous system effects; greater overexposure may

cause dizziness, slurred speech, flushed face, unconsciousness, and convulsions.

Normal use of this product does not result in generation of an oil mist. However if an oil mist is generated, overexposure can cause minor and reversible irritation to the eyes, skin, and especially the lungs. Proper personal protective equipment and sufficient ventilation can provide adequate protection. See Section 8 for oil mist exposure limits.

CARCINOGENCITY INFORMATION:
None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

OTHER:
See Section 11 - Toxicological Information.

4. FIRST AID INFORMATION

EYE CONTACT:
Immediately flush eyes with large amounts of water and continue flushing until irritation subsides. If irritation persists, seek medical attention.

SKIN CONTACT:
Remove contaminated clothing. Wash contaminated area thoroughly with soap and water. Use a hand or skin lotion to prevent dryness. If redness or irritation occurs, seek medical attention.

INHALATION:
If victim exhibits signs of vapor intoxication, remove to fresh air. If breathing has stopped or is irregular, administer artificial respiration and supply oxygen if it is available. If victim is unconscious, remove to fresh air and seek immediate medical attention

INGESTION:
Do not induce vomiting due to aspiration hazard. If vomiting occurs lower head below knees to avoid aspiration. Seek immediate medical attention.

5. FIRE AND EXPLOSION INFORMATION

FLAMMABLE PROPERTIES
Flash Point: >200 F (93.3 C)
Test Method: ASTM D-93 (PMCC)

Flammable Limits in Air
Upper Percent: 6.0%
Lower Percent: 1.0%

Autoignition Temperature: No data available

NFPA Ratings: Health 0; Flammability 1; Instability 0.

EXTINGUISHING MEDIA:
Use dry chemical, foam, or carbon dioxide.

FIRE FIGHTING MEASURES
SPECIAL FIRE FIGHTING PROCEDURES AND EQUIPMENT:
Water may be ineffective but can be used to cool containers exposed to heat or flame.

UNUSUAL FIRE AND EXPLOSION CONDITIONS:
Dense smoke may be generated while burning. Carbon monoxide, carbon dioxide, and other oxides may be generated as products of combustion.

6. ACCIDENTAL RELEASE MEASURES

PERSONNEL SAFEGUARDS:
Consult Health Effect Information in Section 3, Personal Protection Information in Section 8, Fire and Explosion Information in Section 5, and Stability and Reactivity Information in Section 10. Remove all sources of ignition. Provide adequate ventilation during clean up.

REGULATORY NOTIFICATIONS:
Notify appropriate authorities of spill.

CONTAINMENT AND CLEAN UP:
Contain spill immediately. Do not allow spill to enter sewers or watercourses. Absorb with solvent absorbent material. Large spills may be picked up using vacuum pumps, shovels, buckets, or other means and placed in drums or other suitable containers.

7. HANDLING AND STORAGE INFORMATION

HANDLING:
Avoid breathing vapors or mist. Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Wash clothing prior to reuse. May be slippery when spilled.

Fire extinguishers should be kept readily available. See NFPA 30 and OSHA 1910.106--Flammable and Combustible Liquids.

STORAGE:
Do not transfer to unmarked containers. Store in cool, well-ventilated area in closed containers away from heat, sparks, open flame, or oxidizing materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION INFORMATION

EXPOSURE LIMITS
This product does not contain any components with specific OSHA or ACGIH exposure limits. If oil mist is generated, exposure limits apply.

Oil Mist	OSHA PEL:	TWA 5 mg/m3
	ACGIH TLV:	TWA 5 mg/m3; STEL 10 mg/m3

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION:
Eye protection is not required under conditions of normal use. If material is handled such that it could be splashed into eyes, wear plastic face shield or splash-proof safety goggles.

SKIN PROTECTION:
No skin protection is required for single, short duration exposures. For prolonged or repeated exposures, use impervious synthetic rubber clothing (boots, gloves, aprons, etc.) over parts of the body subject to exposure. (Nitrile recommended.) Launder soiled clothes. Properly dispose of contaminated leather articles including shoes, which cannot be decontaminated.

RESPIRATORY PROTECTION:
Select appropriate NIOSH-approved respiratory protection for organic vapors where necessary to maintain exposures below the exposure limits.

PERSONAL HYGIENE:
Consumption of food and beverage should be avoided in work areas where hydrocarbons are present. Always wash hands and face with soap and water before eating, drinking, or smoking.

ENGINEERING CONTROLS / WORK PRACTICES

VENTILATION:
Adequate ventilation in accordance with good engineering practice must be provided to maintain concentrations below the specified exposure or flammable limits.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear, colorless liquid
Odor:	Negligible odor
Vapor Pressure:	<0.1 mm Hg @ 68 F
Vapor Density (air=1):	6.2
pH:	No data available
Percent Volatile by Volume:	No data available
Boiling Point:	430-550 F (221.1-287.8 C)
Volatile Organic Content:	No data available
Melting Point:	Not applicable
Molecular Weight:	No data available
Specific Gravity:	0.82-0.83
Solubility in Water:	Insoluble in water

10. STABILITY AND REACTIVITY INFORMATION

Chemical Stability: Stable.

Conditions to Avoid: Heat, sparks, flame.

Incompatible Materials to Avoid: May react with strong oxidizing agents.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, and other oxides may be generated as products of combustion.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

ANIMAL DATA
Animal studies have shown that prolonged or repeated inhalation exposures to high concentrations of some petroleum distillates have caused liver tumors in mice and kidney damage and tumors in male rats. However, kidney effects were not seen in similar studies involving female rats, guinea pigs, dogs, or monkeys. Present studies indicate the kidney effects will only occur in male rats. Also, human studies do not indicate this peculiar sensitivity for kidney damage and studies reported in 1992 showed that this particular type of rat kidney damage is not useful in predicting a human health hazard. The significance of liver tumors in mice exposed to high doses of chemicals is highly speculative and probably not a good indicator for predicting a potential human carcinogenic hazard.

12. ECOLOGICAL INFORMATION

No information available

13. DISPOSAL INFORMATION

REGULATORY INFORMATION:
All disposals must comply with federal, state, and local regulations. The material, if spilled or discarded, may be a regulated waste. Refer to state and local regulations. Caution! If regulated solvents are used to clean up spilled material, the resulting waste mixture may be regulated. Department of Transportation (DOT) regulations may apply for transporting this material when spilled.

WASTE DISPOSAL METHODS:
Waste material may be landfilled or incinerated at an approved facility. Materials should be recycled if possible.

14. TRANSPORTATION INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT)
Highway / Rail (Non-Bulk): Not regulated
Highway / Rail (Bulk): Not regulated

INTERNATIONAL INFORMATION
Vessel (IMO): Not regulated.
Air (IATA): Not regulated.

15. REGULATORY INFORMATION

INVENTORIES:
AUSTRALIAN (AICS): Listed.
CANADIAN (DSL): Listed.
CHINESE: Listed.
EUROPEAN EC/EINECS: Listed.
JAPANESE ENCS: Listed.
KOREAN (ECL): Listed.
PHILIPPINE (PICCS): Listed.
U.S. (TSCA): Listed.

U.S. SARA SECTION 313:
This product is not known to contain any SARA, Title III, Section 313 Reportable Chemicals at or greater than 1.0% (0.1% for carcinogens).

U.S. SARA 311 / 312 CATEGORIES
Acute:
Chronic:
Fire:
Pressure:
Reactive:
Not Regulated: X

CANADIAN WHMIS CLASSIFICATION:
This is not a WHMIS Controlled Product.

16. OTHER INFORMATION

Additional Information: None available.

SDS no. 10358
Version 6
Revision date 26/Feb/2015
Supersedes date 04/Aug/2010

Safety Data Sheet
LUBE-167†

1. Identification

1.1 Product identifier

Product name LUBE-167†

Product code 10358

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Lubricant.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

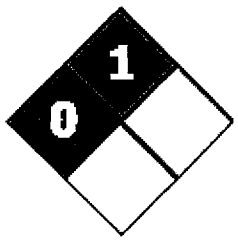
Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Mike McDowell

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600



2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Health hazards	Not classified
Environmental hazards	Not classified
Physical Hazards	Not classified

2.2 Label elements

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Hazard statements

This product is not classified as hazardous therefore no (H) hazard statements assigned.

Precautionary statements

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

Unknown acute toxicity	0% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Not Applicable

Comments

No classified ingredients, or those having occupational exposure limits, present above the level of disclosure.

4. First aid measures

4.1 First-Aid Measures

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Ingestion	Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.
Skin contact	Wash skin thoroughly with soap and water. Get medical attention if irritation persists.
Eye contact	Remove contact lenses. Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

Main symptoms

Inhalation	Please see Section 11. Toxicological Information for further information.
Ingestion	Please see Section 11. Toxicological Information for further information.

Skin contact Please see Section 11. Toxicological Information for further information.

Eye contact Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing media appropriate for surrounding material.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
None known.

Hazardous combustion products
Carbon oxides (COx), Aldehydes, Ketones.

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. See also section 8.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up
Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions	Ensure adequate ventilation. Keep airborne concentrations below exposure limits.
Storage precautions	Keep containers tightly closed in a dry, cool and well-ventilated place.
Packaging material	Use specially constructed containers only.

8. Exposure controls/personal protection

8.1 Control parameters

Exposure limits **The product does not contain any hazardous materials with occupational exposure limits established.**

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection	It is good practice to wear goggles when handling any chemical. Tightly fitting safety goggles.
Hand protection	Wear chemical resistant gloves such as nitrile or neoprene.
Respiratory protection	No personal respiratory protective equipment normally required, In case of insufficient ventilation wear suitable respiratory equipment.
Skin and body protection	Wear suitable protective clothing, Provide eyewash station.
Hygiene measures	Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Opaque

Color	Brown
Odor	Mild
Odor threshold	Not applicable

Property	Values	Remarks
pH	Not applicable	
pH @ dilution	8.8 - 9.2 @ 1%	
Melting/freezing point	No information available	
Boiling point/range	No information available	
Flash point	> 116 °C / 240 °F	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	0.965 - 1.005 @23.8°C	
Bulk density	No information available	
Water solubility	Dispersible	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	No information available
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Carbon oxides (COx). Aldehydes. Ketones.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation	Inhalation of vapors in high concentration may cause irritation of respiratory system.
Eye contact	May cause slight irritation.
Skin contact	Prolonged contact may cause redness and irritation.
Ingestion	Ingestion may cause stomach discomfort.

Sensitization	This product does not contain any components suspected to be sensitizing.
Mutagenic effects	No evidence of mutagenic properties.
Carcinogenicity	No evidence of carcinogenic properties.
Reproductive toxicity	No evidence of toxicity to reproduction.
Developmental toxicity	Not known to cause birth defects or have a deleterious effect on a developing fetus.
Routes of exposure	Eye contact. Skin contact. Inhalation.
Routes of entry	No route of entry noted.
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.
Neurological effects	None known.
Target organ effects	None known.
Aspiration hazard	Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

UN No. (DOT)	Not regulated
UN No. (TDG)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

Not regulated for transportation by DOT, TDG, IMDG and ICAO/IATA.

14.3 Hazard class(es)

DOT Hazard class	Not regulated
TDG Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
TDG Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

Marine pollutant	No

14.6 Special precautions

Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies
European Union (EINECS and ELINCS)	Does not Comply
Philippines (PICCS)	Complies
Japan (ENCS)	Does not Comply
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

IMPORTS, Canada
No import volume restrictions.

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Not a SARA 311/312 hazard.

State Comments
Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

16. Other information

Supersedes date	04/Aug/2010
Revision date	26/Feb/2015
Version	6

The following sections have been revised	All sections. Updated according to GHS/CLP.

HMIS classification

Health	0
Flammability	1
Physical hazard	0
PPE	E

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SDS no. 10094
Version 10
Revision date 29/Jul/2015
Supersedes date 05/Jun/2014

A Schlumberger Company

Safety Data Sheet
POLY-PLUS†

1. Identification

1.1 Product identifier

Product name POLY-PLUS†

Product code 10094

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Shale control agent.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals)

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards Not classified

2.2 Label elements

Hazard statements
This product is not classified as hazardous therefore no (H) hazard statements assigned.

Precautionary statements
This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

Unknown acute toxicity 36% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Component	CAS-No	Weight % - range
Petroleum distillates, hydrotreated light	64742-47-8	10 - 30
Alcohols, C11-14-iso, C13-rich, ethoxylated	78330-21-9	1 - 5

Comments
The product contains other ingredients which do not contribute to the overall classification.

4. First aid measures

4.1 First-Aid Measures

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Ingestion Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

Skin contact Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.

Eye contact Remove contact lenses. Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

General advice The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

Main symptoms

Inhalation Please see Section 11. Toxicological Information for further information.

Ingestion Please see Section 11. Toxicological Information for further information.

Skin contact Please see Section 11. Toxicological Information for further information.

Eye contact Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing media appropriate for surrounding material.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
None known.

Hazardous combustion products
Carbon oxides (COx), Nitrogen oxides (NOx).

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. See also section 8.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up
Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation. Keep airborne concentrations below exposure limits.

Storage precautions Keep containers tightly closed in a dry, cool and well-ventilated place.

Packaging material Use specially constructed containers only.

8. Exposure controls/personal protection

8.1 Control parameters

Component	ACGIH TLV	OSHA PEL
Petroleum distillates, hydrotreated light	Not Determined	Not Determined
Alcohols, C11-14-iso, C13-rich, ethoxylated	Not Determined	Not Determined

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection It is good practice to wear goggles when handling any chemical. Tightly fitting safety goggles.

Hand protection Use protective gloves made of:, Be aware that liquid may penetrate the gloves. Frequent change is advisable.

Respiratory protection No personal respiratory protective equipment normally required In case of insufficient ventilation wear suitable respiratory equipment

Skin and body protection Wear suitable protective clothing, Provide eyewash station.

Hygiene measures Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state Liquid
Appearance Cloudy
Color White
Odor Faint hydrocarbon
Odor threshold Not applicable

Property	Values	Remarks
pH	6 - 8	
pH @ dilution		
Melting/freezing point		
Boiling point/range	100 °C / 212 °F	
Flash point	> 93 °C / 200 °F	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	

Flammability Limits in Air	
Upper flammability limit	No information available
Lower flammability limit	No information available
Vapor pressure	No information available
Vapor density	No information available
Specific gravity	1.07 - 1.10
Bulk density	No information available
Water solubility	slightly soluble
Solubility in other solvents	No information available
Autoignition temperature	No information available
Decomposition temperature	No information available
Kinematic viscosity	> 20.5 mm2/s @ 40 °C
Dynamic viscosity	No information available
Log Pow	Not determined
Explosive properties	Not Applicable
Oxidizing properties	None known.

9.2 Other information

Pour point	-29°C / -20°F
Molecular weight	No information available
VOC content(%)	None
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Carbon oxides (COx). Nitrogen oxides (NOx).

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation	May cause irritation of respiratory tract.
Eye contact	Irritating to eyes.
Skin contact	Prolonged skin contact may defat the skin and produce dermatitis.

Ingestion Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Petroleum distillates, hydrotreated light	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.2 mg/L (Rat) 4 h
Alcohols, C11-14-iso, C13-rich, ethoxylated	No data available	No data available	No data available

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Petroleum distillates, hydrotreated light	No data available	No data available	No data available	No data available
Alcohols, C11-14-iso, C13-rich, ethoxylated	No data available	No data available	No data available	No data available

Sensitization This product does not contain any components suspected to be sensitizing.

Mutagenic effects This substance has no evidence of mutagenic properties.

Carcinogenicity This substance has no evidence of carcinogenic properties.

Reproductive toxicity None known.

Developmental toxicity Not known to cause birth defects or have a deleterious effect on a developing fetus.

Routes of exposure Skin contact. Eye contact.

Routes of entry No route of entry noted.

Specific target organ toxicity (single exposure) Not classified

Specific target organ toxicity (repeated exposure) Not classified.

Aspiration hazard No hazard from product as supplied.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Petroleum distillates, hydrotreated light 64742-47-8 (10 - 30)	2.2 mg/L LC50 (Lepomis macrochirus) = 96 h 45 mg/L LC50 (Pimephales promelas) = 96 h 2.4 mg/L LC50 (Oncorhynchus mykiss) = 96 h	No information available	4720 mg/L LC50 (Den-dronereides heteropoda) = 96 h
Alcohols, C11-14-iso, C13-rich, ethoxylated 78330-21-9 (1 - 5)	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

Not regulated

UN No. (DOT)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

Not regulated for transportation by DOT, TDG, IMDG and ICAO/IATA.

14.3 Hazard class(es)

DOT Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

No

14.6 Special precautions
Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies
European Union (EINECS and ELINCS)	Does not Comply
Philippines (PICCS)	Complies
Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Immediate (acute) health hazard.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Petroleum distillates, hydrotreated light	N/A	N/A	N/A
Alcohols, C11-14-iso, C13-rich, ethoxylated	N/A	N/A	N/A

State Comments
Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

This product has been classified in accordance with the hazard criteria of the CPR and the SDS contains all the information required by the CPR.

16. Other information

Supersedes date	05/Jun/2014
Revision date	29/Jul/2015
Version	10
The following sections have been revised:	All sections. Format changes.

HMIS classification

Health	0
Flammability	1
Physical hazard	0
PPE	B

†A mark of M-I L.L.C.

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

January 27,2011

AMBER
CHEMICAL
INCORPORATED

Material Safety Data Sheet

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: PHOSPHORIC ACID (70-85%)

Date:

Chemical Family: Mineral Acid

Chemical Name: Phosphoric Acid

Synonyms: Phos Acid; Orthophosphoric Acid; Monophosphoric Acid

Company Information: AMBER CHEMICAL INCORPORATED
5201 BOYLAN STREET
BAKERSFIELD; CA 93308

FOR CHEMICAL EMERGENCY, SPILL,LEAK,FIRE,EXPOSURE,ACCIDENT CALL CHEMTREC-DAY OR NIGHT 1-800-424-9300.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No.
Phosphoric Acid	7664-38-2
Water	7732-18-5

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance and Odor: Clear, colorless, syrupy liquid with no odor

WARNING STATEMENTS

DANGER!
CAUSES EYE AND SKIN BURNS
MAY BE HARMFUL IF SWALLOWED

CORROSIVE TO MILD STEEL

POTENTIAL HEALTH EFFECTS

Likely Routes of Exposure: Skin contact

EYE CONTACT: This product causes eye burns. Injury may be permanent.

SKIN CONTACT: This product causes skin burns based on physical properties. It may not produce an immediate burning sensation upon skin contact, delaying the awareness of the worker that contact has occurred.

INHALATION: Breathing of vapor or mist may be irritating to the respiratory tract.

INGESTION: This product may be harmful if swallowed. May cause nausea, vomiting, abdominal discomfort, burns, and a burning sensation (burning behind the breast bone) based on physical properties.

Refer to Section 11 for toxicological information.

4. FIRST AID MEASURES

IF IN EYES OR ON SKIN, immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If easy to do, remove any contact lenses. Get medical attention. Remove material from eyes, skin and clothing. Wash clothing and thoroughly clean shoes before reuse.

IF INHALED, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

IF SWALLOWED, do NOT induce vomiting. Offer a glass of water to drink. Get medical attention. Contact a Poison Control Center. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

5. FIRE FIGHTING MEASURES

FLASH POINT: Not combustible

HAZARDOUS PRODUCTS OF COMBUSTION: Not applicable

EXTINGUISHING MEDIA: Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS: Although this product does not meet the parameters for flammability, it can react with metals to liberate hydrogen, a flammable gas.

6. ACCIDENTAL RELEASE MEASURES

Contain large spills with dikes and transfer the material to appropriate containers for reclamation or disposal. Absorb remaining material or small spills with an inert material and then place in a chemical waste container. Neutralize washings with a base such as soda ash or lime. Flush residual spill area with large amounts of water.

Refer to Section 13 for disposal information and Sections 14 and 15 for reportable quantity information.

7. HANDLING AND STORAGE

HANDLING:

Do not get in eyes, on skin, or on clothing.
Avoid breathing mist or vapor.
Do not taste or swallow.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.

Transfer product from drums to process in closed system (hermetically) and if not possible use effective local exhaust ventilation. Empty drums as thoroughly as possible to facilitate disposal. For bulk transfer, purge lines with nitrogen to remove residual liquid before disconnect. When unloading bulk vehicles, personnel should wear chemical goggles and rubber or neoprene gloves. All fittings should be properly secured prior to energizing unloading system. Care should be taken to avoid acid contact when disconnecting lines/hoses after unloading. For bulk storage type 316L stainless is recommended. Glass, polyethylene and FRP (depending on resin used) are satisfactory, Steel, aluminum and type 304 stainless are not recommended because of rapid or potential corrosion. Vessels should be vented and operated at ambient conditions. Maintenance heat (hot water preferred) may be used to prevent freezing. Dike area around storage tank with sufficient volume to hold entire tank contents.

STORAGE: Store in plastic, rubber-lined, or 316 stainless steel tanks designed for H_3PO_4. Store drums away from heat and out of direct sunlight. Store in a well ventilated, dry area away from alkalies and most metals Store above freezing point. Contact with reactive metals, i.e. mild steel and aluminum may generate hydrogen that may form and explosive mixture in storage vessels.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EYE PROTECTION: Where there is potential for eye contact, wear goggles and have eye flushing equipment immediately available.

SKIN PROTECTION: Wear appropriate protective clothing and chemical resistant gloves to prevent skin contact. Consult the glove/clothing manufacturer to determine the appropriate type glove/clothing for a given application. Wear chemical goggles, a face shield, and chemical resistant clothing when splashing is likely. Wash immediately if skin is contaminated. Remove contaminated clothing promptly and launder before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

RESPIRATORY PROTECTION: Avoid breathing vapor or mist. Use NIOSH/MSHA approved respiratory protection equipment (full facepiece recommended) when airborne exposure limits are exceeded (see below). If used, full facepiece replaces the need for face shield and/or chemical goggles. Consult the respirator manufacturer to determine the appropriate type of equipment for a given application. Observe respirator use limitations specified by NIOSH/MSHA or the manufacturer. Respiratory protection programs must comply with 29 C.F.R. 1910.134.

VENTILATION: Provide natural or mechanical ventilation to minimize exposure. The use of local mechanical exhaust ventilation is preferred at sources of air contamination such as open process equipment. Consult NFPA Standard 91 for design of exhaust systems.

AIRBORNE EXPOSURE LIMITS:

Product/Component	OSHA PEL	ACGIH TLV
Phosphoric Acid	1 mg/m3 8-hr. TWA	1 mg/m3 8-hr TWA 3 mg/m3 STEL

Components referred to herein may be regulated by specific Canadian provincial legislation. Please refer to exposure limits legislated for the province in which the substance will be used.

9. PHYSICAL AND CHEMICAL PROPERTIES

Chemical Formula:	H3PO4		
Appearance:	Clear, colorless, syrupy liquid		
Odor:	None		
Vapor Pressure (100% acid):	0.0285 mm Hg @ 20 degrees C		
Solubility in Water:	Complete		
	75%	80%	85%
% Equivalent H3PO4:	75.1	80.35	85.5
Boiling Point (degrees C):	135	144	154
Freezing point (degrees C):	-17.5	4.6	21.1
Viscosity @ 25 degrees C (Centistokes):	12	17	23
Specific Gravity @ 25 degrees C/15.5 degrees C:	1.575	1.633	1.692
Lbs./gallon @ 25 degrees C:	13.17	13.66	14.15

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

10. STABILITY AND REACTIVITY

STABILITY: Product is stable under normal conditions of storage and handling

MATERIALS TO AVOID: Avoid contact with metals which may liberate flammable hydrogen gas. Avoid contact with materials such as sulfides and sulfites which could release toxic gases. Be cautious in mixing with strong bases because high heat of reaction can generate steam.

HAZARDOUS DECOMPOSITION PRODUCTS: None known

HAZARDOUS POLYMERIZATION: Will not occur

11. TOXICOLOGICAL INFORMATION

Due to its acidity, this product is corrosive to the eyes and skin. This material may not produce an immediate burning sensation upon skin contact, delaying the awareness of the worker that contact has occurred.

Data from ACI single-dose (acute) animal studies with this material are given below:

Phosphoric Acid 75%

Oral - rat LD50: 4,400 mg/kg; slightly toxic
Dermal - rabbit LD50: > 3,160 mg/kg; slightly toxic
Eye Irritation - rabbit (24-hr. exp): corrosive

Skin Irritation - rabbit (24-hr. exp): corrosive
DOT Skin Corrosion - rabbit (4-hr. exp): non-corrosive

Phosphoric Acid 80%

Oral - rat LD50: 4,200 mg/kg; slightly toxic
Dermal - rabbit LD50: > 3,160 mg/kg; slightly toxic
Eye Irritation - rabbit (24-hr. exp): corrosive
Skin Irritation - rabbit (24-hr. exp): corrosive
DOT Skin Corrosion - rabbit (4-hr. exp): non-corrosive

Phosphoric Acid 85%

Oral - rat LD50: 3,500 mg/kg; slightly toxic
Dermal - rabbit LD50: > 1,260 mg/kg; slightly toxic
Eye Irritation - rabbit (24-hr. exp): corrosive
Skin Irritation - rabbit (24-hr. exp): corrosive
DOT Skin Corrosion - rabbit (4-hr. exp): corrosive

The results of single exposure tests indicate that these concentrations of Phosphoric Acid are slightly toxic orally and no more than slightly toxic after skin application. Following a 24-hour exposure, irreversible eye and skin damage occurred at all tested concentrations of Phosphoric Acid.

Phosphoric Acid has produced no genetic changes in standard tests using bacterial cells.

Additional Information

This material is severely corrosive to steel based on DOT , 49 CFR criteria.

Phosphoric Acid has a low vapor pressure at room temperature and is not expected to present a significant inhalation hazard under ambient conditions. Phosphoric Acid can, however, be irritating to the respiratory tract if inhaled as a mist or if the material is vaporized. A Threshold Limit Value (TLV) has been established by the American Conference of Governmental Industrial Hygienists (ACGIH) for Phosphoric Acid. For further information on this material, please refer to the current edition of the Documentation of The Threshold Limit Values and Biological Exposure Indices.

12. ECOLOGICAL INFORMATION

Phosphoric acid is practically nontoxic to one species of freshwater fish. No toxicity data was located for other freshwater species, algae, or Daphnia magna in a search of the available scientific literature.

The following data have been classified using the criteria adopted by the European Economic Community (EEC) for aquatic organism toxicity.

96-hr. LC50 Mosquitofish: 138 mg/L, Practically nontoxic

No specific biodegradation test data was located in a search of the available scientific literature. It was reported in the literature that while acidity of this material may be reduced readily in natural waters, the phosphate may persist indefinitely.

13. DISPOSAL CONSIDERATIONS

This material when discarded is a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA), 40 CFR 261.22, due to its characteristic of corrosivity, EPA hazardous waste number D002. Best Demonstrated Available Treatment (BDAT) as defined by RCRA for D002 characteristic wastes is DEACTIVATION plus meet §268.48 (Universal Treatment Standards) for non-CWA/non-CWA equivalent/non-Class I SDWA systems. Dispose of in accordance with local, state and federal regulations. Consult your attorney or appropriate regulatory officials for information on such disposal.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

US DOT

Proper Shipping Name:	Phosphoric Acid
Hazard Class	8
Hazard Identification Number:	UN1805
Packing Group:	III
Transport Label:	Corrosive

Canadian TDG

Proper Shipping Name:	Phosphoric Acid
Hazard Class	8, 9.2
Hazard Identification Number:	UN 1805
Packing Group:	III
Transport Label:	Corrosive

Reportable Quantity/ Reportable Limit:

US DOT: Packages of ≥ 5,000 lb containing a 5,000 RQ of Phosphoric Acid

Canadian: Packages of ≤ 230 kg containing a 230 kg RL of Phosphoric Acid

15. REGULATORY INFORMATION

TSCA Inventory: Listed

DSL Inventory: Listed

WHMIS Classification: D2(B) - Materials Causing Other Toxic Effects
E - Corrosive Material

SARA Hazard Notification
Hazard Categories Under Title III Rules (40 CFR 370): Immediate
Section 302 Extremely Hazardous Substances: Not Applicable
Section 313 Toxic Chemical(s): Phosphoric acid

CERCLA Reportable Quantity: 5,000 lbs. of phosphoric acid

Release of 5,000 lbs. or more of this product into the environment in a 24 hour period requires notification to the National Response Center (800-424-8802 or 202-426-2675). Since local, state, and federal laws vary, consult your attorney or appropriate regulatory officials for information relating to spill reporting.

FDA: Food grades of phosphoric acid are sanctioned as Generally Recognized as Safe (GRAS) by the U.S. Food and Drug Administration and is codified in 21 CFR 182.1073.

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulation and the MSDS contains all the information required by the Canadian Controlled Products Regulation.

Refer to Section 11 for OSHA/HPA Hazardous Chemical(s) and Section 13 for RCRA classification.

16. OTHER INFORMATION

	Health	Fire	Reactivity	Additional Information
Suggested NFPA Rating	3	0	1	
Suggested HMIS Rating	3	0	1	H

Reason for revision: New Company Supersedes MSDS dated: Not Applicable

Product Use: Phosphates and fertilizers, acid cleaners, aluminum brighteners and metal phosphatizing, leather tanning, varnish, synthetic rubber, boiler water treatment. Food grade is used as an acidulant for cola drinks, yeast nutrient, etc. May be used to treat drinking water up to 12.1 mg/L.

Phosphoric acid is certified under Standard 60 as an acceptable drinking water treatment chemical by NSF International.

SDS no. 10070
Version 9
Revision date 18/Jun/2014
Supersedes date 25/May/2011

Safety Data Sheet
POLYPAC† UL

1. Identification

1.1 Product identifier

Product name POLYPAC† UL

Product code 10070

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Drilling fluid additive. Fluid loss reducer.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Bethicia Prasek

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards
Combustible dust

2.2 Label elements

Signal word
WARNING

May form combustible dust concentrations in air

Precautionary statements
P240 - Ground/bond container and receiving equipment
P243 - Take precautionary measures against static discharge

P241 - Use explosion-proof electrical/ ventilating/ lighting/ equipment

Unknown acute toxicity 0% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Component	CAS-No	Weight % - range
Carboxymethylcellulose sodium salt	9004-32-4	60-100

3.2 Mixtures

Not Applicable

Comments
The exact percentage (concentration) of composition has been withheld as a trade secret

4. First aid measures

4.1 First-Aid Measures

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Ingestion Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

Skin contact Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.

Eye contact Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

General advice The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

Main symptoms

Inhalation Please see Section 11. Toxicological Information for further information.

Ingestion Please see Section 11. Toxicological Information for further information.

Skin contact Please see Section 11. Toxicological Information for further information.

Eye contact Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
Suspended dust may present a dust explosion hazard.

Hazardous combustion products
Carbon oxides (COx).

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Evacuate personnel to safe areas. Use personal protective equipment. See also section 8. If spilled, take caution, as material can cause surfaces to become very slippery.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water. Material becomes slippery when wet. Use caution if wet.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation.

Hygiene measures
Use good work and personal hygiene practices to avoid exposure. Do not eat, drink or smoke when using this product.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation. Provide appropriate exhaust ventilation at places where dust is formed. Keep airborne concentrations below exposure limits.

Storage precautions Keep away from open flames, hot surfaces and sources of ignition. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls/personal protection

8.1 Control parameters

Component	ACGIH TLV	OSHA PEL
Carboxymethylcellulose sodium salt 9004-32-4 (60-100)	Not Determined	Not Determined

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection It is good practice to wear goggles when handling any chemical. Tightly fitting safety goggles.

Hand protection Wear chemical resistant gloves such as nitrile or neoprene.

Respiratory protection All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator. If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.

Skin and body protection Wear suitable protective clothing.

Hygiene measures	Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid powder
Appearance	Opaque
Color	Off-white - Tan
Odor	Mild Odorless
Odor threshold	Not applicable

Property	Values	Remarks
pH		
pH @ dilution	6.5-8.0 @ 1% in H2O	
Melting/freezing point		
Boiling point/range	No information available	
Flash point	Does not flash	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	0 mmHg	
Vapor density	Not applicable	
Specific gravity	1.5 - 1.6	
Bulk density	No information available	
Water solubility	Gels on contact with water	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	Not determined	
Explosive properties	Not Applicable	
Oxidizing properties	None known.	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	None
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
None known.

10.4 Conditions to avoid

Heat, flames and sparks.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Carbon oxides (COx).

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation — Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.

Eye contact — Dust may cause mechanical irritation.

Skin contact — Repeated exposure may cause skin dryness or cracking.

Ingestion — Irritant; may cause pain or discomfort to mouth, throat and stomach.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Carboxymethylcellulose sodium salt	= 27000 mg/kg (Rat)	> 2 g/kg (Rabbit)	> 5800 mg/m³ (Rat) 4 h

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Carboxymethylcellulose sodium salt	No data available	No data available	No data available	No data available

Sensitization — This product does not contain any components suspected to be sensitizing.

Mutagenic effects — This substance has no evidence of mutagenic properties.

Carcinogenicity — This substance has no evidence of carcinogenic properties.

Reproductive toxicity — None known.

Developmental toxicity — Not known to cause birth defects or have a deleterious effect on a developing fetus.

Routes of exposure — Inhalation. Skin contact. Eye contact.

Routes of entry — None known.

Specific target organ toxicity (single exposure) — Not classified

Specific target organ toxicity (repeated exposure) Not classified.

Aspiration hazard No hazard from product as supplied.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Carboxymethylcellulose sodium salt	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating or toxic (PBT)
This substance is not considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known. Check for additional information in sect. 7.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method Disposal should be made in accordance with federal, state and local regulations.

Contaminated packaging Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

UN No. (DOT)	Not regulated
UN No. (TDG)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

Not regulated for transportation by DOT, TDG, IMDG and ICAO/IATA.

14.3 Hazard class(es)

DOT Hazard class	Not regulated
TDG Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
TDG Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

No

14.6 Special precautions

Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies
European Union (EINECS and ELINCS)	Complies
Philippines (PICCS)	Complies
Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories

Not a SARA 311/312 hazard.

SARA 302/304, 313, CERCLA RQ, California Proposition 65

Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Carboxymethylcellulose sodium salt	N/A	N/A	N/A

State Comments
Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

This product has been classified in accordance with the hazard criteria of the CPR and the SDS contains all the information required by the CPR.

16. Other information

Supersedes date	25/May/2011
Revision date	18/Jun/2014
Version	9
The following sections have been revised	All sections.

HMIS classification

Health	1
Flammability	1
Physical hazard	0
PPE	E

N/A - Not Applicable, N/D - Not Determined.

†A mark of M-I L.L.C.

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

MATERIAL SAFETY DATA SHEET

CF Desco® II Deflocculant

Version 1.2 Revision Date 2012-01-16

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product information

Trade name : CF Desco® II Deflocculant
Material : 1068748, 1036678

Use : Drilling Mud Additive

Company : Drilling Specialties Company
10001 Six Pines Drive
The Woodlands, TX 77380

Emergency telephone:

Health:
866.442.9628 (North America)
1.832.813.4984 (International)
Transport:
North America: CHEMTREC 800.424.9300 or 703.527.3887
Asia: +800 CHEMCALL (+800 2436 2255) China: 0532.8388.9090
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Chemcare Asia: Tel: +65 6848 9048 - Mob: +65 8382 9188 - Fax: +65 6848
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Responsible Department : Product Safety and Toxicology Group
E-mail address : MSDS@CPChem.com
Website : www.CPChem.com

2. HAZARDS IDENTIFICATION

Emergency Overview

Form: Powder **Physical state**: Solid **Color**: Fine reddish-brown with small white specks
Odor: Odorless

OSHA Hazards : Moderate skin irritant, Moderate eye irritant, Carcinogen

GHS Classification

: Skin irritation, Category 2
Eye irritation, Category 2A
Carcinogenicity, Category 1A
Specific target organ systemic toxicity - repeated exposure, Category 1, Inhalation, Lungs
Acute aquatic toxicity, Category 3
Chronic aquatic toxicity, Category 3

GHS-Labeling

Symbol(s) :

Signal Word : Danger

Hazard Statements : H303: May be harmful if swallowed.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H350: May cause cancer.
H372: Causes damage to organs (Lungs) through prolonged or repeated exposure if inhaled.
H412: Harmful to aquatic life with long lasting effects.

Precautionary Statements : **Prevention:**
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P260: Do not breathe dust/fume/gas/mist/vapor/spray.
P264: Wash skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P273: Avoid release to the environment.
P280: Wear protective gloves/ eye protection/ face protection.
Response:
P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313: IF exposed or concerned: Get medical advice/ attention.
P321: Specific treatment (see supplemental first aid instructions on this label).
P332 + P313: If skin irritation occurs: Get medical advice/ attention.
P337 + P313: If eye irritation persists: Get medical advice/ attention.
P362: Take off contaminated clothing and wash before reuse.
Storage:
P405: Store locked up.
Disposal:
P501: Dispose of contents/ container to an approved waste disposal plant.

Carcinogenicity:

IARC	Group 1: Carcinogenic to humans
	Crystalline Silica 14808-60-7
NTP	Confirmed Human Carcinogen
ACGIH	Suspected human carcinogen: Human data are accepted as adequate in quality but are conflicting or insufficient to classify the agent as a confirmed human carcinogenE OR, the agent is carcinogenic in experimental animals at dose(s), by route(s) of exposure, at site(s), of histologic type(s), or by mechanism(s) considered relevant to worker exposure. The A2 is used primarily when there is limited evidence of carcinogenicity in humans and

sufficient evidence of carcinogenicity in experimental animals with relevance to humans.
Crystalline Silica 14808-60-7

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Drilling Mud Deflocculant

Molecular formula : Mixture

Component	CAS-No.	Weight %
Ferrous Sulfate	17375-41-6	5 - 10
Crystalline Silica	14808-60-7	1 - 5

4. FIRST AID MEASURES

General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance.

If inhaled : If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.

In case of skin contact : If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.

In case of eye contact : Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed : Induce vomiting immediately and call a physician. Keep respiratory tract clear. If symptoms persist, call a physician. Take victim immediately to hospital.

5. FIRE-FIGHTING MEASURES

Flash point : Not applicable

Autoignition temperature : No data available

Unsuitable extinguishing media : High volume water jet.

Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.

Special protective equipment for fire-fighters : Wear self contained breathing apparatus for fire fighting if necessary.

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in

accordance with local regulations.

Fire and explosion protection	:	Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed.
Hazardous decomposition products	:	Sulfur oxides. Carbon oxides.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Use personal protective equipment. Avoid dust formation. Avoid breathing dust.
Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods for cleaning up	:	Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Handling

Advice on safe handling	:	Avoid formation of respirable particles. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Dispose of rinse water in accordance with local and national regulations.
Advice on protection against fire and explosion	:	Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed.

Storage

Requirements for storage areas and containers	:	Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

US

Ingredients	Basis	Value	Control parameters	Note
Crystalline Silica	ACGIH	TWA	0.025 mg/m3	A2, Respirable fraction
	OSHA Z-1-A	TWA	0.1 mg/m3	Respirable fraction
	NIOSH REL	TWA	0.05 mg/m3	Ca, (respirable dust)
	OSHA Z3	TWA	10 mg/m3	Respirable fraction

A2 Suspected human carcinogen: Human data are accepted as adequate in quality but are conflicting or insufficient to classify the agent as a confirmed human carcinogenE OR, the agent is carcinogenic in experimental animals at dose(s), by route(s) of exposure, at site(s), of histologic type(s), or by mechanism(s) considered relevant to worker exposure. The A2 is used primarily when there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals with relevance to humans.

Ca Potential Occupational Carcinogen

Immediately Dangerous to Life or Health Concentrations (IDLH)

Substance name	CAS-No.	Control parameters	Update
Crystalline Silica	14808-60-7	Immediately Dangerous to Life or Health Concentration Value 50 milligram per cubic meter	1995-03-01

Engineering measures

Adequate ventilation to control airborned concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment

Respiratory protection : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as:. Air-Purifying Respirator for Dusts and Mists / P100. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection : Safety goggles. Eye wash bottle with pure water.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Protective suit. Safety shoes.

Hygiene measures : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance

Form : Powder
Physical state : Solid
Color : Fine reddish-brown with small white specks
Odor : Odorless

Safety data

Flash point	:	Not applicable
Lower explosion limit	:	Not applicable
Upper explosion limit	:	Not applicable
Oxidizing properties	:	no
Autoignition temperature	:	No data available
Molecular formula	:	Mixture
Molecular Weight	:	No data available
pH	:	Not applicable
Pour point	:	No data available
Boiling point/boiling range	:	Not applicable
Vapor pressure	:	Not applicable
Relative density	:	1.5
Water solubility	:	Partly soluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity, kinematic	:	Not applicable
Relative vapor density	:	Not applicable
Evaporation rate	:	Not applicable

10. STABILITY AND REACTIVITY

Chemical stability	:	This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions

Conditions to avoid	:	No data available.
Materials to avoid	:	May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Other data	:	No decomposition if stored and applied as directed.

11. TOXICOLOGICAL INFORMATION

CF Desco® II Deflocculant
Acute oral toxicity : Presumed Not Toxic

CF Desco® II Deflocculant
Skin irritation : Irritating to skin.

May cause skin irritation in susceptible persons.

CF Desco® II Deflocculant
Eye irritation : Eye irritation

May cause irreversible eye damage.

CF Desco® II Deflocculant
Aspiration toxicity : No aspiration toxicity classification.

CF Desco® II Deflocculant
Further information : No data available.

12. ECOLOGICAL INFORMATION

Toxicity to fish

Ferrous Sulfate : LL50: > 6.25 mg/l
Exposure time: 96 h
Species: Cyprinodon variegatus (sheepshead minnow)
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates.

Ferrous Sulfate : LC50: 190 mg/l
Exposure time: 48 h
Species: Acartia tonsa (Marine Copepod)

Toxicity to algae

Ferrous Sulfate : EL50: 45 mg/l
Exposure time: 72 h
Species: Skeletonema costatum (Marine Algae)

Elimination information (persistence and degradability)

Biodegradability : Not applicable

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Harmful to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

The information in this MSDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product	:	The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

14. TRANSPORT INFORMATION

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the MSDS and the bill of lading.

US DOT (United States Department of Transportation)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IMO / IMDG (International Maritime Dangerous Goods)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IATA (International Air Transport Association)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADR (Agreement on Dangerous Goods by Road (Europe))
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

RID (Regulations concerning the International Transport of Dangerous Goods (Europe))
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADN (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

15. REGULATORY INFORMATION

National legislation

SARA 311/312 Hazards	:	Acute Health Hazard Chronic Health Hazard
SARA 302 Reportable Quantity	:	This material does not contain any components with a SARA 302 RQ.
SARA 302 Threshold Planning Quantity	:	SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 304 Reportable Quantity	:	This material does not contain any components with a section 304 EHS RQ.
SARA 313 Ingredients	:	SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

Ozone-Depletion Potential	:	This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).
The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):	:	Acrylic Acid
The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489):	:	Acrylic Acid

US State Regulations

Pennsylvania Right To Know

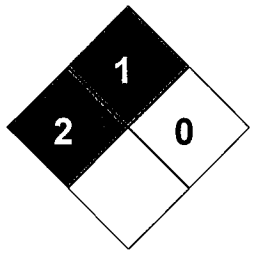
	: Ferrous Sulfate	17375-41-6
	: Crystalline Silica	14808-60-7
	: Acrylic Acid	79-10-7
New Jersey Right To Know		
	: Ferrous Sulfate	17375-41-6
	: Crystalline Silica	14808-60-7
California Prop. 65 Ingredients	: WARNING! This product contains a chemical known in the State of California to cause cancer.	

Notification status

Europe REACH	: A substance or substances in this product is not registered or notified to be registered. Importation or manufacture of this product is still permitted provided that it does not exceed the REACH minimum threshold quantity of the non-regulated substances.
United States of America US.TSCA	: On the inventory, or in compliance with the inventory
Canada DSL	: All components of this product are on the Canadian DSL list.
Australia AICS	: Not in compliance with the inventory
New Zealand NZIoC	: Not in compliance with the inventory
Japan ENCS	: Not in compliance with the inventory
Korea KECI	: Not in compliance with the inventory
Philippines PICCS	: Not in compliance with the inventory
China IECSC	: Not in compliance with the inventory

16. OTHER INFORMATION

NFPA Classification : Health Hazard: 2
Fire Hazard: 1
Reactivity Hazard: 0



Further information

Legacy MSDS Number : 704530

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this MSDS pertains only to the product as shipped.

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates

only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philipines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Compositon, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		

AMBER CHEMICAL INC.

SAFETY DATA SHEET

Transport Symbol	NFPA	GHS	Personal Protective Equipment
Not Regulated			

Section 1: Identification

Product Name:	**Amber Guard 215**
ACI SDS Number:	ACISDS0014
Molecular Formula:	CHO (CH2) 3CHO
Chemical Family:	Dialdehydes
Synonyms:	Glutaraldehyde
Company Name:	Amber Chemical Inc.
Address:	5201 Boylan Street Bakersfield, CA 93308
Phone:	(661) 325-2072
Emergency Contact:	CHEMTREC (Available 24 hours for chemical emergency, spill, leak, fire, exposure, or accident)
Emergency Number:	1-800-424-9300
Product Use:	User is responsible for ensuring that the product is suitable for their purpose.
Date Revised:	May 2015

Section 2: Hazard(s) Identification

Glutaraldehyde
CAS # 111-30-8

GHS Classification:

Health	Environmental	Physical
Acute Toxicity (Oral/Inhalation)- Category 3 **Skin Corrosion/Irritation**- Category 1B **Skin Sensitizer**- Category 1 **Eye Damage**- Category 1 **Respiratory Sensitizer**- Category 1	**Acute Aquatic Toxicity**- Category 1 **Chronic Aquatic Toxicity**- Category 2	**Metal Corrosion**- Category 1

GHS Signal Word: Danger

GHS Label(s):

Hazard Statements:
H290: May be corrosive to metals.
H301: Toxic if swallowed.
H314: Causes severe skin burns and eye damage.
H317: May cause an allergic skin reaction.
H331: Toxic if inhaled.
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H400: Very toxic to aquatic life.
H411: Toxic to aquatic life with long lasting effects.

Precautionary Statements:
Prevention
P260: Do not breathe dust or mist.
P261: Avoid breathing mist.
P264: Wash with plenty of water and soap thoroughly after handling.
P271: Use only outdoors or in a well-ventilated area.
P272: Contaminated work clothing should not be allowed out of the workplace.
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P284: In case of inadequate ventilation wear respiratory protection.
P234: Keep only in original container.

Response
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse SKIN with water/shower.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P391: Collect spillage. Hazardous to the aquatic environment.
P310: Immediately call a POISON CENTER or doctor/physician.
P362+P364: Take off contaminated clothing and wash before reuse.
P390: Absorb spillage to prevent material damage.

Storage
P403+P233: Store in a well-ventilated place. Keep container tightly closed.
P405: Store locked up.
P406: Store in corrosive resistant container with a resistant inner liner.

Disposal
P501: Dispose of contents/container to hazardous or special waste collection point.

Hazards not otherwise classified: The product does not fulfill the criteria for PBT (Persistent/ Bioaccumulative/ Toxic) and vPvB (very persistent/ very bioaccumulative).

Emergency Overview
Causes asthmatic signs and symptoms in hyper-reactive individuals
Wear NIOSH-certified chemical goggles
Wear chemical resistant protective gloves

Wear protective clothing
Eye wash fountains and safety showers must be easily accessible

Section 3: Composition/Information on Ingredients

Chemical	CAS#	NIOSH RTECS#	OSHA IMIS#	Guide#	Content (W/W)
Water	7732-18-5				85.0%
Glutaral	111-30-8	MA2450000	1361	153	15.0%

Section 4: First Aid Measures

Eye Contact: In case of contact with the eyes, check the victim for contact lenses and remove if present. Rinse immediately for at least 30 minutes with plenty of water. Immediate medical attention required. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

Skin Contact: Wash affected areas thoroughly with soap and water. Remove contaminated clothing. Immediate medical attention required.

Inhalation: Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary. Immediate medical attention required. Some symptoms may include: wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest.

Swallowed: Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Immediately rinse mouth and then drink 1 or 2 glasses of water. Do not induce vomiting, seek medical attention. Make sure the victim's airway is open and have the victim lay on his/her side with their head lower than their body.

Note to Physician (Treatment): Treat according to symptoms (decontamination, vital functions), no known specific antidote, administer corticosteroid dose aerosol to prevent pulmonary odema.

Refer to Section 11 for other Health Effects

Section 5: Fire Fighting Measures

Flash Point: No Data Available

Auto-ignition: > 225°C (DIN 51794)

Suitable Extinguishing Media: Water, carbon dioxide, dry extinguishing media, foam

Hazards During Fire-Fighting: Toxic gases/vapors

Protective Equipment for Fire-Fighting: Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Section 6: Accidental Release Measures

Personal Precautions: Use personal protective clothing. Refer to Section 8.

Environmental Precautions: Do not discharge into drains/surface waters/groundwater.

Cleanup: Spills should be contained, solidified, and placed in suitable containers for disposal.

Small Spills: Pick up with absorbent material (e.g. sand, sawdust, general-purpose binder). Dispose of absorbed material in accordance with regulations. Make sure to clean any contaminated surfaces with a soap and water solution. Do not enter contaminated area until it has been considered safe to do so by person in charge.

Large Spills: Pump off product.

Further Information: Pack in tightly closed containers for disposal.

Section 7: Handling and Storage

Handling: Keep away from sources of ignition- no smoking! Handle in accordance with good industrial hygiene and safety practice. Never eat, drink or smoke in work area. Keep container tightly sealed.

Storage: Store protected against freezing.

Storage Incompatibility: General- Segregate from acids, alkalies or combustible materials. Segregate from oxidizing agents. Segregate from incompatible substances.

Refer to Section 8 for Ventilation Requirements

Section 8: Exposure Controls/Personal Protection

Exposure Limits

	CAL/OSHA PEL	NIOSH REL	ACGIH TLV
Glutaral (CAS# 111-30-8)	0.05 ppm (0.2 mg/m^3 Ceiling)	0.2 ppm (0.8 mg/m^3 Ceiling)	0.05 ppm (0.2 mg/m^3 Ceiling)

NIOSH Immediately Dangerous to Life or Health (IDLH) concentration: Not established

Advice on System Design: Provide local exhaust ventilation to control vapors/mists.

Personal Protective Equipment
Respiratory Protection: Wear a NIOSH-certified (or equivalent) organic vapor/ particulate respirator.

Hand Protection: Chemical resistant protective gloves

Eye Protection: Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazards exists.

Body Protection: Body protection must be chosen based on level of activity and exposure.

General Safety and Hygiene Measures: Eye wash fountains and safety showers must be easily accessible. Wear protective clothing as necessary to prevent contact. Avoid inhalation of vapors/mists. Keep away from food, drink and animal feeding stuffs. Avoid contact with skin and eyes. Remove contaminated clothing. Handle in accordance with good industrial hygiene and safety practice.

Section 9: Physical and Chemical Properties

Flash Point	No Data Available
Auto-ignition	> 225°C (DIN 51794)
Form	Liquid

Odor	Characteristic
Color	Yellow
pH Value	Approx. 3.6
Freezing Point	Approx. -5°C (1atm)
Boiling Point	> 100°C (1atm)
Relative Density	1.04 (20C)
Partitioning coefficient n-octanol/ water (log Pow)	-0.36 (23C) (OECD Guideline 107)

Not all physical and chemical properties are displayed on this SDS, as not all information is relevant or available at this time.

Section 10: Stability and Reactivity

Substances to Avoid: Acids, bases and strong oxidizers

Hazardous Reactions: The product is chemically stable.

Decomposition Products: Hazardous decomposition products: carbon monoxide, carbon dioxide

Thermal Decomposition: No data available.

Polymerization: Glutaraldehyde polymerizes on heating and in the presence of water.
Source: National Toxicology Program, 1992

Section 11: Toxicological Information

Test Data
Skin Irritation: Rabbit: Irritant. (Draize test)

Eye Irritation: Rabbit: Severely irritating. (Draize test)

Sensitization: Open epicutaneous test (OET)/guinea pig: sensitizing. The data rely to a diluted watery solution of the substance. Literature data.

Chronic Toxicity
Genetic Toxicity: The substance was mutagenic in various test systems with bacteria and cell cultures; however, these results could not be confirmed in tests with mammals.

Carcinogenicity: In long-term animal studies in which the substance was given in the drinking water in high concentrations, a carcinogenic effect was not observed.

Reproductive Toxicity: Animal studies gave no indication of a fertility impairing effect at doses which were not toxic to the parental animals.

Developmental Toxicity/ Teratogenicity: No indications of a developmental toxic/ teratogenic effect were seen in animal studies.

Acute Toxicity: Ingestion may cause moderate to severe gastrointestinal irritation and ulceration including nausea and vomiting and pain. Inhalation of aerosols may cause respiratory tract irritation and pulmonary inflammation.

Potential Health Effects
Primary Routes of Exposure: Routes of entry for solids and liquids include eye and skin contact, ingestion and inhalation. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Irritation *(Information on: Glutaraldehyde):* Eye and skin contact with glutaraldehyde causes severe irritation; burns and permanent injury may result. Prolonged or repeated skin contact with glutaraldehyde may result in dermatitis.

Sensitization: May cause sensitization by inhalation and skin contact.

Repeated Dose Toxicity *(Information on: Glutaraldehyde):* Overexposures have been known to produce liver damage in animal studies. Fetotoxicity and embryotoxicity in the presence of material toxicity has been shown to occur in rabbits at a high dose of 45 mg/kg.

Medical Conditions Aggravated by Overexposure: Contact may aggravate pulmonary disorders.

Symptoms *(Information on Glutaraldehyde)*: Irritation, eyes, skin, respiratory system; dermatitis, sensitization skin; cough, asthma; nausea, vomiting

Glutaraldehyde (CAS # 111-30-8) Toxicity Information

Species	Concentration	LD_{50} Range
Rat	>5%	0.88-3.25 ml/kg
Rat	<5%	3.34-12.30 ml/kg
Rabbits	46% & 50%	1.59-2.71 ml/kg
Rabbits	25%	8.80-16.00 ml/kg
Rabbits	<15%	Not Lethal

Glutaraldehyde (CAS # 111-30-8) Carcinogenicity Information

National Toxicology Program (NTP) carcinogenic classification: Not listed

International Agency for Research on Cancer (IARC) carcinogenic classification: Not listed

U.S. Environmental Protection Agency (EPA) carcinogenic classification: Not listed

EPA Inhalation Reference Concentration (RfC): Not established

Agency for Toxic Substances and Disease Registry (ATSDR) Inhalation Minimal Risk Level (MRL): Not established

IARC Monographs: Not Listed

Carcinogen Classifications: TLV-A4 (Not Known to be a Human Carcinogen)

Section 12: Ecological Information

Potential Environmental Effects

Aquatic Toxicity: Acutely toxic for aquatic organisms. Depending on local conditions and existing concentrations, disturbances in the biodegradation process of activated sludge are possible.

Environmental Fate and Transport

Biodegradation

Test Method	OECD 301 A (new version) (aerobic), activated sludge, domestic
Method of Analysis	DOC reduction
Degree of Elimination	90-100% (28d)
Evaluation	Readily biodegradable (according to OECD criteria).

Bioaccumulation

Because of the n-octanol/ water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

Environmental Toxicity

Acute and Prolonged Toxicity to Fish
See user defined text. Static
Sunfish, bluegill/ LC50 (96 h): 13mg/l
The details of the toxic effect related to the nominal concentration.

Acute Toxicity to Aquatic Invertebrates
Directive 84/449/EEC, C.2 Static
Daphnia magna/ EC50 (48 h): 29.73 mg/l
The details of the toxic effect relate to the nominal concentration.

Toxicity to Aquatic Plants
OECD Guideline 201 Static
Green algae/EC50 (72 h): 1.20 mg/l
The statement of the toxic effect relates to the analytically determined concentration.

Toxicity to Microorganisms
Bacteria (17 h): 13.3 mg/l

EPA Study on Glutaraldehyde
Soil Contamination: Not likely based on its adsorptions coefficients and its partition into the water phase. Glutaraldehyde degrades rapidly in freshwater and soils causing any impacts to be short-lived.

Surface and Groundwater: Not likely to contaminate due to its biodegradability.

Section 13: Disposal Considerations

Waste Disposal of Substance: It is the waste generator's responsibility to determine if a particular waste is hazardous under RCRA. Disposal can occur only in properly permitted facilities. Refer to regional, state, provincial and local health, safety and pollution laws for any additional requirements, as these may be different from Federal laws and regulations. If in doubt, contact appropriate agencies. Chemical additions, processing or otherwise altering this material may make waste management information presented in the SDS incomplete, inaccurate or otherwise inappropriate. ACI has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

Container Disposal: Dispose of in a licensed facility. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

To minimize exposure refer to Section 8.

Section 14: Transport Information

Land Transport
US D.O.T. Not classified as a dangerous good under transport regulations.

Sea Transport
IMDG Not classified as a dangerous good under transport regulations.

Air Transport
IATA/ ICAO Not classified as a dangerous good under transport regulations.

Note: There are specific regulations in regards to transporting chemicals by water. Shipper is responsible for ensuring that they meet all of the requirements and follow the regulations for the chemical they are transporting.

Section 15: Regulatory Information

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Federal Regulations
Registration Status: TSCA, US: Released/Listed

OSHA Hazard Category: Chronic target organ effects reported. Acute target organ effects reported. Skin and/or eye irritant. Sensitizer. Toxic- oral. Highly Toxic- Inhalation. Corrosive to skin and/or eyes

SARA Hazard Categories (EPCRA 311/312): Acute, Chronic

Glutaral (CAS# 111-30-8) is listed as a Hazardous Substance on the following State's Hazardous Substances Lists.

- California
- Massachusetts
- New Jersey
- Pennsylvania
- Rhode Island

40 CFR Part 63 National Emission Standards for Hazardous Air Pollutants for Source Categories Table 1 to Subpart F of Part 63—Synthetic Organic Chemical Manufacturing Industry Chemicals
Chemical Name: Glutaraldehyde
CAS Number: 111308
Group: IV

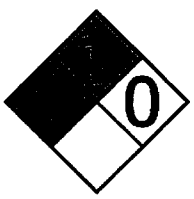
40 CFR 712.30 Section 8(a) of TSCA requires manufacturers of this chemical substance to report preliminary assessment information concerned with production, exposure, and use to EPA as cited in the preamble in 51 FR 41329. Effective date 9/30/91; Reporting date: 11/27/91.

40 CFR 716.120 Pursuant to section 8(d) of TSCA, EPA promulgated a model Health and Safety Data Reporting Rule. The section 8(d) model rule requires manufacturers, importers, and processors of listed chemical substances and mixtures to submit to EPA copies and lists of unpublished health and safety studies. Pentanedial is included on this list.

Section 16: Other Information

Date Revised: May 2015

Glutaraldehyde NFPA Ratings (estimated)



Health	3
Flammability	1
Instability	0

This information is intended solely for the use of individuals trained in the NFPA and HMIS hazard rating systems.

Sources of key data used to compile the Safety Data Sheet: regulations, databases, literature, and own test data.

Disclaimer: All statements, technical information and recommendations contained herein are, to the best of our knowledge, reliable and accurate. The information in this data sheet has been assembled by the manufacturer based on its own studies and on the work of others. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof, nor will any liability be assumed for damages resultant form the use of the material described. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. The manufacturer shall not be liable (regardless of fault) to the vendee, the vendee's employees, or anyone for any direct, special or consequential damages arising out of, or in connection with, the accuracy, completeness, adequacy or furnishing of such information. It is offered solely for your consideration, investigation and verification. As a result, the customer shall be solely responsible for deciding whether said information is suitable and beneficial. Furthermore, vendee assumes the risk in his use of the material. We assume no legal responsibility whatsoever for any damage resulting from reliance upon this information since it is being furnished upon the condition that the person receiving it shall make his or her own determination of the suitability of the material described herein for a particular application or storage situation. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release, and is not to be considered a warranty or quality specification. The user should take the necessary steps to instruct employees, and to develop work practice procedures to ensure and maintain a safe work environment. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process unless specified in the text. Personal Protection rating to be supplied by user depending on use conditions. Since the use of this product is within the exclusive control of the user, it is the user's responsibility to determine the conditions of safe use. Such conditions must comply with all governmental regulations. This information is not intended as a license to operate under, or a recommendation to practice or infringe upon any patent of this company or others covering any process, compositions of matter or use. Neither this data sheet nor any statement contained herein grants or extends any license, express or implied, in connection with patents issued or pending which may be the property of the manufacturer or others.

AMBER CHEMICAL INC.

SAFETY DATA SHEET

Transport Symbol	NFPA	GHS	Personal Protective Equipment
Not Regulated			

Section 1: Identification

Product Name:	Potassium Chloride, Dry
ACI SDS Number:	ACISDS0100
Formula:	KCl
Synonym:	Muriate of Potash
Common Name:	Potash
Company Name:	Amber Chemical Inc.
Address:	5201 Boylan Street Bakersfield, CA 93308
Phone:	(661) 325-2072
Emergency Contact:	CHEMTREC (Available 24 hours for chemical emergency, spill, leak, fire, exposure, or accident)
Emergency Number:	1-800-424-9300
Product Use:	Fertilizer
Date Revised:	August 2014

Section 2: Hazard(s) Identification

Potassium Chloride
CAS# 7447-40-7

GHS Classification:

Health	Environmental	Physical
Acute Toxicity (Oral)- Category 4		

Sodium Chloride
CAS# 7647-14-5

GHS Classification:

Health	Environmental	Physical
Acute Toxicity (Oral)- Category 5		

GHS Signal Word: Warning

GHS Label(s):


(GHS07)

Hazard Statements:
H302: Harmful if swallowed.
H303: May be harmful if swallowed.

Precautionary Statements:
Prevention
P264: Wash skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.

Response
P301+P312: IF SWALLOWED: call a POISON CENTER or doctor/physician IF you feel unwell.
P330: Rinse mouth.

Disposal
P501: Dispose of contents/container to.....

Section 3: Composition/Information on Ingredients

Chemical Name	CAS#	EC Number	% by Weight
Potassium Chloride	7447-40-7	231-211-8	95-99.8%
Sodium Chloride	7647-14-5	231-598-3	0.1-4%

May contain up to 0.25% base lubrication oil and/or 0.03% neutralized primary aliphatic amines.

Section 4: First Aid Measures

Eyes: First check the victim for contact lenses and remove if present. Flush with water, including under upper and lower lids, for 15-30 minutes. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. Immediately transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

Skin: Gently wash all affected skin areas thoroughly with soap and water. If symptoms such as redness or irritation develop, immediately call a physician and be prepared to transport the victim to a hospital for treatment.

Ingestion: Do not induce vomiting. Administer water if patient is conscious and not convulsing. Ingesting potash will usually cause purging of the stomach by vomiting. Immediately call a hospital or poison control center and transport the victim to a hospital.

Inhalation: Remove to fresh air. If symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop, call a physician and be prepared to transport the victim to a hospital.

Refer to Section 11 for other Health Effects.

Section 5: Fire Fighting Measures

Flash Point: None

Auto-ignition Temperature: Not Applicable

Upper/ Lower Explosive Limit: Not Applicable

Unusual Fire and Explosion Hazards: When subjected to extremely high temperatures, it may release small quantities of chlorine gas.

Extinguishing Media: Potash is non-flammable and does not support combustion. Fires that involve Sodium Chloride can be controlled with a dry chemical, carbon dioxide, foam or Halon extinguisher.
Source: NTP, 1992

Special Firefighting Procedures and Equipment: Wear full protective clothing and self-contained breathing apparatus. As this material is virtually non-flammable wear PPE sufficient to fight surrounding fire.

Section 6: Accidental Release Measures

Personal Precautions: Do not eat, drink, or smoke during work. Use local exhaust to reduce dust concentration. Refer to Section 8 for information on Personal Protective Equipment.

Small Spill: Can be used as fertilizer if non-contaminated. If spilled, dampen the solid spill material with water and then transfer the dampened material to a suitable container. Absorbent paper should be used to pick up any remaining material. Seal your contaminated clothing and the absorbent paper in a vapor-tight plastic bag for eventual disposal.
Source: NTP, 1992

Large Spill: Collect with appropriate equipment. If on soil, remove and collect the top 5 cm of soil.

Cleaning: All contaminated surfaces should be thoroughly washed with a strong soap and water solution. The contaminated area should not be reentered until the Safety Officer (or other responsible person) has ensured that the area is uncontaminated.
Source: NTP, 1992

Release Notes: Potash is highly soluble and can be quickly diluted below the toxic level by relatively large amounts of water. Potash which has entered a small non-permanent pond should be removed by pumping the pond dry. If spill could potentially enter any waterway, including intermittent dry creeks, contact the local authorities. If in the U.S., contact the U.S. Coast Guard National Response Center toll free number, 800-424-8802. In case of accident or road spill notify: Chemtrec in USA at 800-424-9300; Canutec in Canada at 613-996-6666 Chemtrec in other countries at (International Code) +1-703-527-3887.

Comments: Large and small spills may have a broad definition depending on the user's handling system. Therefore, the spill category must be defined at the point of release by technically qualified personnel.

Section 7: Handling and Storage

Handling: Avoid generating dust by excessive or unnecessary movement. Avoid contact with strong acids and hot nitric acid. Contain all spills and leaks to prevent discharge into the environment. Never eat, drink or smoke in work area.

Storage: Store in a dry location. Avoid contact with aluminum or carbon steel to minimize corrosion. NTP recommends that Potassium Chloride and Sodium Chloride be stored in a refrigerator.

Ventilation: Local exhaust to reduce dust concentration below recommended levels.

Incompatibilities: Potassium Chloride is incompatible with strong oxidizing agents and strong acids. Sodium Chloride is incompatible with strong oxidizing agents. Sodium Chloride can release gaseous hydrogen chloride if mixed with a concentrated nonvolatile acid such as sulfuric acid.
Source: Cameo Chemical

Section 8: Exposure Controls/Personal Protection

Engineering Controls: May be necessary to minimize dust levels. Use local exhaust to reduce dust concentration below recommended levels.

Personal Protection Equipment
Eye Protection: Use tight-fitting safety goggles in areas of high dust concentration.
Protective Clothing: Gloves, long sleeve shirts and long pants. Launder work clothing regularly.
Respiratory Protection: NIOSH approved dust respirators until engineering controls are implemented.
Other Protective Clothing or Equipment: Optional

	ACGIH TLV	OSHA PEL	CAL/OSHA PEL
Particulates Not Otherwise Regulated (Total Dust)	10 mg/m^3 TWA (inhalable particles)	15 mg/m^3 (50 mppcf*) TWA	10 mg/m^3 TWA
Particulates Not Otherwise Regulated (Respirable Fraction)	3 mg/m^3 (respirable particles)	5 mg/m^3 (15 mppcf*) TWA	5 mg/m^3 TWA

**mppcf= Millions of particles per cubic foot of air*

Section 9: Physical and Chemical Properties

Flash Point	None
Auto-Ignition Temperature	Not Applicable
Upper Explosive Limit	Not Applicable
Lower Explosive Limit	Not Applicable
Appearance	Fine to 4mm size, granules
Color	White to Red Solid
Odor	Slightly Oily Odor
Melting Point	1423°F
Solubility in Water	357 g/L at 25°C
Specific Gravity	2.0 (H_2O=1)
Vapor Density	Not Applicable
Bulk Density	1.98 g/ml
pH	8-9 (solution)
Viscosity	Not Applicable
Boiling Point	1500°C (sublimates)
Boiling Point/Range	1420°C-1500°C
Vapor Pressure (mmHg)	Not Applicable
Molecular Weight	74
% Volatiles	<0.5
Evaporation Rate	Not Applicable

Potassium Chloride Physical and Chemical Properties

Decomposition Temperature	Not Established
Partition Coefficient (Log Pow)	-0.46 at 20°C
Flammability	Not Applicable

Sodium Chloride Physical and Chemical Properties

Vapor pressure	1 mm Hg at 865°C (1589.0°F)

Section 10: Stability and Reactivity

Stability: Stable

Hazardous Polymerization: Will not occur

Conditions to Avoid: None

Materials to Avoid (Incompatibilities): Incompatible with strong oxidizing agents. Contact with strong acid may produce hydrogen chlorine gas; contact with hot nitric acid may produce toxic nitrosyl chloride. Potassium Chloride may have a violent reaction with BrF_3 and with a sulfuric acid potassium permanganate mixture.

Hazardous Decomposition Products: None

Section 11: Toxicological Information

Significant Routes of Exposure: Eyes, Skin, Inhalation, Ingestion

Potential Acute Health Effects: May cause irritation.

Eyes and Skin: Mild irritation, especially in open wounds. Symptoms include redness and pain.

Inhalation: Exposure to high dust concentrations may cause irritation of mucous membranes. Symptoms include cough and sore throat.

Ingestion: A large body load may cause vomiting, nausea, diarrhea, cramps, tingling in hands and feet, weak pulse, and circulatory disturbances.

Ingestion (Large Dose): Poisoning disturbs the rhythm of heart. Large dose may cause gastrointestinal irritation.

Toxicity to Animals: Oral LD_{50} (mouse, rat): 1,500-2,600 mg/kg

Potassium Chloride Toxicity

LD_{50} Mouse Oral 1,500 mg/kg
Source: Iyakuhin Kenkyu. Study of Medical Supplies. Vol. 21, Pg. 257, 1990.

LD_{50} Guinea pig oral 2,500 mg/kg body weight
Source: European Chemicals Bureau; IUCLID Dataset, Potassium Chloride (CAS No. 7447-40-7)

Sodium Chloride Toxicity

LD_{50} Mouse oral 4,000 mg/kg
Source: Kirk-Othmer Encyclopedia of Chemical Technology. 3rd ed., Volumes 1-26. New York, NY: John Wiley and Sons, 1978-1984., p. V15 581 (1981)

LD_{50} Rat oral 3,000 mg/kg
Source: Lewis, R.J. Sr. (ed) Sax's Dangerous Properties of Industrial Materials. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 3238

Chronic Effects on Humans: Not reported to be carcinogenic mutagenic, teralogenic, or allergenic.

Other Effects on Humans: None Known

Carcinogenicity
IARC Monographs: No
NTP Report on Carcinogens: No
OSHA: No

Section 12: Ecological Information

Ecotoxicity
96 hour LC_{50} (rainbow trout) 2010 mg/L
12 hour TLm (aquatic plants) 1337 mg/L
NEOL (aquatic plants) 0.6 g/L
48 hour TLm (daphnia 337 mg/L
72 hour EC50 (aquatic plants) 2500 mg/L

Environmental Fate: Dissolves in water and disassociates into K and Cl ions. Will remain in solution until solubility product (350 g/L) reached. Ions may be absorbed by plants or by animals ingesting water containing potash.

Toxicity: Non-toxic to aquatic organisms as defined by US EPA.

Degradation: Chloride and potassium ions.

Soil Mobility *(Information on Potassium Chloride)*: The transport/leaching of Potassium Chloride in soil is affected by various factors (clay minerals, pH, and organic matter).

Bioaccumulation Potential *(Information on Potassium Chloride)*: Not established.

Plant Toxicity Data *(Information on Potassium Chloride)*: Potassium Chloride is not considered toxic to plant life.
Source: OECD SIDS

Section 13: Disposal Considerations

Product Disposal: Uncontaminated product may be used as fertilizer. Otherwise, dispose according to Federal State or Provincial regulations in a landfill approved to receive potash.

General Comments: Because of its solubility, potash should not be disposed of in a location where run-off will escape.

Disposal can occur only in properly permitted facilities. Refer to regional, state, provincial and local health, safety and pollution laws for any additional requirements, as these may be different from Federal laws and regulations. If in doubt, contact appropriate agencies. Chemical additions, processing or otherwise altering this material may make waste management information presented in the SDS incomplete, inaccurate or otherwise inappropriate. ACI has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

To minimize exposure refer to Section 8.

Section 14: Transport Information

U.S. D.O.T.: Not Regulated

Note: There are specific regulations in regards to transporting chemicals by water. Shipper is responsible for ensuring that they meet all of the requirements and follow the regulations for the chemical they are transporting.

Section 15: Regulatory Information

SARA Hazard Category:
This product has been reviewed according to the EPA Hazard Categories promulgated under Section 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire: No
Pressure Generating: No
Reactivity: No
Acute: No
Chronic: No

40 CFR Part 355- Extremely Hazardous Substances: Not Listed
40 CFR Part 370- Hazardous Chemical Reporting: Exemptions at 40 CFR, Part 370 may apply for agricultural use, or quantities of less than 10,000 pounds on-site.

All intentional ingredients listed on the TSCA inventory.

SARA Title III Information: This product contains the following substances subject to the reporting requirements of Title III (EPCRA) of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

Chemical	CAS #	Percent by Weight	CERCLA RQ (lbs.)	SARA (1986) Reporting		
				311	312	313
Potassium Chloride	7447-40-7	95-99.8	N/A	No	No	No
Sodium Chloride	7647-14-5	0.1-4	N/A	No	No	No

CERCLA/Superfund, 40 CFR Parts 117, 302: If this product contains components subject to substances designated a CERCLA Reportable Quantity (RQ) Substances, it will be designated in the above table with the RQ value in pounds. If there is a release of RQ Substance to the environment, notification to the National Response Center, Washington D.C. (1-800-424-8802) is required.

FDA: Potassium Chloride used as a dietary supplement in food for human consumption is generally recognized as safe (GRAS) when used in accordance with good manufacturing practice (21 CFR 182.5622). Substance added directly to human food affirmed as GRAS (21 CFR 184.1622)

Canada
WHMIS Hazard Symbol and Classification: Not Controlled
Ingredient Disclosure List: This product does not contain ingredient(s) on this list.
Environmental Protection: All intentional ingredients are listed on the DSL (Domestic Substance List).

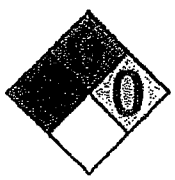
Section 16: Other Information

Date Revised: August 2014

Potassium Chloride NFPA Hazard Rating (estimated)

Health	1
Flammability	0
Instability	0

Sodium Chloride NFPA Hazard Rating (estimated)



Health	0
Flammability	0
Instability	0

This information is intended solely for the use of individuals trained in the NFPA and HMIS hazard rating systems.

Disclaimer: All statements, technical information and recommendations contained herein are, to the best of our knowledge, reliable and accurate. The information in this data sheet has been assembled by the manufacturer based on its own studies and on the work of others. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof, nor will any liability be assumed for damages resultant form the use of the material described. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. The manufacturer shall not be liable (regardless of fault) to the vendee, the vendee's employees, or anyone for any direct, special or consequential damages arising out of, or in connection with, the accuracy, completeness, adequacy or furnishing of such information. It is offered solely for your consideration, investigation and verification. As a result, the customer shall be solely responsible for deciding whether said information is suitable and beneficial. Furthermore, vendee assumes the risk in his use of the material. We assume no legal responsibility whatsoever for any damage resulting from reliance upon this information since it is being furnished upon the condition that the person receiving it shall make his or her own determination of the suitability of the material described herein for a particular application or storage situation. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release, and is not to be considered a warranty or quality specification. The user should take the necessary steps to instruct employees, and to develop work practice procedures to ensure and maintain a safe work environment. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process unless specified in the text. Personal Protection rating to be supplied by user depending on use conditions. Since the use of this product is within the exclusive control of the user, it is the user's responsibility to determine the conditions of safe use. Such conditions must comply with all governmental regulations. This information is not intended as a license to operate under, or a recommendation to practice or infringe upon any patent of this company or others covering any process, compositions of matter or use. Neither this data sheet nor any statement contained herein grants or extends any license, express or implied, in connection with patents issued or pending which may be the property of the manufacturer or others.

Approved By:

Bob Presley *(Safety Manager)*

Nick Brister *(Operations Manager)*

SDS no. 10337
Version 7
Revision date 09/Oct/2015
Supersedes date 02/Sep/2015

Safety Data Sheet
SAFE-CARB† (all grades)

1. Identification

1.1 Product identifier

Product name SAFE-CARB† (all grades)

Product code 10337

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Completion fluid additive. Bridging and weighting agent.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

M-I SWACO, A Schlumberger Company
200 - 125, 9th Avenue SE
Calgary, Alberta T2G 0P6, Canada
Telephone: 1-780-962-8221

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Bethicia Prasek

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards

Carcinogenicity	Category 1A

Environmental hazards Not classified

Physical Hazards Not classified

2.2 Label elements

Signal word
DANGER

Hazard statements
H350 - May cause cancer

Precautionary statements
P201 - Obtain special instructions before use
P281 - Use personal protective equipment as required
P308 + P313 - IF exposed or concerned: Get medical advice/ attention

Supplementary precautionary statements
P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P281 - Use personal protective equipment as required
P308 + P313 - IF exposed or concerned: Get medical advice/attention
P501 - Dispose of contents/ container to an approved waste disposal plant

Unknown acute toxicity 0% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Component	CAS-No	Weight % - range
Silica, crystalline, quartz	14808-60-7	1 - 5

Comments
The product contains other ingredients which do not contribute to the overall classification. The exact percentage (concentration) of composition has been withheld as a trade secret

4. First aid measures

4.1 First-Aid Measures

Inhalation Move to fresh air. If breathing is difficult, (trained personnel should) give oxygen. Get medical attention immediately if symptoms occur.

Ingestion	Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.
Skin contact	Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if irritation persists.
Eye contact	Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

Main symptoms

Inhalation	Please see Section 11. Toxicological Information for further information.
Ingestion	Please see Section 11. Toxicological Information for further information.
Skin contact	Please see Section 11. Toxicological Information for further information.
Eye contact	Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
None known.

Hazardous combustion products
Carbon oxides (COx), Calcium oxide.

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear suitable protective equipment. Evacuate personnel to safe areas. Prevent further leakage or spillage if safe to do so. Avoid dust formation.

6.2 Environmental precautions

Do not allow material to contaminate ground water system.

Environmental exposure controls
No information available.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Cover powder spill with plastic sheet or tarp to minimize spreading.

Methods for cleaning up
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).

6.4 Reference to other sections

No information available.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Avoid breathing dust; if exposed to high dust concentration, leave area immediately. Avoid contact with skin, eyes and clothing.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation.

Storage precautions Protect from moisture

8. Exposure controls/personal protection

8.1 Control parameters

Component Information

Component	ACGIH TLV	OSHA PEL
Silica, crystalline, quartz	0.025 mg/m³	see Table Z-3

Silica, crystalline, quartz
OSHA - Final PELs - Table Z-3 Mineral Dusts
(30)/(%SiO2 + 2) mg/m³ TWA, total dust; (250)/(%SiO2 + 5) mppcf TWA, respirable fraction; (10)/(%SiO2 + 2) mg/m³ TWA, respirable fraction

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye protection Tightly fitting safety goggles.
Hand protection Neoprene, Nitrile.

Respiratory protection	All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent. If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator. If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.
Hygiene measures	Wash hands before breaks and immediately after handling the product, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid
Appearance	Opaque
Color	White
Odor	Odorless
Odor threshold	Not applicable

Property	Values	Remarks
pH	Not applicable	
pH @ dilution	No information available	
Melting/freezing point	No information available	
Boiling point/range	No information available	
Flash point	No information available	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	2.7 - 2.8	
Bulk density	No information available	
Water solubility	Insoluble in water	
Solubility in other solvents	Insoluble	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	No information available
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable. Hazardous polymerization does not occur.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
None known.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

Acids.

10.6 Hazardous decomposition products

None known.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation — Inhalation of dust in high concentration may cause irritation of respiratory system. Repeated or prolonged inhalation of crystalline silica dust can cause delayed lung injury, and other diseases, including silicosis and lung cancer.

Eye contact — Dust contact with the eyes can lead to mechanical irritation.

Skin contact — Repeated exposure may cause skin dryness or cracking.

Ingestion — Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Silica, crystalline, quartz	= 500 mg/kg (Rat)	No data available	No data available

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Silica, crystalline, quartz	Group 1; Monograph 100C [in preparation] Group 1; Monograph 68 [1997] Monograph 100C [in preparation] (listed under Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources); Monograph 68 [1997]	A2 Suspected Human Carcinogen	Present	Known Human Carcinogen

Sensitization	This product does not contain any components suspected to be sensitizing.
Mutagenic effects	No evidence of mutagenic properties.
Carcinogenicity	Contains a known or suspected carcinogen. Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled.
Reproductive toxicity	No evidence of toxicity to reproduction.
Developmental toxicity	Not known to cause birth defects or have a deleterious effect on a developing fetus.
Routes of exposure	Skin contact. Inhalation. Eye contact.
Routes of entry	Inhalation.
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.
Aspiration hazard	Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Silica, crystalline, quartz 14808-60-7 (1 - 5)	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No product level data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

UN No. (DOT)	Not regulated
UN No. (TDG)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name
The product is not covered by international regulation on the transport of dangerous goods

14.3 Hazard class(es)

DOT Hazard class	Not regulated
TDG Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
TDG Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard
No

14.6 Special precautions
Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies
European Union (EINECS and ELINCS)	Complies
Philippines (PICCS)	Complies
Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Delayed (chronic) health hazard.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Silica, crystalline, quartz	N/A	N/A	N/A

State Comments
Proposition 65: This product contains chemical(s) considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 to cause cancer and/or reproductive toxicity. See table under U.S. Federal and State Regulations for the specific chemicals.

Silica, crystalline, quartz
carcinogen

Canadian Classification

This Safety Data Sheet has been prepared in compliance with the Hazardous Products Regulations.

16. Other information

Supersedes date	02/Sep/2015
Revision date	09/Oct/2015
Version	7
The following sections have been revised:	1, 3, 8, 10, 15, 16.

HMIS classification

Health	1*
Flammability	0
Physical hazard	0

N/A - Not Applicable, N/D - Not Determined.

Disclaimer

The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

SDS no. 12459
Version 3
Revision date 18/Jun/2014
Supersedes date 19/May/2011

Safety Data Sheet
THRUTROL†

1. Identification of the substance/preparation and of the Company/undertaking

1.1 Product identifier

Product name THRUTROL†
Product code 12459

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Drilling fluid additive

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.
P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com

Prepared by
Global Chemical Regulatory Compliance (GCRC) , Mike McDowell

1.4 Emergency Telephone Number

Emergency telephone - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600
Telephone Number - 281-561-1512

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards

Combustible dust

2.2 Label elements

Signal word
WARNING

May form combustible dust concentrations in air

Precautionary statements
P240 - Ground/bond container and receiving equipment
P243 - Take precautionary measures against static discharge

Supplementary precautionary statements
P241 - Use explosion-proof electrical/ ventilating/ lighting/ equipment

3. Composition/information on Ingredients

3.1 Substances

Component	CAS-No	Weight % - range
Polysaccharide	Proprietary	60 - 100

3.2 Mixtures

Not Applicable

4. First aid measures

4.1 Description of first-aid measures

Inhalation — If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Ingestion — Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

Skin contact — Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.

Eye contact — Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

General advice — The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

Main symptoms

Inhalation — Please see Section 11. Toxicological Information for further information.

Ingestion — Please see Section 11. Toxicological Information for further information.

Skin contact — Please see Section 11. Toxicological Information for further information.

Eye contact — Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician — Treat symptomatically.

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
Suspended dust may present a dust explosion hazard.

Hazardous combustion products
Carbon oxides (COx).

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Use personal protective equipment. See also section 8. Evacuate personnel to safe areas. If spilled, take caution, as material can cause surfaces to become very slippery.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation.

Hygiene measures
Use good work and personal hygiene practices to avoid exposure. Do not eat, drink or smoke when using this product.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation. Provide appropriate exhaust ventilation at places where dust is formed. Keep airborne concentrations below exposure limits.

Storage precautions Keep away from open flames, hot surfaces and sources of ignition. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls/personal protection

8.1 Control parameters

Component	ACGIH TLV	OSHA PEL
Polysaccharide (60 - 100)	Not Determined	Not Determined

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection It is good practice to wear goggles when handling any chemical. Tightly fitting safety goggles.

Hand protection Repeated or prolonged contact:, Use protective gloves made of:, Nitrile, Neoprene gloves.

Respiratory protection All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator.

If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.

Skin and body protection Wear suitable protective clothing.

Hygiene measures Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid powder
Appearance	Opaque
Odor	Mild
Color	Off-white
Odor threshold	Not applicable

Property	Values	Remarks
pH		
pH @ dilution	9.0 - 10.5 @ 4%	
Melting/freezing point		
Boiling point/range	No information available	
Flash point	Does not flash	
Evaporation rate (BuAc =1)		
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	Not applicable	
Lower flammability limit	Not applicable	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	0.48 - 0.64	
Bulk density	No information available	
Relative density	No information available	
Water solubility	Insoluble in water	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	Does not bioaccumulate	
Explosive properties	Not Applicable	
Oxidizing properties	None known.	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	None
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
None under normal processing.

10.4 Conditions to avoid

Heat, flames and sparks.

10.5 Incompatible materials

Strong oxidizing agents. Acids. Bases.

10.6 Hazardous decomposition products

Carbon oxides (COx).

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation	Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.
Eye contact	Dust may cause mechanical irritation.
Skin contact	Repeated exposure may cause skin dryness or cracking.
Ingestion	Irritant; may cause pain or discomfort to mouth, throat and stomach.
Acute toxicity	0% of the mixture consists of ingredient(s) of unknown toxicity.

Component	LD50 Oral	LD50 Dermal	LD50 Inhalation
Polysaccharide	No data available	No data available	No data available

Sensitization	This product does not contain any components suspected to be sensitizing.
Mutagenic effects	This substance has no evidence of mutagenic properties.
Carcinogenicity	This substance has no evidence of carcinogenic properties.
Reproductive toxicity	None known.
Routes of exposure	Skin contact. Inhalation. Eye contact.
Routes of entry	No route of entry noted.
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.
Target organ effects	None known.
Aspiration hazard	No hazard from product as supplied.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Polysaccharide	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Waste from residues / unused products Dispose of in accordance with local regulations.

Contaminated packaging Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

Not regulated

UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated
UN No. (DOT)	Not regulated

14.2 Proper shipping name
Not regulated for transportation by DOT, TDG, IMDG and ICAO/IATA.

14.3 Hazard class(es)

ADR/RID/ADN Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated
DOT Hazard class	Not regulated

14.4 Packing group

ADR/RID/ADN Packing Group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated
DOT Packing group	Not regulated

14.5 Environmental hazard
No

14.6 Special precautions
Not Applicable

15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

International inventories

USA (TSCA)	Complies
European Union (EINECS and ELINCS)	Complies
Canada (DSL)	Complies
Philippines (PICCS)	Complies
Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

U.S. Federal and State Regulations

SARA 311/312 Hazard Catagories Not a SARA 311/312 hazard.

SARA 302/304, 313, CERCLA RQ, California Proposition 65
Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class Not a controlled product.

16. Other information

Supersedes date	19/May/2011
Revision date	18/Jun/2014
Version	3

HMIS classification

Health	1
Flammability	1
Physical hazard	0
PPE	E

N/A - Not Applicable, N/D - Not Determined.

†A mark of M-I L.L.C.

Disclaimer
The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

GEO
DRILLING FLUIDS INC.

Safety Data Sheet – Omnipol II

Section 1: Product and Company Identification

Product Identifier: Omnipol II
Product Names: Omnipol II

Product uses: Drilling fluids

Company:
GEO Drilling Fluids Inc
1431 Union Ave
Bakersfield, CA 93305

Emergency Telephone Number: 1-800-498-1496
Telephone Number for Information: 1-800-498-1496

Section 2: Hazards Identification

Classification according to paragraph (d) of Regulation 29 CFR 1910.120: Not classified
Signal Word: none
Hazard Statement: none
Precautionary Statement: none

Section 3: Composition Information

Mixture:
Contains no reportable hazardous substances

Section 4: First-Aid Measures

Eye Contact: Rinse immediately with plenty of water, seek medical attention
Skin Contact: Avoid prolonged or repeated contact with skin. Wash thoroughly with soap and water. If irritation persists, seek medical attention
Inhalation: Move victim to fresh air in well ventilated area. No hazards which require special first aid measures
Ingestion: Do not induce vomiting unless directed to do so by medical personnel, get medical attention

Section 5 Fire Fighting Measures

Suitable Extinguishing Media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide
Unsuitable extinguishing media: none known
Special hazards arising from the substance or mixture: Thermal decomposition may produce: Carbon oxides (CO_x) and Nitrogen oxides (NO_x)
Special Fire Fighting Procedure: No special protective measures against fire required. Wear self contained breathing apparatus if necessary.
Other: Will not burn until water is evaporated, spilled material produce extremely slippery surfaces

GEO
DRILLING FLUIDS INC.

Safety Data Sheet – Omnipol II

Section 6: Accidental Release Measures

Clean-up Methods: dam spilled material, mix with inert dry material then vacuum or shovel spill. Do not flush with water except to deal with residue.
Personal Precautions and Personal Protective Equipment: Wear appropriate protective equipment and clothing during clean-up (Section 8). Spills produce extremely slippery surfaces.
Environmental Precautions: Do not flush into surface water.

Section 7: Handling and Storage

Precautions for safe handling: Material can render surfaces extremely slippery.
Conditions for safe storage including any incompatibilities: Keep container tightly closed. Freezing mayh damage the material

Handling Procedures: Use good industrial hygiene practices. Smoking, eating and drinking should be prohibited in the application area. Wash thoroughly after handling. Contaminated clothing and PPE should be removed before entering eating areas. Keep out of the reach of children.

Section 8: Exposure Controls/Personal Protection

Occupational Exposure Limits: None
Engineering Measures: Use local exhaust ventilation if misting occurs

Personal Protective Equipment (PPE):

Respiratory: Not required except in case of aerosol formation
Eyes: Safety glasses with side shields or goggles.
Skin and Body: Chemical resistant apron or protective suit if splashing or repeated contact with material is likely
Hand protection: impervious gloves
Hygiene measures: Wash hands before breaks and at the end of work day, keep away from food and beverages.
Environmental Exposure controls: Do not allow uncontrolled discharge of produce into the environment. Do not flush into surface water.

Section 9: Physical and Chemical Properties

Appearance: Clear to slightly yellow liquid	**Odor:** slight

DRILLING FLUIDS INC.

Safety Data Sheet – Omnipol II

Physical state: Liquid	**Odor threshold:** No data Available
pH: 6-9	**Flashpoint:** Does not flash
Melting/Freezing Point: <0C	**Boiling Point:** 100C
Evaporation Rate: Same as Water	**Flammability:** NA
Vapor Pressure (mm HG): 2-3 kpa @ 20C	**Vapor Density:** ~0.8 g/l
Relative density: 1-1.4	**Specific Gravity:** NA
Solubility in water at 100 C: miscible	**Partition coefficient:** ~0
Decomposition temperature: >100C	**Auto-ignition temperature:** NA
Viscosity: no data available	**Explosive Limits:** Not expected to be explosive

Section 10: Stability and Reactivity

Reactivity: None known
Chemical Stability: Stable under normal conditions
Possibility of Hazardous Reactions and Conditions to Avoid: None known under normal use conditions
Conditions to avoid: Frost, heat, and sunlight
Incompatibility: None
Hazardous decomposition products: Thermal decomposition may produce: Carbon oxides (CO_x) Nitrogen Oxides (NO_2)

Section 11: Toxicological Information

Acute oral toxicity: LD_{50} / Oral/ Rat> 5000 mg/kg (estimated)
Acute dermal toxicity: LD_{50}/Dermal/rat >5000 mg/kg (estimated)
Acute inhalation toxicity: No Data available
Skin corrosion/irritation: not expected to be irritating
Serious eye damage/ eye Irritation: Not expected to be irritating
Respiratory/ Skin Sensitization: not expected to be sensitizing
Mutagenicity: Not expected to be mutagenic
Carcinogenicity: Not expected to be carcinogenic
Reproductive Toxicity: Not expected to be toxic for reproduction
STOT: No data available
Aspiration toxicity: No hazards resulting from the material as supplied

Section 12: Ecological Information

Acute Toxicity to Fish: LC_{50}/Fish/96 hours >100 mg/l (estimated)
Acute Toxicity Invertebrates: EC_{50}/Daphnia/ 48 hours >100 mg/l (estimated)
Acute toxicity Algae: IC_{50}/Algae/72 hours >100 mg/l (estimated)
Chronic Toxicity to Fish: No data available
Toxicity to microorganisms: No data available
Effects on terrestrial organisms : No data available

DRILLING FLUIDS INC.

Safety Data Sheet – Omnipol II

Sediment Toxicity: No data available
Degradation: Not readily biodegradable
Hydrolysis: Does not hydrolyze
Photolysis: No data available
Bioaccumulative Potential: Not expected to bioaccumulate
Partition Co-Efficient ~0
Bioconcentration Factor: No data available
Mobility in Soil: No data available

Section 13: Disposal Considerations

Personal Protection: Refer to section 8 for proper PPE when disposing of waste material
Appropriate disposal containers: No special requirements
Appropriate disposal methods: Disposal of this product should comply with the requirements of environmental protection and waste disposal legislation and any regional or local authority requirements.
Physical and chemical properties that may affect disposal: Dust should be minimized in disposal by either transporting in seal containers or wetting dust before transport
Sewage disposal: do not dispose of into sewage systems, material will settle out of water and clog pipes.
Special precautions for landfills or incineration activities: None

Section 14: Transport Information

Regulatory Information	UN Number	UN Proper Shipping Name	Transport Hazard Class	Packing Group Number	Bulk Transport Guidance	Special Precautions
DOT Classification	Not Regulated	-	-	-	-	-
TDG Classification	Not Regulated	-	-	-	-	-
ADR/RID Class	Not Regulated	-	-	-	-	-
IMDG Class	Not Regulated	-	-	-	-	-
IATA-DGR Class	Not Regulated	-	-	-	-	-

Section 15 Regulatory Information

TSCA – Toxic Substances Control Act – EPA All components exempt from listing

California Proposition 65 Information: Not concerned

GEO
DRILLING FLUIDS INC.

Safety Data Sheet – Omnipol II

SARA/Title III (Emergency Planning & Community Right-to-Know Act This mixture contains no substances at or above the reporting threshold under section 313, based on available data.

Section 16: Other Information

The information presented herein has been compiled from sources considered to be dependable and is accurate and reliable to the best of our knowledge and belief but is not guaranteed to be so, nothing here in is to be construed as recommending any practice or product in violation of any patent, law, or regulation. It is the user's responsibility to determine the suitability of any material for a specific purpose and to adopt such safety precautions as may be necessary. We make no warranty as to the results to be obtained in using any material and, since conditions of use are not under our control, we must necessarily disclaim all liability with respect to the use of any material we supply.

MATERIAL SAFETY DATA SHEET

#1700, 407 2ND STREET S.W., CALGARY, ALBERTA T2P 2Y3
TELEPHONE: (403) 269-2242 FAX: (403) 269-2251
1-613-996-6666 – CANUTEC – Transportation Emergency
1-888-243-9771 – ChExSS – Chemical Exposure

PRIMA SEAL

SECTION I: IDENTIFICATION OF PRODUCT

Product Name: PRIMA SEAL
Chemical Family: Vegetable and polymer fibres
WHMIS Classification: Not controlled
Workplace Hazard: Not applicable

Product Use: Lost circulation control
TDG Classification: Not Regulated
Packaging Group: Not applicable
PIN: Not applicable

SECTION II: HAZARDOUS INGREDIENTS

Ingredients	Percent	CAS Number	LD_{50} (Species/Route)	LC_{50} (Species/Route)

Contains no WHMIS controlled ingredients.

SECTION III: TOXICOLOGICAL PROPERTIES

Route of entry: ☐ **Skin** ☒ **Eye Contact** ☐ **Inhalation** ☐ **Ingestion**

Effects of acute exposure: May cause mechanical irritation to the eyes and slight irritation to the upper respiratory tract.

Effects of chronic exposure: Prolonged or repeated contact may cause irritation in some individuals.

Exposure limits: Not available

Irritancy of product: May cause mechanical irritation to the eyes and slight irritation to the upper respiratory tract. Prolonged or repeated contact may cause irritation in some individuals.

Sensitization to product: Not determined

Carcinogenicity: No information available

Reproductive toxicity: No information available

Teratogenicity: No information available

Mutagenicity: No information available

Name of toxicological synergistic products: No information available

SECTION IV: FIRST AID MEASURES

Skin contact: Flush with water. Launder contaminated clothing before re-use. If irritation persists, obtain medical attention.

Eye contact: Immediately flush with gently flowing warm water until particles are removed. If irritation persists, obtain medical attention.

Inhalation: Move to fresh air. Apply oxygen or artificial respiration if required. If breathing difficulties, or distress, continue obtain medical attention.

Ingestion: Do not induce vomiting. If conscious, rinse out mouth and give 1 to 2 glasses of water to drink. If vomiting occurs keep head below hips to prevent aspiration of vomits and readminister water. If symptoms develop, obtain medical attention. Never give anything by mouth to an unconscious or convulsing victim.

SECTION V: PHYSICAL DATA

Physical state: Solid

Appearance and odour: Yellow/brown particles; slight odour

Odour threshold: Not applicable

Specific gravity (°C): Not applicable

Vapor pressure (mmHG): Not applicable

Vapor density (Air=1): Not applicable

Evaporation rate: Not applicable

Boiling point (°C): Not applicable

Freeze/Melting point (°C): Not applicable

pH (%): Not applicable

Co-efficient of water/oil distribution: Not applicable

SECTION VI: FIRE AND EXPLOSION DATA

Conditions of flammability: This material can burn under fire conditions

Means of extinguishing: Use media suitable for packaging and surrounding materials. Move containers from fire area if possible.

Flash point: Not flammable

Upper flammable limit: Not applicable

Lower flammable limit: Not applicable

Auto-ignition temperature: Not applicable

Hazardous combustion products: Oxides of carbon and possibly other elements.

Explosion data-sensitivity to mechanical impact: Not applicable

Explosion data-sensitivity to static discharge: Not applicable

SECTION VII: REACTIVITY DATA

Chemically unstable (conditions): Stable.

Product incompatible with: None known

Conditions of reactivity: None known

Hazardous decomposition products: Not determined

SECTION VIII: PREVENTATIVE MEASURES

Personal protective equipment: Use an approved dust mask, or respirator with dust cartridges, if ventilation is inadequate. Protective gloves: Personal preference. Safety glasses with side-shields recommended. Wear clothing adequate to protect against exposure.

Specific engineering controls: Use local exhaust ventilation, process enclosure or other engineering controls to maintain dust level below TLV. Ensure eye-wash station and emergency shower are available.

Procedures for leak/spills: Use appropriate safety equipment. Vacuum or sweep up. Avoid creating dust clouds. Collect uncontaminated material for repackaging. Collect contaminated material in approved containers for disposal.

Waste disposal: Dispose in accordance with federal, provincial and local regulations. This material can be landfilled in most areas; check with local operator. It is the responsibility of the end user to determine if material meets the criteria of hazardous waste at the time of disposal

Handling procedures and equipment: Wash thoroughly after handling. Avoid contact with eyes, skin or clothing. Avoid generating dust.

Storage requirements: Store in a cool, dry area away from ignition sources.

Special shipping information: Not applicable

SECTION IX: PREPARATION

Date updated: March 6, 2007 **Prepared by:** Product Safety Committee

All the recommendations and suggestions herein concerning this product are based upon tests and data believed to be reliable, however it is the user's responsibility to determine the safety, toxicity and sustainability for their own use of the product described herein. Since the actual use by others is beyond our control, no guarantee, expressed or implied, is made by Q'Max Solutions Inc. as to the effects of such use, the results to be obtained, or the safety and toxicity of the product nor does Q'Max Solutions Inc. assume any liability arising out of use by others. Nor is the information herein to be considered as absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations.

SDS no. PID1436
Version 7
Revision date 18/Sep/2015
Supersedes date 02/Mar/2011

Safety Data Sheet
SAPP

1. Identification

1.1 Product identifier

Product name SAPP

Product code PID1436

Molecular weight 222.15

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use SAPP dispersant. Thinner.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

M-I SWACO, A Schlumberger Company
200 - 125, 9th Avenue SE
Calgary, Alberta T2G 0P6, Canada
Telephone: 1-780-962-8221

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Bethicia Prasek

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards

Serious eye damage/eye irritation	Category 2

Environmental hazards Not classified

Physical Hazards Not classified

2.2 Label elements

Signal word
WARNING

Hazard statements
H319 - Causes serious eye irritation

Precautionary statements
P264 - Wash face, hands and any exposed skin thoroughly after handling
P280 - Wear protective gloves/protective clothing and eye/face protection
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P313 - Get medical advice/attention
P501 - Dispose of contents/container in accordance with local regulations.

Unknown acute toxicity 0% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Component	CAS-No	Weight % - range
Disodium dihydrogen diphosphate	7758-16-9	60-100

3.2 Mixtures

Not Applicable

Comments
The exact percentage (concentration) of composition has been withheld as a trade secret

4. First aid measures

4.1 First-Aid Measures

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Ingestion Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

Skin contact	Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.
Eye contact	Remove contact lenses. Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Seek immediate medical attention/advice.

4.2 Most important symptoms and effects, both acute and delayed

General advice	The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.
Main symptoms	
Inhalation	Please see Section 11. Toxicological Information for further information.
Ingestion	Please see Section 11. Toxicological Information for further information.
Skin contact	Please see Section 11. Toxicological Information for further information.
Eye contact	Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician	Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing media appropriate for surrounding material.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
None known.

Hazardous combustion products
Fire or high temperatures create:, Oxides of phosphorus.

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. See also section 8.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation.

Hygiene measures
Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands before eating, drinking or smoking. Remove contaminated clothing.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions	Ensure adequate ventilation. Keep airborne concentrations below exposure limits.
Storage precautions	Keep containers tightly closed in a dry, cool and well-ventilated place. Avoid contact with: Strong alkalies. Protect from moisture Keep away from direct sunlight.
Packaging material	Use specially constructed containers only.

8. Exposure controls/personal protection

8.1 Control parameters

Exposure limits

Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m³ (Inhalable); 3 mg/m³ (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m³ (Total); 5 mg/m³ (Respirable).

Component	ACGIH TLV	OSHA PEL
Disodium dihydrogen diphosphate 7758-16-9 (60-100)	Not Determined	Not Determined

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection	Tightly fitting safety goggles.
Hand protection	Wear chemical resistant gloves such as nitrile or neoprene.
Respiratory protection	No personal respiratory protective equipment normally required In case of insufficient ventilation wear suitable respiratory equipment Use NIOSH approved respirator with dust and mist protection (3M 8210). If dust concentration exceeds 5 times the exposure limit, wear an approved HEPA respirator
Skin and body protection	Wear suitable protective clothing, Provide eyewash station.
Hygiene measures	Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid
Appearance	Crystalline Powder
Color	White
Odor	Odorless
Odor threshold	Not applicable

Property	Values	Remarks
pH	No information available	
pH @ dilution	4.0 - 5.0	@ 10 g/l
Melting/freezing point	No information available	
Boiling point/range	No information available	
Flash point	Non-flammable No information available	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	1.8 - 1.9 sg	20 °C
Bulk density	1000-1200 kg/m³	
Water solubility	Soluble in water	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	Not determined	
Explosive properties	Not Applicable	
Oxidizing properties	None known.	

9.2 Other information

Pour point	No information available
Molecular weight	222.15
VOC content(%)	None
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

10.4 Conditions to avoid

Protect from moisture. Avoid excessive heat for prolonged periods of time.

10.5 Incompatible materials

Strong alkalies.

10.6 Hazardous decomposition products

See also section 5.2.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation	Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.
Eye contact	Causes serious eye irritation.
Skin contact	Prolonged skin contact may cause skin irritation.
Ingestion	Ingestion may cause stomach discomfort.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Disodium dihydrogen diphosphate	= 1800 mg/kg (Rat)	No data available	> 0.58 mg/L (Rat) 4 h

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Disodium dihydrogen diphosphate	No data available	No data available	No data available	No data available

Sensitization This product does not contain any components suspected to be sensitizing.

Mutagenic effects	This substance has no evidence of mutagenic properties.
Carcinogenicity	This substance has no evidence of carcinogenic properties.
Reproductive toxicity	None known.
Developmental toxicity	Not known to cause birth defects or have a deleterious effect on a developing fetus.
Routes of exposure	Eye contact.
Routes of entry	No route of entry noted.
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.
Aspiration hazard	Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
This product is not considered toxic to algae.

Toxicity to fish
Not considered toxic to fish.

Toxicity to daphnia and other aquatic invertebrates
Not considered toxic.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Disodium dihydrogen diphosphate	No information available	No information available	No information available

12.2 Persistence and degradability

Not Applicable - Inorganic chemical.

12.3 Bioaccumulative potential

Not Applicable - Inorganic chemical.

12.4 Mobility in soil

Soluble in water.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

Not regulated

UN No. (DOT)	Not regulated
UN No. (TDG)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

The product is not covered by international regulation on the transport of dangerous goods

14.3 Hazard class(es)

DOT Hazard class	Not regulated
TDG Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
TDG Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

No

14.6 Special precautions

Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies
European Union (EINECS and ELINCS)	Complies
Philippines (PICCS)	Complies

Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

IMPORTS, Canada
No import volume restrictions.

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Immediate (acute) health hazard.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Disodium dihydrogen diphosphate	N/A	N/A	N/A

State Comments
Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

Canadian Classification

This Safety Data Sheet has been prepared in compliance with the Hazardous Products Regulations.

16. Other information

Supersedes date	02/Mar/2011
Revision date	18/Sep/2015
Version	7
The following sections have been revised:	All sections. Updated according to GHS/CLP.

HMIS classification

Health	2
Flammability	1
Physical hazard	0
PPE	E

Disclaimer
The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

SDS no. 12462
Version 2
Revision date 03/Sep/2014
Supersedes date 07/May/2014

A Schlumberger Company

Safety Data Sheet
DRILZONE† L

1. Identification

1.1 Product identifier

Product name DRILZONE† L

Product code 12462

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Drilling fluid additive.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Bethicia Prasek

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards Not classified

2.2 Label elements

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Hazard statements
None

Precautionary statements
None

Unknown acute toxicity 23.0% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Comments
The product contains other ingredients which do not contribute to the overall classification.

4. First aid measures

4.1 First-Aid Measures

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Ingestion Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

Skin contact Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.

Eye contact Remove contact lenses. Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

General advice The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

Main symptoms

Inhalation Please see Section 11. Toxicological Information for further information.

Ingestion Please see Section 11. Toxicological Information for further information.

Skin contact Please see Section 11. Toxicological Information for further information.

Eye contact Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing media appropriate for surrounding material.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
None known.

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate and ventilate the area. Use personal protective equipment identified in Section 8. Prevent further leakage or spillage if safe to do so.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up
Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions	Keep containers tightly closed in a dry, cool and well-ventilated place.
Storage precautions	Keep containers tightly closed in a dry, cool and well-ventilated place.
Packaging material	Use specially constructed containers only.

8. Exposure controls/personal protection

8.1 Control parameters

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection	It is good practice to wear goggles when handling any chemical. Tightly fitting safety goggles.
Hand protection	Wear chemical resistant gloves such as nitrile or neoprene.
Respiratory protection	No personal respiratory protective equipment normally required, In case of insufficient ventilation wear suitable respiratory equipment.
Skin and body protection	Wear suitable protective clothing, Provide eyewash station.
Hygiene measures	Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Transparent
Color	Amber
Odor	Faint hydrocarbon
Odor threshold	Not applicable

Property	Values	Remarks
pH		
pH @ dilution		
Melting/freezing point		
Boiling point/range	No information available	

Flash point	102 °C / 215.6 °F	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	0.80	
Bulk density	No information available	
Water solubility	Insoluble in water	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	No information available
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Carbon oxides (COx).

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation	Inhalation of vapors in high concentration may cause irritation of respiratory system.
Eye contact	May cause slight irritation.
Skin contact	Prolonged contact may cause redness and irritation.
Ingestion	Ingestion may cause stomach discomfort.

Sensitization	This product does not contain any components suspected to be sensitizing.
Mutagenic effects	No evidence of mutagenic properties.
Carcinogenicity	No evidence of carcinogenic properties.
Reproductive toxicity	No evidence of toxicity to reproduction.
Developmental toxicity	Not known to cause birth defects or have a deleterious effect on a developing fetus.
Routes of exposure	Eye contact. Skin contact. Inhalation.
Routes of entry	None known.
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.
Aspiration hazard	Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

UN No. (DOT)	Not regulated
UN No. (TDG)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

Not regulated for transportation by DOT, TDG, IMDG and ICAO/IATA.

14.3 Hazard class(es)

DOT Hazard class	Not regulated
TDG Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
TDG Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

No

14.6 Special precautions

Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Does not Comply
European Union (EINECS and ELINCS)	Does not Comply
Philippines (PICCS)	Does not Comply
Japan (ENCS)	Does not Comply
China (IECSC)	Complies
Australia (AICS)	Does not Comply
Korean (KECL)	Does not Comply
New Zealand (NZIoC)	Complies

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Not a SARA 311/312 hazard.

State Comments
Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

Canadian Classification

This product may not be distributed or used in Canada.

16. Other information

Supersedes date	07/May/2014
Revision date	03/Sep/2014
Version	2
The following sections have been revised	All sections. Updated according to GHS/CLP.

Health	0
Flammability	1
Physical hazard	0
PPE	E

†A mark of M-I L.L.C.

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SDS no. 10034
Version 11
Revision date 04/Dec/2015
Supersedes date 01/Sep/2015

A Schlumberger Company

Safety Data Sheet
DUO-VIS†

1. Identification

1.1 Product identifier

Product name DUO-VIS†

Product code 10034

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Drilling fluid additive.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals)

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards

Skin sensitization	Category 1

Environmental hazards Not classified

Physical Hazards

Combustible dust

2.2 Label elements

Signal word
WARNING

Hazard statements
H317 - May cause an allergic skin reaction
May form combustible dust concentrations in air

Precautionary statements
P280 - Wear eye protection/ face protection
P240 - Ground/bond container and receiving equipment
P403 + P235 - Store in a well-ventilated place. Keep cool
P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P233 - Keep container tightly closed

P261 - Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray
P272 - Contaminated work clothing should not be allowed out of the workplace
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P321 - Specific treatment (see supplemental first aid instructions on this label)
P333 + P313 - If skin irritation or rash occurs: Get medical advice/ attention
P363 - Wash contaminated clothing before reuse
P501 - Dispose of contents/ container to an approved waste disposal plant
P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical/ ventilating/ lighting/ equipment
P242 - Use only non-sparking tools
P243 - Take precautionary measures against static discharge
P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P403 + P235 - Store in a well-ventilated place. Keep cool
P501 - Dispose of contents/ container to an approved incineration plant

Unknown acute toxicity 99.07% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Component	CAS-No	Weight % - range
Polysaccharide	Proprietary	60 - 100

Comments
The exact percentage (concentration) of composition has been withheld as a trade secret

4. First aid measures

4.1 First-Aid Measures

Inhalation — If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Ingestion — Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

Skin contact — Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.

Eye contact — Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

General advice — The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

Main symptoms

Inhalation — Please see Section 11. Toxicological Information for further information.

Ingestion — Please see Section 11. Toxicological Information for further information.

Skin contact — Please see Section 11. Toxicological Information for further information.

Eye contact — Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician — Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
Suspended dust may present a dust explosion hazard.

Hazardous combustion products
Carbon oxides (COx).

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate personnel to safe areas. Remove all sources of ignition. Use personal protective equipment. See also section 8. If spilled, take caution, as material can cause surfaces to become very slippery.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Ensure adequate ventilation.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation.

Storage precautions none

8. Exposure controls/personal protection

8.1 Control parameters

Component	ACGIH TLV	OSHA PEL
Polysaccharide	Not Determined	Not Determined

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection It is good practice to wear goggles when handling any chemical. Tightly fitting safety goggles.

Hand protection	Repeated or prolonged contact:, Use protective gloves made of:, Nitrile, Neoprene gloves.
Respiratory protection	All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent. If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator. If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.
Skin and body protection	Wear suitable protective clothing.
Hygiene measures	Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid powder
Appearance	Opaque
Color	White - Tan
Odor	Odorless
Odor threshold	Not applicable

Property	Values	Remarks
pH	5.4 - 8.6	
pH @ dilution		
Melting/freezing point		
Boiling point/range	No information available	
Flash point	Does not flash	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	0 mmHg	
Vapor density	Not applicable	
Specific gravity	1.5	
Bulk density	No information available	
Water solubility	Gels on contact with water	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	Not determined	
Explosive properties	Not Applicable	
Oxidizing properties	None known.	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	None
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
None known.

10.4 Conditions to avoid

Heat, flames and sparks.

10.5 Incompatible materials

Strong oxidizing agents. Acids. Bases.

10.6 Hazardous decomposition products

See also section 5.2.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation — Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.

Eye contact — Dust may cause mechanical irritation.

Skin contact — Repeated exposure may cause skin dryness or cracking. May cause sensitization by skin contact.

Ingestion — Irritant; may cause pain or discomfort to mouth, throat and stomach.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Polysaccharide	No data available	No data available	No data available

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Polysaccharide	No data available	No data available	No data available	No data available

Sensitization — May cause sensitization by skin contact.

Mutagenic effects — This substance has no evidence of mutagenic properties.

Carcinogenicity — This substance has no evidence of carcinogenic properties.

Reproductive toxicity — None known.

Developmental toxicity — Not known to cause birth defects or have a deleterious effect on a developing fetus.

Routes of exposure — Inhalation. Skin contact. Eye contact.

Routes of entry	Skin absorption.
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.
Aspiration hazard	No hazard from product as supplied.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Polysaccharide (60 - 100)	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

Not determined

12.6 Other adverse effects.

None known. Check for additional information in sect. 7.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number
Not regulated

UN No. (DOT)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name
The product is not covered by international regulation on the transport of dangerous goods

14.3 Hazard class(es)

DOT Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard
No

14.6 Special precautions
Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies
European Union (EINECS and ELINCS)	Complies
Philippines (PICCS)	Complies
Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Delayed (chronic) health hazard.

SARA 302/304, 313, CERCLA RQ, California Proposition 65
Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Polysaccharide	N/A	N/A	N/A

State Comments
Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

16. Other information

Supersedes date	01/Sep/2015
Revision date	04/Dec/2015
Version	11
The following sections have been revised:	The following sections have been revised: 2, 3, 9, 14, 16.

HMIS classification

Health	2
Flammability	1
Physical hazard	0
PPE	E

N/A - Not Applicable, N/D - Not Determined.

†A mark of M-I L.L.C.

Disclaimer
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SDS no. 10031
Version 7
Revision date 30/Dec/2015
Supersedes date 08/Jun/2015

Safety Data Sheet
GELEX†

1. Identification

1.1 Product identifier

Product name GELEX†

Product code 10031

This product may not be distributed or used in Canada.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Drilling fluid additive. Bentonite extender.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals)

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards

Combustible dust	-

2.2 Label elements

Signal word
WARNING

Hazard statements
May form combustible dust concentrations in air

Precautionary statements

P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical/ ventilating/ lighting/ equipment
P243 - Take precautionary measures against static discharge

Unknown acute toxicity 93% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Component	CAS-No	Weight % - range
Polyacrylate polyacrylamide blend	Proprietary	60 - 100

Comments
The exact percentage (concentration) of composition has been withheld as a trade secret

4. First aid measures

4.1 First-Aid Measures

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Ingestion Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

Skin contact Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.

Eye contact Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

General advice The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

Main symptoms

Inhalation Please see Section 11. Toxicological Information for further information.

Ingestion Please see Section 11. Toxicological Information for further information.

Skin contact Please see Section 11. Toxicological Information for further information.

Eye contact Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
Suspended dust may present a dust explosion hazard.

Hazardous combustion products
Carbon oxides (COx).

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. See also section 8.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions	Ensure adequate ventilation. Provide appropriate exhaust ventilation at places where dust is formed. Keep airborne concentrations below exposure limits.
Storage precautions	Keep away from open flames, hot surfaces and sources of ignition. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls/personal protection

8.1 Control parameters

Exposure limits **Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m³ (Inhalable); 3 mg/m³ (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m³ (Total); 5 mg/m³ (Respirable).**

Component	ACGIH TLV	OSHA PEL
Polyacrylate polyacrylamide blend	Not Determined	Not Determined

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection	Tightly fitting safety goggles.
Hand protection	Wear chemical resistant gloves such as nitrile or neoprene.
Respiratory protection	All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent. Use NIOSH approved respirator with dust and mist protection (3M 8210). If dust concentration exceeds 5 times the exposure limit, wear an approved HEPA respirator
Skin and body protection	Wear suitable protective clothing.
Hygiene measures	Wash hands before breaks and immediately after handling the product, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid powder
Appearance	Opaque
Color	White
Odor	Odorless
Odor threshold	Not applicable

Property	Values	Remarks

pH	No information available	
pH @ dilution	No information available	
Melting/freezing point	No information available	
Boiling point/range	No information available	
Flash point	Does not flash	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	0 mmHg	
Vapor density	Not applicable	
Specific gravity	1.3	
Bulk density	No information available	
Water solubility	Appreciable	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	No information available	

Explosive properties	Suspended dust may present a dust explosion hazard
Oxidizing properties	None known.

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	None
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

10.4 Conditions to avoid

Heat, flames and sparks. Avoid dust formation.

10.5 Incompatible materials

Strong oxidizing agents. Acids. Bases.

10.6 Hazardous decomposition products

Carbon oxides (COx).

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.

Eye contact Dust may cause mechanical irritation.

Skin contact Repeated exposure may cause skin dryness or cracking.

Ingestion Irritant; may cause pain or discomfort to mouth, throat and stomach.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Polyacrylate polyacrylamide blend	No data available	No data available	No data available

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Polyacrylate polyacrylamide blend	No data available	No data available	No data available	No data available

Sensitization This product does not contain any components suspected to be sensitizing.

Mutagenic effects No evidence of mutagenic properties.

Carcinogenicity No evidence of carcinogenic properties.

Reproductive toxicity No evidence of toxicity to reproduction.

Developmental toxicity Not known to cause birth defects or have a deleterious effect on a developing fetus.

Routes of exposure Inhalation. Skin contact. Eye contact.

Routes of entry Inhalation.

Specific target organ toxicity (single exposure) Not classified

Specific target organ toxicity (repeated exposure) Not classified.

Target organ effects Lungs.

Aspiration hazard Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Polyacrylate polyacrylamide blend (60 - 100)	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

Not regulated

UN No. (DOT)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

14.3 Hazard class(es)

DOT Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

No

14.6 Special precautions

Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies.
European Union (EINECS and ELINCS)	Does not Comply
Philippines (PICCS)	Does not Comply
Japan (ENCS)	Does not Comply
China (IECSC)	Complies
Australia (AICS)	Does not Comply
Korean (KECL)	Does not Comply
New Zealand (NZIoC)	Complies

-

SARA 311/312 Hazard Categories
Not a SARA 311/312 hazard.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Polyacrylate polyacrylamide blend	N/A	N/A	N/A

State Comments
Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

This product may not be distributed or used in Canada.

16. Other information

Supersedes date	08/Jun/2015
Revision date	30/Dec/2015
Version	7
The following sections have been revised:	1, 2. Hazards Identification 15,

HMIS classification

Health	1
Flammability	1
Physical hazard	0
PPE	E

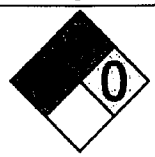
N/A - Not Applicable, N/D - Not Determined.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

AMBER CHEMICAL INC.

SAFETY DATA SHEET

Transport Symbol	NFPA Rating (estimated)	GHS	Personal Protective Equipment
Not Restricted		N/A	

Section 1: Identification

Product Name:	Cottonseed Hulls
ACI SDS Number:	ACISDS0097
Company Name:	Amber Chemical Inc.
Address:	5201 Boylan Street Bakersfield, CA 93308
Phone:	(661) 325-2072
Emergency Contact:	CHEMTREC (Available 24 hours for chemical emergency, spill, leak, fire, exposure, or accident)
Emergency Number:	1-800-424-9300
Product Use:	User is responsible for ensuring that the product is suitable for their purpose.
Date Revised:	May 2015

Section 2: Hazard(s) Identification

Not a dangerous substance according to Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Note: No significant hazards expected.

Section 3: Composition/Information on Ingredients

Substance	CAS#	Percent%	ACGIH TLV-TWA	OSHA PEL-TWA
Cotton seed hulls	68308-87-2	60-100%	Not applicable	Not applicable

Product Trade Name: Cottonseed Hulls
Synonyms: None
Chemical Family: Not applicable

Section 4: First Aid Measures

Inhalation: If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Skin: Wash with soap and water. Get medical attention if irritation persists.

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Ingestion: Under normal conditions, first aid procedures are not required.

Notes to Physician: Not applicable

Section 5: Fire Fighting Measures

Flash Point: Not applicable

Flammable Limits: Not applicable

Lower Explosive Limit: Unknown

Upper Explosive Limit: Unknown

Auto ignition Temperature: Not determined.

Fire Hazard: Slight, when exposed to heat.

Spontaneous Heating: Low. If piled or stored wet and hot, it can generate dangerous amounts of heat.

Fire Extinguishing Media: Water fog, carbon dioxide, foam, dry chemical

Special Protective Equipment for Firefighters: Not applicable.

Special Fire Fighting Procedures: Do not use direct hose stream if dust can be dispersed into air. Dust dispersed by water stream in the presence of an ignition source could cause an explosion.

Unusual Fire and Explosion Hazards: If improperly handled, stored and/or exposed to an ignition source, this material may burn. Airborne dust in sufficient concentrations, when confined and exposed to a sufficient ignition source, can explode.

Special Exposure Hazards: Not applicable.

Section 6: Accidental Release Measures

Personal Precautionary Measures: Use appropriate protective equipment. Avoid creating and breathing dust.

Steps to be Taken in Case Material is Released or Spilled: Normal housekeeping adequate. Respiratory protection recommended where levels cannot be controlled below PEL.

Procedure for Cleaning/ Absorption: Scoop up and remove.

Environmental Precautionary Measures: None known.

Section 7: Handling and Storage

Handling Precautions: Avoid dispersion in air. Avoid creating or inhaling dust. Avoid exposure to potential ignition sources.

Storage Information: Store in a cool, dry location.

Section 8: Exposure Controls/Personal Protection

Occupational Exposure Limits
Particulates Not Otherwise Regulated: 15 mg/m^3 (total). 5 mg/m^3 (respirable)

Engineering Controls- Ventilation
Use in a well ventilated area.

Local exhaust: Where needed.

Mechanical (General): Where needed.

Special: Not applicable.

Other: Not applicable.

Personal Protective Equipment
Respiratory: Not normally needed. But if significant exposures are possible then the following respirator is recommended. Filter masks should be used to prevent the inhalation of lint and dust. Air purifying dust respirators approved by NIOSH or MSHA where needed.

Protective Gloves: Not applicable. Normal work gloves as needed.

Skin Protection: Normal work coveralls as needed.

Eye Protection: Wear safety glasses or goggles to protect against exposure.

Other Protective Clothing or Equipment: Not applicable

Work Hygiene Practices: Remove from skin by washing with soap and water.

Section 9: Physical and Chemical Properties

Boiling Point	Not applicable
Vapor Pressure (mm Hg)	Not applicable
Vapor Density (Air=1)	Not applicable
Solubility	Insoluble
Specific Gravity	0.24-1.6
Melting Point	Not applicable
Evaporation Rate (Butyl Acetate=1)	Not applicable
Appearance	White fibers (amorphous solid), lignin seed hull
Color	Brown
Odor	Odorless
Flash Point	Not applicable
Flammable Limits	Not applicable
Lower Explosive Limit	Unknown
Upper Explosive Limit	Unknown
pH	Not determined
Density @ 20°C (lbs./gallon)	Not determined

Not all physical and chemical properties are displayed on this SDS, as not all information is relevant or available at this time.

Section 10: Stability and Reactivity

Stability: Stable

Conditions to Avoid: Not applicable

Incompatibilities (Materials to Avoid): Not applicable

Hazardous Decomposition or Byproducts: Carbon monoxide formed on combustion as in all combustion.

Hazardous Polymerization: Will not occur.

Section 11: Toxicological Information

Carcinogenicity
NTP: No
IARC: No
OSHA: No

Routes of Entry: Skin Contact, Eye Contact, Ingestion and Inhalation

Toxicity: A powerful allergen. Inhalation or ingestion may produce bronchial asthma, sneezing, eczema and hives in persons already sensitized to this material.

Health Hazards: Excessive inhalation may affect the respiratory system. Smokers have an increased risk to respiratory effects. Contact may cause irritation to eyes.

Signs and Symptoms of Exposure: Some persons may occasionally experience airway irritation and coughing.

Medical Conditions Generally Aggravated by Exposure: Allergies and respiratory ailments.

Genotoxicity: Not determined.

Reproductive/ Developmental Toxicity: Not determined.

Section 12: Ecological Information

Acute Fish Toxicity: Not determined

Acute Crustaceans Toxicity: Not determined

Acute Algae Toxicity: Not determined

Mobility (Water/Soil/Air): Not determined

Persistence/ Degradability: Biodegradable

Bio-accumulation: Not determined

Chemical Fate Information: Not determined

Other Information: Not applicable

Section 13: Disposal Considerations

Contaminated Packaging: Follow all applicable national or local regulations.

Disposal can occur only in properly permitted facilities. Refer to regional, state, provincial and local health, safety and pollution laws for any additional requirements, as these may be different from Federal laws and regulations. If in doubt, contact appropriate agencies. Chemical additions, processing or otherwise altering this material may make waste management information presented in the SDS incomplete, inaccurate or otherwise inappropriate. ACI has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

To minimize exposure refer to Section 8.

Section 14: Transport Information

Land Transportation
DOT: Not Restricted

Canadian TDG: Not Restricted

ADR: Not Restricted

Air Transportation
ICAO/IATA: Not Restricted

Sea Transportation
IMDG: Not Restricted

Other Shipping Information
Labels: None

Note: There are specific regulations in regards to transporting chemicals by water. Shipper is responsible for ensuring that they meet all of the requirements and follow the regulations for the chemical they are transporting.

Section 15: Regulatory Information

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

US Regulations
US TSCA Inventory: All components listed on inventory.

EPA SARA Title III Extremely Hazardous Substances: Not applicable

EPA SARA (311,312) Hazard Class: None

EPA SARA (3131) Chemicals: This product does not contain a toxic chemical for routine annual "Toxic Chemical Release Reporting" under Section 313 (40 CFR 372).

EPA CERCLA/ Superfund Reportable Spill Quantity for this Product: Not applicable

EPA RCRA Hazardous Waste Classification: If product becomes a waste, it does not meet the criteria of a hazardous waste as defined by the US EPA.

California Proposition 65: All components listed do not apply to the California Proposition 65 Regulation.

MA Right-to-Know Law: Does not apply

CA Right-to-Know Law: Does not apply

NJ Right-to-Know Law: Does not apply

PA Right-to-Know Law: Does not apply

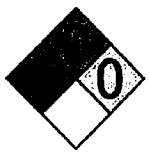
Canadian Regulations
Canadian DSL Inventory: Product contains one or more components not listed on inventory.

WHMIS: Not controlled.

Section 16: Other Information

Date Revised: May 2015

NFPA Rating (estimated)



Health	0
Flammability	0
Instability	0

HMIS Rating (estimated)

Health	0
Flammability	0
Instability	0
PPE	N/A

This information is intended solely for the use of individuals trained in the NFPA and HMIS hazard rating systems.

Sources of key data used to compile the Safety Data Sheet: regulations, databases, literature, and own test data.

Disclaimer: All statements, technical information and recommendations contained herein are, to the best of our knowledge, reliable and accurate. The information in this data sheet has been assembled by the manufacturer based on its own studies and on the work of others. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof, nor will any liability be assumed for damages resultant form the use of the material described. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. The manufacturer shall not be liable (regardless of fault) to the vendee, the

vendee's employees, or anyone for any direct, special or consequential damages arising out of, or in connection with, the accuracy, completeness, adequacy or furnishing of such information. It is offered solely for your consideration, investigation and verification. As a result, the customer shall be solely responsible for deciding whether said information is suitable and beneficial. Furthermore, vendee assumes the risk in his use of the material. We assume no legal responsibility whatsoever for any damage resulting from reliance upon this information since it is being furnished upon the condition that the person receiving it shall make his or her own determination of the suitability of the material described herein for a particular application or storage situation. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release, and is not to be considered a warranty or quality specification. The user should take the necessary steps to instruct employees, and to develop work practice procedures to ensure and maintain a safe work environment. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process unless specified in the text. Personal Protection rating to be supplied by user depending on use conditions. Since the use of this product is within the exclusive control of the user, it is the user's responsibility to determine the conditions of safe use. Such conditions must comply with all governmental regulations. This information is not intended as a license to operate under, or a recommendation to practice or infringe upon any patent of this company or others covering any process, compositions of matter or use. Neither this data sheet nor any statement contained herein grants or extends any license, express or implied, in connection with patents issued or pending which may be the property of the manufacturer or others.

Approved By:

Bob Presley *(Safety Manager)*

Nick Brister *(Chief Operating Officer)*

Commercial Detail

- **Contract Scope & Duration**
  - Requesting a five year term
  - Sole supplier of chemicals and services
  - Employ the unbundled format
  - Applied to all California operations
- **Pricing**
  - One BPA, one price catalog
  - Adjust chemical pricing quarterly
- **Discount Elements**
  - Initial spend: $52,917,358
  - Adjusted spend: $48,106,689 (10% on discounted price units)
  - Additional discount: $962,134 (2% discount on current spend)
  - Additional 2% discount can be applied immediately upon new contract (could realize $480,000 before September 1st)
  - BHI product line estimates a 3% to 5% reduction in raw material cost in 2016.
  - Current discount of 10% + additional 2% + an estimated 3% to 5% drop in raw materials = a 15% to 17% discount level.
- **Spend Attrition Limit**
  - At a spend level of $42,000,000 or less BHI would like to reserve the right to revisit the discounts.
- **Profit Recovery**
  - Discount reconciliation based on crude oil price recovery:

    At $45/barrel the discount is changed to 1.5%

    At $50/barrel the discount is changed to 1.0%

    At $55/barrel the discount is changed to 0.5%

    At $60/barrel the discount is changed to 0.0%
- **Market Share Maintenance**
  - Performance resolution process
  - Technical oversight
  - New property addition (BHI UC treats new properties)

Material Safety Data Sheet

OSHA / ANSI Z400.1-2004 Compliant

Ciba

Date / Revised: 02-19-2007 Release: 1.0

Product: ALCOMER 507

NFPA Hazard codes:

Health: 2	Fire: 1	Reactivity: 0	Special: -

HMIS III rating

Health: 2	Flammability: 1	Physical hazard: 0	Personal protection: X

HMIS Note: * Indicates possible chronic health effects.

1. Identification of the Substance/Preparation and of the Company/Undertaking

Company Information

Company: Ciba Corporation
2301 Wilroy Road
P.O. Box 820
Suffolk, VA 23434-0820
U.S.A.
Customer Service / Product Information: 1-800-322-3885
MSDS Request Line: 1-800-431-2360

Emergency information

Emergency 24-Hour Health/Environmental Phone: (24h) +1-800-873-1138

CHEMTREC: (800) 424-9300 (24hrs) or (703) 527-3887

Product information

Product: ALCOMER 507

Use: process chemical

2. Hazards Identification

Emergency overview

Signal word:	CAUTION: !
Colour:	off-white
Appearance:	beads
State of matter:	solid
Odour:	mild
Health:	This product is an eye, skin and respiratory irritant.
Physical/Chemical hazards:	Slip hazard when wet., Organic powders may be capable of generating static discharges and creating explosive mixtures in air. Handle with caution., Refer to MSDS Section 7 for Dust Explosion information.

Potential health effects

Primary routes of entry:

Skin, Eyes, Inhalation, Ingestion

3. Composition/Information on Ingredients

Chemical name	CAS Number	Content (Weight)	Hazardous
Urea	57-13-6	2.0 - 10.0 %	Y

This material is classified as hazardous under OSHA regulations.

Material Safety Data Sheet

OSHA / ANSI Z400.1-2004 Compliant

Ciba

Date / Revised: 02-19-2007 Release: 1.0

Product: ALCOMER 507

Protection against fire and explosion:

Avoid creating dusty conditions. Risk of explosion if an air-dust mixture forms. Avoid creating dust. Organic powders may be capable of generating static discharges and creating explosive mixtures in air. Handle with caution. Handle with caution.

Storage

General advice:

Keep container tightly closed in a dry, cool and well-ventilated place.
Keep away from heat and sources of ignition.
Avoid buildup of dust.
Avoid wet or humid conditions.

> for industrial use only <

8. Exposure Controls and Personal Protection

Engineering Controls:

Work in well ventilated areas. Do not breathe dust.

Personal protective equipment

Respiratory protection:

Wear a NIOSH-certified respirator as necessary.

Eye protection:

Wear safety goggles (chemical goggles) if there is potential for airborne dust exposures.

Body protection:

Wear chemical resistant gloves and protective clothing.

General safety and hygiene measures:

There are no OSHA or ACGIH exposure guidelines available for component(s) in this product.
Eye wash station and safety shower should be available in immediate work area.

9. Physical and Chemical Properties

Colour:	off-white	
Form:	beads	
State of matter:	solid	
Odour:	mild	
pH value:	approx.6.0	(10 g/l)
Evaporation rate:		Not tested
Flash point:		Not applicable
Melting point:		Not applicable
Boiling point:		Not applicable
Vapour pressure:		Not tested
Density:		Not applicable
Bulk density:	0.75 g/cm3	
Vapour density:		Not tested
Partitioning coefficient n-octanol/water (log Pow):		Not applicable
Viscosity, dynamic:		Not tested
% Volatiles:		not determined
Solubility in water:		Forms a viscous solution
Solubility in other solvents:		Not tested

Material Safety Data Sheet

OSHA / ANSI Z400.1-2004 Compliant

Ciba

Date / Revised: 02-19-2007 Release: 1.0

Product: ALCOMER 507

Disclaimer:

The information contained herein is based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to such data or information. The user is responsible for determining whether the product is suitable for its intended conditions of use.

END OF DATA SHEET

AMBER CHEMICAL INCORPORATED
5201 BOYLAN STREET
BAKERSFIELD, CA 93308 (661) 325-2072

REVISION DATE: 01-22-06

EMERGENCY TELEPHONE NUMBER: 1-800-424-9300 (CHEMTREC)

SECTION ONE—PRODUCT DESCRIPTION

PRODUCT NAME: AMBER D.M.S. 30

CHEMICAL DESCRIPTION: Nonionic Surfactant

SYNONYMS:

SECTION TWO—HAZARDOUS INGREDIENT

CHEMICAL	*CAS NUMBER*	*% PRESENT*	*TLV or PEL (current ACGIH limit)*
None			

SECTION THREE—PHYSICAL DATA

BOILING POINT:	not determined	*SPECIFIC GRAVITY (H_2O=1):*	1.05 to 1.06
SOLUBILITY IN WATER (% by volume):	soluble	*FREEZING POINT:*	not determined
EVAPORATION RATE (Butyl Acetate=1):	not determined	*VAPOR PRESSURE @ 30°C:*	33 mm Hg
% VOLATILES BY VOLUME:	69 - 71	*VAPOR DENSITY*	not determined
APPEARANCE & ODOR:	Clear liquid. Bland odor.		

SECTION FOUR—FIRE AND EXPLOSION HAZARD

FLASH POINT (Test Method(s)): >200°F (PMCC)

FLAMMABLE LIMITS IN AIR, % BY VOLUME: Not Established

EXTINGUISHING MEDIA: Water Fog, Dry Powder or Carbon Dioxide

UNUSUAL FIRE AND EXPLOSION HAZARDS: none currently known

SPECIAL FIRE FIGHTING PROCEDURES: Remove unprotected personnel from hazard area. Wear protective clothing. Emergency personnel should be equipped with a NIOSH approved SCBA with full face piece. Cool exposed containers with water.

SECTION FIVE--HEALTH AND FIRST AID DATA

ACUTE EFFECTS OF OVEREXPOSURE:

SWALLOWING: : Ingestion may cause irritation to the membranes of the mouth, throat and gastrointestinal tract. Nausea, vomiting, cramps and diarrhea may occur.

SKIN ABSORPTION: Prolonged or widespread contact may result in the absorption of potentially harmful amounts of material.

INHALATION: No health effects are known to occur from inhalation of this product. Inhalation of mists or sprays may result in non-specific irritation of the upper respiratory tract.

SKIN CONTACT: Contact with skin could produce local irritation.

EYE CONTACT: Severe local irritation may result. CORNEAL DAMAGE MAY OCCUR IF NOT PROMPTLY WASHED AWAY WITH WATER.

CHRONIC EFFECTS OF OVEREXPOSURE: Repeated skin contact may cause dermititis.

OTHER HEALTH HAZARDS: None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING: Obtain medical attention.

SKIN: Flush affected area with water, followed by washing with soap and water until material has been removed. Obtain medical attention if irritation persists.

INHALATION: Remove from contaminated atmosphere. If symptoms of respiratory discomfort persist, obtain medical attention.

EYES: Immediately flush eyes with large quantities of water. Do not attempt to neutralize with chemical agents. Obtain medical attention if irritation persists.

TLV OR PEL AND SOURCE: None currently established.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM

HEALTH:	2
FLAMMABILITY:	0
REACTIVITY:	1
PERSONAL PROTECTION EQUIPMENT:	C

Goggles, gloves, synthetic apron

HAZARD INDEX	
4	SEVERE HAZARD
3	SERIOUS HAZARD
2	MODERATE HAZARD
1	SLIGHT HAZARD
0	MINIMAL HAZARD

SECTION SIX—REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID IF UNSTABLE: None.

INCOMPATIBILITY WITH OTHER MATERIALS: Avoid strong oxidizing agents and materials reactive with hydroxyl compounds.

HAZARDOUS DECOMPOSITION PRODUCTS: Burning can produce carbon monoxide and/or carbon dioxide.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: None currently known.

SECTION SEVEN—SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Wear suitable protective equipment. *Small Spills:* Absorb liquid with absorbent material. *Large Spills:* Stop spill at source. Dike area of the spill to prevent spreading. Pump liquids into waste containers. Remaining liquids can be absorbed.

WASTE DISPOSAL METHOD: Incinerate or landfill where permitted under appropriate federal, state and local regulations. Questions concerning disposal should be directed to Amber Chemical.

SECTION EIGHT—SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Self-contained breathing apparatus in high concentrations. Normally not required.

VENTILATION: General (mechanical) room ventilation is expected to be satisfactory.

PROTECTIVE GLOVES: Butyl or neoprene rubber

EYE PROTECTION: Monogoggles

OTHER PROTECTIVE EQUIPMENT: Synthetic apron, eye wash station

SECTION NINE—SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Soiled clothing should be removed and laundered before reuse. Store below 120°F. Keep container closed. Store in well-ventilated area away from any ignition sources.

MATERIAL SAFETY DATA SHEET

AMBER CHEMICAL, INC.
5201 BOYLAN STREET
BAKERSFIELD, CA 93308
(661) 325-2072

SECTION 1 -- PRODUCT INFORMATION

PRODUCT NAME: AMBER DEFOAMER 7
SYNONYMS: Nonionic Defoaming Agent

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE, ACCIDENT CALL CHEMTREC-DAY OR NIGHT 1-800-424-9300.

NFPA Rating	HMIS Rating
HEALTH: 1	HEALTH: 1
FLAMMABILITY: 1	FLAMMABILITY: 1
REACTIVITY: 0	REACTIVITY: 0

EMERGENCY TELEPHONE NUMBER: CHEMTREC 1-800-424-9300

EMERGENCY OVERVIEW

Light yellow viscous liquid with slight odor. May cause mild transient skin and eye irritation.

SECTION 2 -- COMPOSITION INFORMATION

INGREDIENT	CAS NO.	% WT/WT	PEL:	TLV:
Trade Secret Ingredients	Trade Secret	100	None Established	None Established

LISTED AS CARCINOGEN BY:

IARC: NO	NTP: NO
OSHA: NO	ACGIH: NO

PEL: OSHA Permissible Exposure Limit
STEL: Short Term Exposure Limit
HI: Hazardous Ingredient
TWA: Time Weighted Average, 8-hr
TLV: ACGIH Threshold Limit
C.LIM: Ceiling Limit

OM: Oil mist
TD: Total dust
ND: Nuisance dust
WF: Wax fume
RF: Respirable fraction
ST: Skin TWA

SECTION 3 -- HAZARDS IDENTIFICATION

ROUTES OF EXPOSURE

INHALATION: No hazard expected under ordinary conditions of use. Prolonged or repeated exposure to vapors generated at high temperatures may result in irritation of the respiratory tract and inhalation of harmful amounts.
SKIN CONTACT: May cause minimal irritation.
SKIN ABSORBTION: Practically non-toxic by this route.
EYE CONTACT: May cause irritation.
INGESTION: Considered practically non-toxic. May cause nausea, vomiting and diarrhea.

EFFECTS OF OVEREXPOSURE

ACUTE OVEREXPOSURE: Possible eye, skin and respiratory tract irritation.
CHRONIC OVEREXPOSURE: No Data

SECTION 4 -- FIRST AID MEASURES

EYES: Immediately flush with plenty of water for at least 15 minutes, holding eyelids apart to ensure flushing of the entire surface. Washing within one minute is essential to achieve maximum effectiveness. Seek medical attention.
SKIN: Wash thoroughly with soap and water, remove contaminated clothing and footwear. Wash clothing before reuse. Get medical attention if irritation should develop.
INHALATION: Remove to fresh air.
INGESTION: Do not induce vomiting. If vomiting should occur spontaneously, keep airway clear. Get medical attention. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIAN: None

SECTION 5 -- FIRE FIGHTING MEASURES

FLASHPOINT: >200 °F
AUTOIGNITION TEMPERATURE: Not Available

FLAMMABLE LIMITS IN AIR, % BY VOLUME:
LOWER FLAMMABILITY LIMIT: NAV
UPPER FLAMMABILITY LIMIT: NAV

EXTINGUISHING MEDIA: Water Spray, Carbon Dioxide, Foam, Dry Chemical.
FIRE OR EXPLOSION HAZARDS: None
FIRE FIGHTING PROCEDURES:
Cool exposed containers with water spray. Use self-contained breathing apparatus in confined areas.

SECTION 6 -- ACCIDENTAL RELEASE MEASURES

Stop leaks. Use absorbent material to clean up spills. Place in labeled waste container for disposal. Wear adequate personal protective clothing and equipment.

SECTION 7 -- HANDLING AND STORAGE

PRECAUTIONARY STATEMENTS:
CAUTION!
MAY CAUSE IRRITATION.
Avoid contact with eyes, skin, and clothing.
Avoid breathing mist or vapor.
Wear chemical splash goggles, gloves, and protective clothing when handling.
Use with adequate ventilation and employ respiratory protection where mist or vapor may be generated.
Wash thoroughly after handling.
FOR INDUSTRIAL USE ONLY.

HANDLING/STORAGE REQUIREMENTS:
Always mix well before using. Product may congeal or stratify if cold; Warm to 122 deg. F (50 deg. C) and mix well before using.

SECTION 8 -- EXPOSURE CONTROLS/PERSONAL PROTECTION

VENTILATION REQUIREMENTS: Local exhaust ventilation recommended.
EYE PROTECTION: Chemical splash goggles and/or face shield.
SKIN PROTECTION: Rubber or plastic gloves.
RESPIRATORY PROTECTION:
None required under normal conditions of use. NIOSH/MSHA approved respirator if necessary following manufacturer's recommendations.
OTHER REQUIRED EQUIPMENT:
Standard work clothing and work shoes. Safety shower and eye wash located in immediate area.

SECTION 9 -- PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Clear, light yellow slightly viscous liquid
ODOR: Slight
SPECIFIC GRAVITY (WATER=1): 0.986
BOILING POINT: NAV
FREEZING POINT: NAV
VAPOR PRESSURE: NAV
VISCOSITY: 260 SUS AT 100 °F

SOLUBILITY IN WATER: Poor unstable emulsions
pH: 6.8 (2%)
DENSITY @ 20C: 8.2 lb/gal
MELTING POINT: NAPL
EVAPORATION RATE: NAV
VAPOR DENSITY (AIR=1): NAV
VOLATILES BY WEIGHT: Not Available

SECTION 10 -- STABILITY AND REACTIVITY

STABLE: YES
CONDITIONS TO AVOID: None
INCOMPATIBLE MATERIALS: Strong oxidizing agents.
HAZARDOUS POLYMERIZATION: NO
DECOMPOSITION PRODUCTS: Carbon dioxide and carbon monoxide.

SECTION 11 -- TOXICOLOGICAL INFORMATION

Acute Oral LD50 (rat): 15 g/kg
Acute Dermal LD50 (rabbit): >20 g/kg

SECTION 12 -- ECOLOGICAL INFORMATION

BOD5: mg O2/mg: 0.0217
ppm: Not Available
Biodegradable, %: Not Available
BOD28: mg O2/mg: Not Available
ppm: Not Available
Biodegradable, %: Not Available
COD: mg O2/mg: 1.550
ppm: Not Available
Biodegradable, %: 1.4

Aquatic Toxicity:
Not Available

SECTION 13 -- DISPOSAL CONSIDERATIONS

Dispose of product in an approved chemical waste landfill

or incinerate in accordance with applicable Federal, State, and local regulations. Avoid landfilling liquids. Since emptied container retains product residue, all labeled hazard precautions must be observed.

SECTION 14 -- TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME: NOT APPLICABLE, NOT RESTRICTED

Harmonized Tariff Schedule Number: 3402.13.20 10

SECTION 15 -- REGULATORY INFORMATION

NOTICE: This product does not contain any ingredients subject to the reporting requirements of SARA Title III, Section 313 (40 CFR Part 372).

SARA Section 311/312: Not Applicable.

TSCA: Components found in TSCA Inventory.

New Jersey Trade Secret Registry Numbers: 679485-5053P.

SECTION 16 -- OTHER INFORMATION

LAST REVISION DATE: 01-01-2008

The information herein is given in good faith but no warranty, expressed or implied, is made.

Legend: NAPL Not Applicable
NAV Not Available

LAST PAGE OF THE DOCUMENT

AMERICAN COLLOID COMPANY

One North Arlington • 1500 West Shure Drive
Arlington Heights, Illinois 60004-7803 • U.S.A.
Tel. (847) 392-4600 • Telex: ITT 4330321
Fax. (847) 506-6199

MATERIAL SAFETY DATA SHEET - May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements. 1301 101

PRODUCT NAME: VOLCLAY PREMIUM GEL

Section I MANUFACTURER'S INFORMATION

Manufacturer's Name & Address:
American Colloid Company
1500 West Shure Drive
One North Arlington
Arlington Heights, Illinois 60004

Telephone Number for Information: 847-392-4600
Date Prepared: January 23, 1998

Section II HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components (Specific Chemical Identity: Common Name(s))		OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Crystalline Quartz CAS# 14808-60-7 (naturally occurring contaminant)		-	-	*	1-2%
Respirable Crystalline Quartz	present (TWA)	0.1mg/m^3	0.1mg/m^3 TWA	NIOSH 50ug/m^3 TWA	<1-2%
	proposed (TWA)		50ug/m^3 TWA	-	-
Nuisance Dust	Respirable	5mg/m^3	5mg/m^3	-	-
	Total Dust	15mg/m^3	10mg/m^3	-	-

*** WARNING:**
This clay product contains a small amount of crystalline silica (quartz) which may cause delayed respiratory disease if inhaled over a prolonged period of time. Avoid breathing dust. Use NIOSH/MSHA approved respirator where TLV for crystalline silica may be exceeded. IARC Monographs on the evaluation of the Carcinogenic Risk of Chemicals to Humans (volume 68, 1997) concludes that crystalline silica (quartz) is carcinogenic to humans in the form of quartz. IARC classification 1.

The small quantities of crystalline silica (quartz) found in this product are, under normal conditions, naturally coated with an unremovable layer of amorphous silica and/or bentonite clay. IARC (vol. 68, 1997, pp 191-192) states that crystalline silica (quartz) can differ in toxicity depending on the minerals with which it is combined, citing studies in IARC (vol. 42, 1987, p 86) which states that the toxic effect of crystalline silica (quartz) is reduced by the "protective effect.....due mainly to clay minerals....".

National Institute for Occupational Safety and Health (NIOSH) has recommended that the permissible exposure limit be changed to 50 micrograms respirable free silica per cubic meter air (0.5 mg/m^3) as determined by a full shift sample up to 10 hour working day, 40 hours per week. See: 1974 NIOSH criteria for a recommended Standard for Occupational Exposure to Crystalline Silica should be consulted for more detailed information.

PEL means OSHA Permissible Exposure Limit.
TLV means American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value.
TWA means 8 hour time weighted average.

Note: The Permissible Exposure Limits (REL) reported above are the pre-1989 limits that were reinstated by OSHA June 30, 1993 following a decision by the United States Circuit Court of Appeals for the 11th Circuit. These PELs are now being enforced by Federal OSHA. More restrictive exposure limits may be enforced by some other jurisdictions.

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1301
101

PRODUCT NAME: VOLCLAY PREMIUM GEL

PRODUCT IDENTIFICATION

Chemical Name: Bentonite Clay (100%)
Chemical Family: Natural Mineral, Montmorillonite
CAS No.: 1302-78-9 Bentonite is on the TSCA inventory.
FORMULA: Naturally occurring hydrated aluminosilicate of sodium, calcium, magnesium, and iron
NFPA/HMIS: Health - 1, Fire - 0, Reactivity - 0, Specific Hazard - See Section VI
Dot Class: Not Regulated

Section III PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	- Not Applicable	**Specific Gravity (H_2O = 1)**	- 2.5
Vapor Pressure (mm Hg.)	- Not Applicable	**Melting Point**	- Not Applicable
Vapor Density (AIR = 1)	- Not Applicable	**Evaporation Rate (Butyl Acetate = 1)**	- Not Applicable
Solubility in Water	- Negligible		
Appearance and Odor	- Pale grey to buff powder or granules, odorless.		

Section IV FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used) - Not Applicable
Flammable Limits - Not Applicable **LEL**- - **UEL**- -
Extinguishing Media - Not Applicable
Special Fire Fighting Procedures - Inorganic Mineral/Non-Flammable
Unusual Fire and Explosion Hazards - Not Applicable

Section V REACTIVITY DATA

Stability: Stable - X **Conditions to Avoid** - None Known

Incompatibility (Materials to Avoid): - None Known
Hazardous Decomposition or By-products: - None Known

Hazardous Polymerization: Will Not Occur - X **Conditions to Avoid** - None Known

Section VI HEALTH HAZARD DATA

This product is chemically inert, non-combustible mineral. A single exposure will not result in serious adverse effects. Excessive occupational, uncontrolled inhalation of dust may cause lung disease, silicosis, with symptoms of shortness of breath and reduced pulmonary function.

Route(s) of Entry: Inhalation? Yes **Skin?** No **Ingestion?** No
Health Hazards (Acute and Chronic) - May cause delayed respiratory disease if dust inhaled over a prolonged period of time.

Inhalation: Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may cause irritation of the nose, throat and respiratory passages. Inhalation of dust may have the following serious chronic health effects:

Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling and sometimes fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

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Cancer Status: The International Agency for Research on Cancer has determined that crystalline silica inhaled in the form quartz or crystobalite from occupational sources is carcinogenic to humans (Group 1-carcinogenic to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibers (published in June 1997) in conjunction with the use of these materials. The National Toxicology Program classifies respirable crystalline silica as "reasonable anticipated to be a carcinogen". For further information See: "Adverse effects of Crystalline Silica Exposure" published by the American Thoracic Society Medical Section of the American Lung Association, American Journal of Respiratory and Critical Care Medicine, Volume 155, page 761-765, 1997.

Other data with possible relevance to Human Health: The small quantities of crystalline (quartz) found in this product are, under normal naturally coated with an unremovable layer of amorphous silica and/or clay. IARC (Vol. 68, 1997, pp 191-192) states that crystalline silica (quartz) can differ in toxicity depending on the minerals with which it is combined, citing studies in IARC (vol 42, 1987, p 86) which states that the toxic effect of crystalline silica (quartz) is reduced by the "protective effect....due mainly to clay minerals....".

Skin Contact: No adverse effects expected.
Eye Contact: Contact may cause mechanical irritation and possible injury.
Ingestion: No adverse effects expected for normal, incidental ingestion.

Chronic Health Effects: See "Inhalation" subsection above with respect to silicosis, cancer status and other data with possible relevance to human health.
Signs and Symptoms of Exposure - There are generally no signs or symptoms of exposure to crystalline silica (quartz). See "Inhalation" subsection above for symptoms of silicosis.
Medical Conditions Generally Aggravated by Exposure - Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation should not be exposure to crystalline silica (quartz) dust.

Emergency and First Aid Procedures

Eye Contact - Flush the eyes immediately with large amounts of water. lifting the upper and lower lids occasionally. If irritation persists or for imbedded foreign body, get immediate medical attention.
Gross Inhalation - Remove to fresh air. If breathing has stopped, perform artificial respiration. If breathing is difficult, have qualified personnel administer oxygen. Get prompt medical attention.
Skin Contact No first aid should be needed since this product does not affect the skin. Wash exposed, skin with soap and water before breaks and at the end of the shift.
Ingestion If large amounts are swallowed, get immediate medical attention.

Section VII PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released or Spilled - Vacuum if possible to avoid generating airborne dust. Avoid breathing dust. Wear an approved respirator. Avoid adding water, the product will become slippery when wet.

Waste Disposal Method - Follow federal, state and local regulations for solid waste

Handling and Storing Precautions - Do not breath dust. Use normal precautions against bag breakage or spills of bulk material. Avoid creation of respirable dust. Use good housekeeping in storage and use areas to prevent accumulation of dust in work areas. Use adequate ventilation and dust collection. Maintain and use proper, clean respiratory equipment. Launder clothing that has become dusty. Empty containers (bags, bulk containers, storage tanks, etc.) retain silica residue and must be handled in accordance with the provisions of this Material Safety Data Sheet. Warn and Train employees in accordance with state and federal regulations.

Other Precautions - Slippery when wet.

WARN YOUR EMPLOYEES (AND YOUR CUSTOMERS - USERS IN CASE OF RESALE) BY POSTING AND OTHER MEANS OF THE HAZARDS AND OSHA PRECAUTIONS TO BE USED. PROVIDE TRAINING FOR YOUR EMPLOYEES ABOUT OSHA PRECAUTIONS.

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PRODUCT NAME: VOLCLAY PREMIUM GEL

Section VIII CONTROL MEASURES

Respiratory Protection: Use appropriate respiratory protection for respirable particulate based on consideration of airborne workplace concentration and duration of exposure arising from intended end use. Refer to the most recent standards of ANSI (z88.2) OSHA (29 CFR 1910.134), MSHA (30 CFR Parts 56 and 57) and NIOSH Respirator Decision Logic.

Ventilation: Use local exhaust as required to maintain exposures below applicable occupational exposure limits (See Section II). See also ACGIH "Industrial Ventilation - A Manual for Recommend Practice", (current edition).

Protective Gloves - Recommended
Eye Protection - Safety glasses or goggles recommended.
Other Protective Clothing or Equipment - As appropriate for work environment. Dusty clothing should be laundered before reuse.

Transportation Data: U.S. DOT Hazard Classification

Proper Shipping Name:	Not regulated
Technical Name:	N/A
UN Number:	N/A
Hazard Class/Packing Group:	N/A
Labels Required:	None
DOT Packaging Requirements:	N/A
Exceptions:	N/A

Section IX OTHER REGULATORY INFORMATION

SARA 311/312: Hazard Categories for SARA Section 311/312 reporting: Chronic Health
SARA 313: This product contains the following chemicals subject to annual reporting requirements under the SARA Section 313 (40 CFR 372): None

CERCLA Section 103 Reportable Quantity: None

California Proposition 65: THIS PRODUCT CONTAINS THE FOLLOWING SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND/OR REPRODUCTIVE HARM: This product contains Crystalline Silica (Respirable); However, the user should note that the small quantities of crystalline silica (quartz) found in this product are, under normal conditions, naturally coated with an unremovable layer of amorphous silica and/or bentonite clay. IARC (vol. 68, 1997, pp 191-192) states that crystalline silica (quartz) can differ in toxicity depending on the minerals with which it is combined. Citing studies in IARC (vol. 42, 1987, p 86) which states that the toxic effect of crystalline silica (quartz) is reduced by the "protective effect....due mainly to clay minerals...".

Toxic Substances Control Act: All of the components of this product are listed on the EPA TSCA Inventory or exempt from notification requirements.

European Inventory of Commercial Chemical Substances: All of the components of this product are listed on the EINECS Inventory or exempt from notification requirements. (The EINECS number for Quartz: 231-545-5).

Canadian Environmental Protection Act: All of the components of this product are listed on the Canadian Domestic Substances List or exempt from notification requirements.

Japan MITI: All of the components of this product are existing chemical substances as defined in the Chemical Substance Control Law.

Australian Inventory of Chemical Substances: All of the components of this product are listed on the AICS inventory or exempt from notification requirements.

Canadian WHMIS Classification: Class D, Division 2, Subdivision A (Very Toxic Material causing other Toxic Effects).

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PRODUCT NAME: VOLCLAY PREMIUM GEL

Section X OTHER INFORMATION

European Community Labeling Classification:	Harmful (Xn)		
European Community Risk and Safety Phrases:	R40, R48, S22		
NFPA Hazard Rating: Health: 1	Fire: 0	Reactivity: 0	
HMIS Hazard Rating: Health: *	Fire: 0	Reactivity: 0	

*Warning - Chronic health effect possible - inhalation of silica dust may cause lung injury/disease (silicosis). Take appropriate measures to avoid breathing dust. See Section II.

The information herein has been compiled from sources believed to be reliable and is accurate to the best of our knowledge. However, American Colloid Company cannot give any guarantees regarding information from other sources, and expressly does not make any warranties, nor assumes any liability, for its use.

Lost Circulation Specialists, Inc.

MAGMA FIBER® *The Acid Soluble LCM*

SAFETY DATA SHEET

according to Regulation (EC) No. 453/2010

MAGMA FIBER COARSE ®

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier

Product Name — MAGMA FIBER COARSE®

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use	Viscosifier
Sector of Use	SU2 - Mining, (including offshore industries)
Product Category	PC20 - Products such as pH-regulators, flocculants, precipitants, neutralization agents, other unspecific
Process Categories	PROC 26 - Handling of solid inorganic substances at ambient temperature

1.3 Details of the supplier of the safety date sheet

Lost Circulation Specialists, Inc.
14011 Park Dr. Suite 103
Tomball, TX 77377-2127

1.4 Emergency Telephone Number

+1-281-252-4243

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Not classified

Classification according to EU Directives 67/548/EEC or 1999/45/EC

2.2 Label Elements

Not Classified

Hazard Pictograms

Signal Word — **None**

Hazard Statements

Not Classified

Precautionary Statements – EU (§28, 1272/2008)
Not Classified

Contains

Substances	**CAS Number**
Contains no hazardous substances	Mixture

2.3 Other Hazards
None known

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	EINECS	CAS Number	Percent (w/w)	EEC Classification	EU – CLP Substance Classification	REACH No.
Contains no hazardous substances	Not applicable	Mixture	60 – 100%	Not applicable	Not applicable	No data available

4. FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation — If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Eyes — In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Skin — Wash with soap and water. Get medical attention if irritation persists.

Ingestion — Under normal conditions, first aid procedures are not required.

4.2 Most Important symptoms and effects, both acute and delayed
No significant hazards expected. May cause mild eye, skin, and respiratory irritation.

4.3 Indication of any immediate medical attention and special treatment needed
Notes to physician — Treat symptomatically

5. FIREFIGHTING MEASURES

5.1 Extinguishing media
Suitable Extinguishing Media
All standard fire fighting media

Extinguishing media which must not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture
Special Exposure Hazards
Not applicable.

5.3 Advice to firefighters
Special Protective Equipment for Fire-Fighters
Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use appropriate protective equipment
See section 8 for additional information

6.2 Environmental precautions
None known.

6.3 Methods and material for containment and cleaning up
Scoop up and remove

6.4 Reference to other sections
See section 8 and 13 for additional information.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with eyes, skin, or clothing.
Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice

7.2 Conditions for safe storage, including any incompatibilities
Store in a dry location

7.3 Specific End Use(s)

Exposure Scenario	No information available
Other Guidelines	No information available

8. Exposure Controls/Personal Protection

8.1 Control Parameters
Exposure Limits

Substances	CAS Number	EU	UK OEL	Netherlands	France OEL
Contains no hazardous substances	Mixture	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Germany MAK/TRK	Spain	Portugal	Finland
Contains no hazardous substances	Mixture	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Austria	Ireland	Switzerland	Norway
Contains no hazardous substances	Mixture	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
Contains no hazardous substances	Mixture	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Denmark
Contains no hazardous substances	Mixture	Not applicable

Derived No Effect Level (DNEL) No information available.

Worker

General Population

Predicted No Effect Concentration (PNEC) No information available

8.2 Exposure Controls

Engineering Controls Use in a well ventilated area.

Personal protective equipment

Respiratory Protection Not normally needed. But if significant exposures are possible then the following respirator is recommended: Dust/mist respirator. (N95, P2/P3)

Hand Protection Normal work gloves.

Skin Protection	Normal work coveralls.
Eye Protection	Wear safety glasses or goggles to protect against exposure.
Other Precautions	Not known
Environmental Exposure Controls	No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical State:	fibers	**Color:**	White to gray
Odor:	odorless	**Odor Threshold:**	No information available

Property Remarks/ - Method	Values
pH:	No data available
Feezing Point/Range	No data available
Melting Point/Range	No data available
Boiling Point/Range	No data available
Flash Point	No data available
Evaporation Rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	2.6
Water Solubility	Insoluble in water
Solubolity in other Solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscocity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2 Other Information

VOC Content (%)	No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
Not applicable

10.2 Chemical Stability
Stable

10.3 Possibility of Hazardous Reactions
Will Not Occur

10.4 Conditions to Avoid
None anticipated

10.5 Incompatible Materials
Strong acids

10.6 Hazardous Decomposition Products
Carbon monoxide and carbon dioxide

11. TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects
Acute Toxicity

Inhalation	May cause respiratory irritation.
Eye Contact	May cause mechanical irritation to eye.
Skin Contact	May cause mechanical skin irritation.
Ingestion	None known.
Chronic Effects/Carcinogenicity	No data available to indicate product or components present at greater than 1% are chronic health hazards

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Contains no hazardous substances	Mixture	No data available	No data available	No data available

12. EXOLOGICAL INFORMATION

12.1 Toxicity
Ecotoxicity Effects

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Dapnia Magna (Water Flea)
Contains no hazardous substances	Mixture	No information available	No information available	No information available	No information available

12.2 Persistence and degradability
The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential
No information available

12.4 Mobility in soil
No information available

12.5 Results of PBT and vPvB assessment
No information available.

12.6 Other adverse effects
Endocrine Disruptor Information
This product does not contain any known or suspected endocrine disruptors

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Disposal Method	Bury in a licensed landfill according to federal, state, and local regulations.
Contaminated Packaging	Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION

IMDG/IMO

UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

RID

UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

ADR

UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

IATA/ICAO

UN Number:	Not restricted
UN Proper Shipping Name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

Special Precautions for User None

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

International Inventories

All of the components in the product are on the following Inventory lists:

EINECS Inventory	This product, and all its components, complies with EINECS
US TSCA Inventory	All components listed on inventory or are exempt.
Canadian DSL Inventory	All components listed on inventory or are exempt.

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

Germany, Water Endangering Classes (WGK) WGK 0: Generally not water endangering

15.2 Chemical Safety Assessment

No information available

16. Other Information

Full text of R-phrases referred to under Sections 2 and 3

None

Key literature references and sources for data

www.ChemADVISOR.com/

Revision Date: 03-Feb-2014

Revision Note

Not applicable

This safety data sheet complies with the requirements of Regulation (EC) No. 453/2010

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

SDS no. PID1477
Version 1
Revision date 18/Sep/2015
Supersedes date 24/Jul/2013

A Schlumberger Company

Safety Data Sheet
Soda Ash

1. Identification

1.1 Product identifier

Product name Soda Ash

Product code PID1477

Synonyms SODIUM CARBONATE

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use pH modifier.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

M-I SWACO, A Schlumberger Company
200 - 125, 9th Avenue SE
Calgary, Alberta T2G 0P6, Canada
Telephone: 1-780-962-8221

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Bethicia Prasek

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards

Serious eye damage/eye irritation	Category 2

Environmental hazards Not classified

Physical Hazards Not classified

2.2 Label elements

Signal word
WARNING

Hazard statements
H319 - Causes serious eye irritation

Precautionary statements
P264 - Wash face, hands and any exposed skin thoroughly after handling
P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337 + P313 - If eye irritation persists: Get medical advice/ attention
P501 - Dispose of contents/container in accordance with local regulations.

Unknown acute toxicity 0% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Component	CAS-No	Weight % - range
Sodium carbonate	497-19-8	60-100

3.2 Mixtures

Not Applicable

Comments
The exact percentage (concentration) of composition has been withheld as a trade secret

4. First aid measures

4.1 First-Aid Measures

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Ingestion Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

Skin contact	Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention if irritation persists.
Eye contact	Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

General advice	The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.
Main symptoms	
Inhalation	Please see Section 11. Toxicological Information for further information.
Ingestion	Please see Section 11. Toxicological Information for further information.
Skin contact	Please see Section 11. Toxicological Information for further information.
Eye contact	Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician	Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
None known.

Hazardous combustion products
Fire or high temperatures create:, Sodium oxides.

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. See also section 8.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so. Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.

Methods for cleaning up
Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation.

Hygiene measures
Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands before eating, drinking or smoking. Remove contaminated clothing.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions	Ensure adequate ventilation.
Storage precautions	Keep containers tightly closed in a dry, cool and well-ventilated place. Avoid contact with: Oxidizing agents Acids Protect from moisture
Packaging material	Use specially constructed containers only.

8. Exposure controls/personal protection

8.1 Control parameters

Exposure limits

Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m³ (Inhalable); 3 mg/m³ (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m³ (Total); 5 mg/m³ (Respirable).

Component	ACGIH TLV	OSHA PEL
Sodium carbonate 497-19-8 (60-100)	Not Determined	Not Determined

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation. Mechanical ventilation or local exhaust ventilation is required.

Personal protective equipment

Eye protection	Tightly fitting safety goggles.
Hand protection	Wear chemical resistant gloves such as nitrile or neoprene.
Respiratory protection	No personal respiratory protective equipment normally required In case of insufficient ventilation wear suitable respiratory equipment Use NIOSH approved respirator with dust and mist protection (3M 8210). If dust concentration exceeds 5 times the exposure limit, wear an approved HEPA respirator
Skin and body protection	Wear suitable protective clothing, Eye wash and emergency shower must be available at the work place.
Hygiene measures	Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid
Appearance	Powder Dust
Color	White
Odor	Odorless
Odor threshold	Not applicable

Property	Values	Remarks
pH	No information available	
pH @ dilution	> 12	@ 10 g/l
Melting/freezing point	851 °C / 1564 °F	
Boiling point/range	No information available	
Flash point	Non-flammable	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	No information available	
Bulk density	No information available	
Water solubility	Soluble in water	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	> 400°C (752°F)	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	Not determined	
Explosive properties	Not Applicable	
Oxidizing properties	None known.	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	None
Density	No information available

10. Stability and reactivity

10.1 Reactivity

Reacts violently with acids.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

10.4 Conditions to avoid

Avoid dust formation. Protect from moisture.

10.5 Incompatible materials

Oxidizing agents.

10.6 Hazardous decomposition products

See also section 5.2.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation	Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.
Eye contact	Causes serious eye irritation.
Skin contact	Prolonged contact may cause redness and irritation.
Ingestion	Ingestion may cause stomach discomfort.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium carbonate	= 4090 mg/kg (Rat)	No data available	= 2300 mg/m³ (Rat) 2 h

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Sodium carbonate	No data available	No data available	No data available	No data available

Sensitization This product does not contain any components suspected to be sensitizing.

Mutagenic effects	This product does not contain any known or suspected mutagens.
Carcinogenicity	This product does not contain any known or suspected carcinogens.
Reproductive toxicity	This product does not contain any known or suspected reproductive hazards.
Developmental toxicity	Not known to cause birth defects or have a deleterious effect on a developing fetus.
Routes of exposure	Eye contact.
Routes of entry	No route of entry noted.
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.
Aspiration hazard	Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Sodium carbonate	= 300 mg/L LC50 Lepomis macrochirus 96 h 310 - 1220 mg/L LC50 Pimephales promelas 96 h	242 mg/L EC50 (Nitzschia) = 120 h	265 mg/L EC50 (Daphnia magna) = 48 h

12.2 Persistence and degradability

Not Applicable - Inorganic chemical.

12.3 Bioaccumulative potential

Not Applicable - Inorganic chemical.

12.4 Mobility in soil

Soluble in water.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

Not regulated

UN No. (DOT)	Not regulated
UN No. (TDG)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

The product is not covered by international regulation on the transport of dangerous goods

14.3 Hazard class(es)

DOT Hazard class	Not regulated
TDG Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
TDG Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

No

14.6 Special precautions

Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies

European Union (EINECS and ELINCS)	Complies
Philippines (PICCS)	Complies
Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Immediate (acute) health hazard.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Sodium carbonate	N/A	N/A	N/A

State Comments
Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

Canadian Classification

This Safety Data Sheet has been prepared in compliance with the Hazardous Products Regulations.

16. Other information

Supersedes date	24/Jul/2013
Revision date	18/Sep/2015
Version	1
The following sections have been revised:	All sections. Updated according to GHS/CLP.

HMIS classification

Health	2
Flammability	0
Physical hazard	0
PPE	E

Disclaimer
The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

NATURAL SODA

SODIUM BICARBONATE

Safety Data Sheet

Section 1: Identification

Product Name: SODIUM BICARBONATE	**Emergency Phone Number:** CHEMTREC: 800-424-9300
Other Identification: Baking Soda, Bicarbonate of Soda, Sodium Hydrogen Carbonate	**CAS#:** 144-55-8
Manufacturer: Natural Soda LLC 3200 County Road 31 Rifle, Colorado 81650 USA **Phone Number:** 1-970-878-3674	**Intended Use:** food and baking ingredient, specialty products, fire retardant, animal nutrition, pharmaceutical, household and personal care, mild cleaners, general industrial.

Section 2: Hazard(s) Identification

Classification of Substance **Classification (GHS-US):** Not Classified	**Other Hazards** **Inhalation:** Breathing dusts may cause coughing or difficulty breathing. **Eye Contact:** Direct eye contact may cause irritation, reddening or tearing. **Skin Contact:** Direct contact may cause irritation.
Label Elements **GHS-US Labeling:** No applicable labeling	
Unknown Acute Toxicity (GHS-US) Not available	

Section 3: Composition / Information on Ingredients

Substance	**CAS#:** 144-55-8
Common Name: Sodium Bicarbonate	**Formula:** $NaHCO_3$
Chemical Names: Sodium Bicarbonate, Bicarbonate of Soda Sodium Hydrogen Carbonate	**Purity:** 99+% (w/w)
	Impurities: No impurities relevant for classification and labeling.

Section 4: First-aid Measures

Most Important Symptoms and Effects, Acute and Delayed	Description of First-Aid Measures
General: None expected under normal conditions of use.	**General:** No known delayed effects. Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice.
Eye Contact: Contact may cause irritation due to mechanical abrasion.	**Eye Contact:** Immediately rinse eyes with water. Remove any contact lenses, and continue flushing eyes with running water for at least 15 minutes. Get immediate medical attention.
Skin: Contact with large amounts of dust may cause mechanical irritation.	**Skin:** Wash affected areas with plenty of water, and soap if available, for several minutes. Seek medical attention if irritation develops or persists.
Inhalation: Prolonged inhalation of dust may cause respiratori irritation.	**Inhalation:** Remove from area to fresh air. Seek medical attention if respiratory irritation develops or if breathing becomes difficult.
Ingestion: Large doses may product systemic alkalosis and expansion in extracellular fluid volume with edema.	**Ingestion:** May cause nausea, vomiting and abdominal pain. Large doses can cause alkalosis.

Indication of Any Immediate Medical Attention and Special Treatment Needed
If exposed or concerned, get medical advice and attention.

Section 5: Fire-fighting Measures

General: This product will not burn, and can be used a dry powder extinguishing medium.

Extinguishing Media **Suitable Extinguishing Media:** Use material suitable for surrounding fire conditions. **Unsuitable Extinguishing Media:** none.	**Advice for Firefighters** No special precautions required. **General Measures:** Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. **Protection During Firefighting:** Do not enter fire area without proper protective equipment, including respiratory protection. **Hazardous Combustion Products:** CO_2 (displacement of breathable atmosphere).
Special Hazards Arising from the Substance **Fire Hazard:** Not Flammable **Explosion Hazards:** Not Explosive **Reactivity:** Hazardous reactions will not occur under normal conditions.	

Section 6: Accidental Release Measures

General Personal Precautions, Protective Equipment and Emergency Procedures: For dry spills, sweep or shovel and place in containers for disposal in accordance with applicable regulations (see Disposal Considerations section). Handle in accordance with good industrial hygiene and safety practice. Avoid formation of dust. Avoid excess skin and eye contact. Avoid contamination of bodies of water during cleanup.

For Non-Emergency Personnel Keep dust levels to a minimum Wear suitable personal protective equipment	**Environmental Precautions** Avoid any mixture with an acid into sewer or drain (CO_2 gas formation)
For Emergency Personnel Equip cleanup crew with proper protection. Ventilate area..	**Methods for Containment:** vacuum or shovel into bags **Methods for Cleanup:** Avoid generation of dust during cleanup of spills. Keep in suitable closed labeled container for disposal.

NATURAL SODA

SODIUM BICARBONATE

Safety Data Sheet

Section 7: Handling and Storage

Precautions for Safe Handling	Conditions for Safe Storage
General: Avoid contact with eyes, skin and clothing. Wash hands thoroughly with soap and water after handling and before eating, drinking or smoking.	**General:** Store in a cool, dry and well-ventilated location. Good housekeeping should be maintained to minimize dust accumulation and generation. **Incompatibilities:** Keep away from acids, water.

Section 8: Exposure Controls / Personal Protection

Control Parameters (Particles not otherwise classified)	
US ACGIH (TWA) :	3 mg/m³ Respirable Dust 10 mg/m³ Total Dust
US OSHA PEL (TWA):	5 mg/m³ Respirable Dust 15 mg/m³ Total Dust
Engineering Controls: Use local exhaust ventilation to keep airborne levels below exposure limits.	**Eye Protection:** Use vented goggles or safety glasses in excessively dusty conditions **Skin Protection:** Not required under normal conditions. Use gloves and protective clothing if excessively dusty, or if skin is damaged **Respiratory Protection:** None required where adequate ventilation is provided. If airborne concentrations are high, use a NIOSH/MSHA approved respirator that has been selected by a technically qualified person for the specific work conditions.

Section 9: Physical and Chemical Properties

Solubility In Water: 8.8% at 20°C	**pH Value:** 1% Solution = 8.0-8.5
Appearance: White granular solid	**Flash Point:** Not Applicable
Molecular Weight: 84.01	**Specific Gravity:** (H_2O=1 @ 4°C): 2.16
Boiling Point: Decomposes on heating	**Bulk Density:** 60 lbs/ ft³
Melting Point: Decomposes above 50°C without melting	**Vapor Pressure:** Not Applicable

Section 10: Stability and Reactivity

Reactivity: Hazardous reactions will not occur under normal circumstances.	**Conditions to Avoid:** Exposure to moisture or moist air. Temperatures above 150°F (65°C)
Chemical Stability: Stable in dry air, in moist air forms sodium carbonate, an irritant.	**Incompatible Materials:** Acids. Aluminum (tarnishes).
Possibility of Hazardous Reactions: Hazardous polymerization will not occur.	**Hazardous Decomposition Products:** When heated to decomposition, sodium bicarbonate produces carbon dioxide.

Section 11: Toxicological Information

EYES: Mid (rabbit) 100 mg/ 30 sec **SKIN:** Mid (human) 30 mg/ 3 days-intermittent **INGESTION:** Oral LD60 (rat) 4220 mg/kg Oral LD60 (mouse) 3360 mg/kg Oral LDL5 (man) 20 mg/kg/ 5 days-intermittent Oral LDL5 (infant) 1260 mg/kg	**Symptoms after Inhalation:** Prolonged inhalation of dust may cause respiratory irritation. **Symptoms after Skin Contact:** Large amounts of dust may cause mechanical irritation. **Symptoms after Eye Contact:** Contact may cause irritation due to mechanical abrasion. **Symptoms after Ingestion:** Large doses may produce symptomatic alkalosis and expansion in extracellular fluid volume with edema. **Chronic Symptoms:** None expected under normal conditions of use
Skin Corrosion/Irritation: Not classified **Serious Eye Damage/Irritation:** Not classified **Respiratory or skin sensitization:** Not classified **Germ cell mutagenicity:** Not classified **Teratogenicity:** Not classified **Carcinogenicity:** Not classified **Specific Target Organ Toxicity:** Not classified **Reproductive Toxicity:** Not classified **Aspiration Hazard:** Not classified	**CARCINOGENICITY:** Sodium Bicarbonate is not listed as a carcinogen by the Environmental Protection Agency (EPA), the State of California, the National Toxicology Program, or the International Agency for Research on Cancer. See Regulatory Information Section for additional information.

Section 12: Ecological Information

Toxicity		
LC 50 Fish 1:	7100 mg/l (Bluegill)	**Persistence and Degradability:** Not established
LC 50 Fish 1:	8250-9000 mg/l (Exposure time 96h)	**Bioaccumulative Potential:** Not established
EC 50 Daphnia 1:	4100 mg/l	**Mobility in Soil:** Not available
EC 50 Daphnia 1:	2350 mg/l (Exposure time 48h)	**Other Adverse Effects:** No other adverse effects are identified
LC 50 Fish 2:	7700 mg/l (Rainbow trout)	

Section 13: Disposal Considerations

Disposal Guidance: If permitted by local and state regulations, place in a hazardous or industrial waste landfill. Tonnage quantities are not, however, recommended for the landfill, and if possible, should be re-used for an appropriate application. Small quantities may be flushed to sewers if permitted by NPDES or POTW permit. Refer to federal, state, provincial and local regulations for applicable site-specific requirements. Keep out of drinking water sources. See Regulatory Information for more details.

NATURAL SODA

SODIUM BICARBONATE

Safety Data Sheet

Section 14: Transport Information

U.S. Department of Transportation (DOT) Identification Number: Sodium Bicarbonate is not a DOT Hazardous Material.

International Transportation: Sodium Bicarbonate has no U.N. number, and is not regulated under international rail, highway, water, or air transport regulations.

Transportation of Dangerous Goods (TDG): Not Regulated.

Section 15: Regulatory Information

TSCA Number: 144-55-8	**California Proposition 65:** Not listed.
RCRA (40 CFR 261): Not listed under any section.	**SARA III: Section 302-No:311-Yes: 312-Yes: 313-No**
CERCLA (Superfund): Not listed under any section.	**Workplace Hazardous Materials Information System (WHMIS):** Not a controlled product.
Clean Water Act (CWA): Not listed.	**EU CLASSIFICATION:** Not a dangerous substance.
Safe Drinking Water Act (SWDA): Not listed.	**OSHA:** Treat as particulates not otherwise regulated.
International Agency for Research on Cancer: Not listed.	**ACGIH:** Treat as particulates not otherwise regulated.
NTP Annual Report on Carcinogens: **OSHA Carcinogen:** Not listed. **CONEG Model Legislation:** Not listed.	**Federal Drug Agency (FDA):** Sodium bicarbonate is permitted for the following uses: Antibiotic manufacturing; cake, pancake and ready-mixes; catalyst manufacture; chemical; dentifrices; explosives; fire extinguishers; food colors; food conditioner; papermaking; pharmaceuticals; photography; self-rising flour; starches; sugar refining; textiles.

International Listings

- AICS (Australian Inventory of Chemical Substances.
- Canadian DSL (Domestic Substances List).
- IECSC (Inventory of Existing Chemical Substances Produced or Imported in China).
- EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
- Japanese ENCS (Existing & New chemical Substances) inventory
- Korean ECL (Existing Chemicals List)
- NZIoC (New Zealand Inventory of Chemicals)
- PICCS (Philippines Inventory of Chemicals and Chemical Substances)
- United States TSCA (Toxic Substances Control Act) inventory

NOTICE

Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, Natural Soda LLC extends no warranties, makes no representation, and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes for consequences of its use.

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Registry of Toxic Effects of Chemical Substances Accession Number: VZ0950000.

Section 16: Other Information, including date of preparation or last revision

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

Revision Date: 04/10/2015	**Prepared by:** Natural Soda LLC 3200 County Road 31 Rifle, Colorado 81650 Ph: 970-878-3674

BASF
We create chemistry

Safety Data Sheet
Myacide® GA 25

1. Identification

Product identifier used on the label

Myacide® GA 25

Recommended use of the chemical and restriction on use

* The "Recommended use" identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

Details of the supplier of the safety data sheet

Company:
BASF Canada Inc.
100 Milverton Drive
Mississauga, ON L5R 4H1, CANADA

Telephone: +1 289 360-1300

Emergency telephone number

CANUTEC (reverse charges): (613) 996-6666
BASF HOTLINE: (800) 454-COPE (2673)

Other means of identification

Molecular formula:	CHO(CH2)3CHO
Chemical family:	dialdehydes, aqueous solution
Synonyms:	GLUTARALDEHYDE

2. Hazards Identification

According to Hazardous Products Regulations (HPR) (SOR/2015-17)

Classification of the product

Acute Tox.	4 (oral)	Acute toxicity
Acute Tox.	3 (Inhalation - mist)	Acute toxicity
Skin Corr./Irrit.	1B	Skin corrosion/irritation
Eye Dam./Irrit.	1	Serious eye damage/eye irritation
Resp. Sens.	1	Respiratory sensitization
Skin Sens.	1A	Skin sensitization
STOT SE	3 (irritating to	Specific target organ toxicity — single exposure

	respiratory system)	
Aquatic Acute	1	Hazardous to the aquatic environment - acute
Aquatic Chronic	2	Hazardous to the aquatic environment - chronic

Label elements

Pictogram:

Signal Word:
Danger

Hazard Statement:

H331	Toxic if inhaled.
H302	Harmful if swallowed.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.
H335	May cause respiratory irritation.
H314	Causes severe skin burns and eye damage.
H411	Toxic to aquatic life with long lasting effects.
H400	Very toxic to aquatic life.

Precautionary Statements (Prevention):

P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P260	Do not breathe dust or mist.
P261	Avoid breathing mist.
P273	Avoid release to the environment.
P284	In case of inadequate ventilation wear respiratory protection.
P272	Contaminated work clothing should not be allowed out of the workplace.
P270	Do not eat, drink or smoke when using this product.
P264	Wash with plenty of water and soap thoroughly after handling.

Precautionary Statements (Response):

P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/physician.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P301 + P330 + P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P362 + P364	Take off contaminated clothing and wash it before reuse.
P391	Collect spillage.

Precautionary Statements (Storage):

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

Precautionary Statements (Disposal):

P501	Dispose of contents/container to hazardous or special waste collection point.

Hazards not otherwise classified

No specific dangers known, if the regulations/notes for storage and handling are considered.

3. Composition / Information on Ingredients

4. First-Aid Measures

Description of first aid measures

General advice:
Immediately remove contaminated clothing. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). First aid personnel should pay attention to their own safety.

If inhaled:
If difficulties occur after vapour/aerosol has been inhaled, remove to fresh air and seek medical attention.

If on skin:
Remove contaminated clothing. Rinse skin immediately with plenty of water for 15 - 20 minutes. Seek medical attention. Consult a skin specialist.

If in eyes:
Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

If swallowed:
Immediately rinse mouth and then drink plenty of water, do not induce vomiting, seek medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.
Further important symptoms and effects are so far not known.
Hazards: No applicable information available.

Indication of any immediate medical attention and special treatment needed

Note to physician

Treatment:	Treat according to symptoms (decontamination, vital functions), no known specific antidote, administer corticosteroid dose aerosol to prevent pulmonary odema.

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
water spray, dry powder, foam

Special hazards arising from the substance or mixture
Hazards during fire-fighting:
harmful vapours
Evolution of fumes/fog. The substances/groups of substances mentioned can be released in case of fire.

Advice for fire-fighters
Protective equipment for fire-fighting:
Wear a self-contained breathing apparatus in confined areas or when exposed to combustion products.

Further information:
Contaminated extinguishing water must be disposed of in accordance with official regulations.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Use personal protective clothing.

Environmental precautions
Contain contaminated water/firefighting water. Do not discharge into drains/surface waters/groundwater.

Methods and material for containment and cleaning up
For small amounts: Pick up with absorbent material (e.g. sand, sawdust, general-purpose binder).
Dispose of absorbed material in accordance with regulations.
For large amounts: Pump off product.
Spills should be contained, solidified, and placed in suitable containers for disposal.

7. Handling and Storage

Precautions for safe handling
No special measures necessary provided product is used correctly.

Protection against fire and explosion:
No special precautions necessary.

Conditions for safe storage, including any incompatibilities
Segregate from foods and animal feeds.

Further information on storage conditions: Keep container tightly closed and in a cool place.
Store protected against freezing.

8. Exposure Controls/Personal Protection

Users of a pesticidal product should refer to the product label for personal protective equipment requirements.

Components with occupational exposure limits

Methanol	OSHA PEL	PEL 200 ppm 260 mg/m3 ; TWA value 200 ppm 260 mg/m3 ; SKIN_FINAL ; The substance can be absorbed through the skin. STEL value 250 ppm 325 mg/m3 ;
	ACGIH TLV	Skin Designation ; The substance can be absorbed through the skin. STEL value 250 ppm ; TWA value 200 ppm ;
glutaral	OSHA PEL	CLV 0.2 ppm 0.8 mg/m3 ;
	ACGIH TLV	CLV 0.05 ppm ;

Advice on system design:
Provide local exhaust ventilation to control vapours/mists.

Personal protective equipment

Respiratory protection:
Respiratory protection in case of vapour/aerosol release. Breathing protection if breathable aerosols/dust are formed. Wear a NIOSH-certified (or equivalent) organic vapour/particulate respirator.

Hand protection:
Wear chemical resistant protective gloves.

Eye protection:
Tightly fitting safety goggles (chemical goggles) and face shield.

Body protection:
Body protection must be chosen based on level of activity and exposure.

General safety and hygiene measures:
Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Avoid contact with skin and eyes. Remove contaminated clothing. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and Chemical Properties

Form:	liquid	
Odour:	characteristic	
Odour threshold:	No applicable information available.	
Colour:	yellow	
Freezing point:	approx. -5 °C (1 ATM)	
Boiling point:	> 100 °C (1 ATM)	
Sublimation point:	No applicable information available.	
Flash point:	not applicable	
Flammability:	No applicable information available.	
Lower explosion limit:	No applicable information available.	
Upper explosion limit:	No applicable information available.	
Autoignition:	> 275 °C	(DIN 51794)

Vapour pressure:	approx. 17.5 mmHg (20 °C) The product has not been tested. The statement has been derived from the properties of the individual components.
Density:	1.06 g/cm3 (20 °C)
Vapour density:	No applicable information available.
Partitioning coefficient n-octanol/water (log Pow):	No applicable information available.
Thermal decomposition:	No decomposition if correctly stored and handled.
Viscosity, dynamic:	No applicable information available.
Viscosity, kinematic:	No applicable information available.
Solubility in water:	soluble
Solubility (quantitative):	No applicable information available.
Solubility (qualitative):	No applicable information available.
Molar mass:	100 g/mol
Evaporation rate:	Value can be approximated from Henry's Law Constant or vapor pressure.
Other Information:	If necessary, information on other physical and chemical parameters is indicated in this section.

10. Stability and Reactivity

Reactivity
No hazardous reactions if stored and handled as prescribed/indicated.

Corrosion to metals:
No corrosive effect on metal.

Chemical stability
The product is stable if stored and handled as prescribed/indicated.

Possibility of hazardous reactions
The product is chemically stable.

Conditions to avoid
No conditions to avoid anticipated.

Incompatible materials
acids, bases, amines

Hazardous decomposition products

Decomposition products:
Hazardous decomposition products:
carbon monoxide, carbon dioxide

Thermal decomposition:
No decomposition if correctly stored and handled.

11. Toxicological information

Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute toxicity
Assessment of acute toxicity: Of high toxicity after short-term inhalation. Of moderate toxicity after single ingestion. Of low toxicity after short-term skin contact.

Oral
Type of value: LD50
Species: rat
Value: approx. 530 mg/kg (BASF-Test)

Tested as a preparation.

Inhalation
Type of value: ATE
Value: 1.12 mg/l
Determined for mist

Dermal
Type of value: LD50
Species: rabbit (male/female)
Value: > 1,000 mg/kg (similar to OECD guideline 402)
No mortality was observed. The data on toxicology refer to the active ingredient. The value meets the highest applied test concentration.

Assessment other acute effects
Assessment of STOT single:
Causes temporary irritation of the respiratory tract.

Irritation / corrosion
Assessment of irritating effects: Corrosive! Damages skin and eyes.

Skin
Species: rabbit
Result: Irritant.
Method: Draize test

Eye
Species: rabbit
Result: Severely irritating.
Method: Draize test

Sensitization
Assessment of sensitization: The substance may cause sensitization of the respiratory tract.
Sensitization after skin contact possible.

Information on: glutaral
Open epicutaneous test (OET)
Species: guinea pig
Result: sensitizing

Species: human
Result: sensitizing

Chronic Toxicity/Effects

Repeated dose toxicity

Information on: glutaral
Assessment of repeated dose toxicity: After repeated exposure the prominent effect is local irritation. The substance may cause damage to the upper respiratory tract after repeated inhalation, as shown in animal studies.

Genetic toxicity

Information on: glutaral
Assessment of mutagenicity: The substance was mutagenic in various test systems with bacterias and cell cultures; however, these results could not be confirmed in tests with mammals.

Carcinogenicity
Assessment of carcinogenicity: None of the components in this product at concentrations greater than 0.1% are listed by IARC; NTP, OSHA or ACGIH as a carcinogen.

Reproductive toxicity

Information on: glutaral
Assessment of reproduction toxicity: The results of animal studies gave no indication of a fertility impairing effect.

Teratogenicity

Information on: glutaral
Assessment of teratogenicity: No indications of a developmental toxic / teratogenic effect were seen in animal studies.

Other Information
The product has not been tested. The statement has been derived from the properties of the individual components.
The data on toxicology refer to the active ingredient.

Symptoms of Exposure

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.
Further important symptoms and effects are so far not known.

12. Ecological Information

Toxicity

Aquatic invertebrates
EC50 (48 h) 5.75 mg/l, Daphnia magna (Daphnia test acute, static)
The details of the toxic effect relate to the nominal concentration.

EC50 (96 h) 0.75 mg/l, Crassostrea virginica (other, Flow through.)
The statement of the toxic effect relates to the analytically determined concentration.

LC50 (96 h) 5.5 mg/l, Mysidopsis bahia (OPP 72-3 (EPA-Guideline), Flow through.)
The statement of the toxic effect relates to the analytically determined concentration.

Aquatic plants
EC50 (72 h) 0.6 mg/l (growth rate), Desmodesmus subspicatus (OECD Guideline 201, static)
The statement of the toxic effect relates to the analytically determined concentration.

No observed effect concentration (72 h) 0.025 mg/l, Desmodesmus subspicatus (OECD Guideline 201, static)
The statement of the toxic effect relates to the analytically determined concentration.

EC50 (72 h) 0.92 mg/l (growth rate), Skeletonema costatum (ISO/DIS 10253)
The details of the toxic effect relate to the nominal concentration.

Chronic toxicity to fish
No observed effect concentration (97 d) 1.6 mg/l, Oncorhynchus mykiss (Flow through.)
The details of the toxic effect relate to the nominal concentration.

Chronic toxicity to aquatic invertebrates
No observed effect concentration (21 d) 2.5 mg/l, Daphnia magna (OECD Guideline 202, part 2, semistatic)
The statement of the toxic effect relates to the analytically determined concentration.

Toxicity to terrestrial plants

EC20 (19 d) > 450 mg/kg, Vicia sativa (OECD Guideline 208)

Microorganisms/Effect on activated sludge

Toxicity to microorganisms
bacteria (17 h): 13.3 mg/l

Persistence and degradability

Assessment biodegradation and elimination (H2O)

Information on: glutaral

Readily biodegradable (according to OECD criteria).

Elimination information

Information on: glutaral
90 - 100 % DOC reduction (28 d) (OECD 301 A (new version)) (aerobic, activated sludge, domestic)

Assessment of stability in water

Information on: glutaral

In contact with water the substance will hydrolyse slowly.

Bioaccumulative potential

Bioaccumulation potential
Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

Assessment bioaccumulation potential

Information on: glutaral

No significant accumulation in organisms is expected as a result of the distribution coefficient of n-octanol/water (log Pow).

Mobility in soil

Assessment transport between environmental compartments

Information on: glutaral

The substance will not evaporate into the atmosphere from the water surface.
Adsorption to solid soil phase is possible.

Additional information

Other ecotoxicological advice:
Data refer to a diluted aqueous solution of the substance.

13. Disposal considerations

Waste disposal of substance:
Must be disposed of or incinerated in accordance with local regulations.

Container disposal:
Dispose of in a licensed facility. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

14. Transport Information

Land transport
TDG

Hazard class:	8
Packing group:	II
ID number:	UN 3265
Hazard label:	8, EHSM
Proper shipping name:	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (contains GLUTARALDEHYDE)

Sea transport

IMDG

Hazard class:	8
Packing group:	II
ID number:	UN 3265
Hazard label:	8, EHSM
Marine pollutant:	YES
Proper shipping name:	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (contains GLUTARALDEHYDE)

Air transport
IATA/ICAO

Hazard class:	8
Packing group:	II
ID number:	UN 3265
Hazard label:	8
Proper shipping name:	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (contains GLUTARALDEHYDE)

15. Regulatory Information

Federal Regulations

Registration status:

Biocide 28339	DSL, CA	released / exempt

16. Other Information

SDS Prepared by:
BASF NA Product Regulations
SDS Prepared on: 2016/04/14

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

END OF DATA SHEET

SDS no. 10674
Version 7
Revision date 25/Nov/2014
Supersedes date 23/May/2013

MI SWACO
A Schlumberger Company

Safety Data Sheet
DUAL-FLO†

1. Identification

1.1 Product identifier

Product name DUAL-FLO†

Product code 10674

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Drilling fluid additive. Polymer additive.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Bethicia Prasek

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards
Combustible dust

2.2 Label elements

Signal word
WARNING

May form combustible dust concentrations in air

Precautionary statements
P240 - Ground/bond container and receiving equipment
P243 - Take precautionary measures against static discharge

P241 - Use explosion-proof electrical/ ventilating/ lighting/ equipment

Unknown acute toxicity 0% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Component	CAS-No	Weight % - range
Polysaccharide	Proprietary	60-100

3.2 Mixtures

Not Applicable

Comments
The exact percentage (concentration) of composition has been withheld as a trade secret

4. First aid measures

4.1 First-Aid Measures

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Ingestion Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

Skin contact Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.

Eye contact Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

General advice The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

Main symptoms

Inhalation Please see Section 11. Toxicological Information for further information.

Ingestion Please see Section 11. Toxicological Information for further information.

Skin contact Please see Section 11. Toxicological Information for further information.

Eye contact Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
Suspended dust may present a dust explosion hazard.

Hazardous combustion products
Carbon oxides (COx).

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment identified in Section 8. Keep unnecessary personnel away. Prevent further leakage or spillage if safe to do so.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation.

Hygiene measures
Use good work and personal hygiene practices to avoid exposure. Do not eat, drink or smoke when using this product.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation. Provide appropriate exhaust ventilation at places where dust is formed. Keep airborne concentrations below exposure limits.

Storage precautions Keep away from open flames, hot surfaces and sources of ignition. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls/personal protection

8.1 Control parameters

Exposure limits **Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m³ (Inhalable); 3 mg/m³ (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m³ (Total); 5 mg/m³ (Respirable).**

Component	ACGIH TLV	OSHA PEL
Polysaccharide (60-100)	Not Determined	Not Determined

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection Tightly fitting safety goggles.

Hand protection Wear chemical resistant gloves such as nitrile or neoprene.

Respiratory protection All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator. If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.

Skin and body protection Wear suitable protective clothing.

Hygiene measures	Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid
Appearance	Powder
Color	White - Tan
Odor	Odorless
Odor threshold	Not applicable

Property	Values	Remarks
pH	Not applicable	
pH @ dilution	8.0 - 10.5	4% solution in water
Melting/freezing point		
Boiling point/range	No information available	
Flash point	Not Applicable	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	0 mmHg	
Vapor density	Not applicable	
Specific gravity	1.5 - 1.6	
Bulk density	30 - 40 lb/cu. ft.	
Water solubility	Gels on contact with water	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	No information available	

Explosive properties	Suspended dust may present a dust explosion hazard
Oxidizing properties	None known.

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	None
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
Hazardous polymerization does not occur.

10.4 Conditions to avoid

Avoid dust formation. Heat, flames and sparks.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Carbon oxides (COx).

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation — Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.

Eye contact — Dust may cause mechanical irritation.

Skin contact — Repeated exposure may cause skin dryness or cracking.

Ingestion — Irritant; may cause pain or discomfort to mouth, throat and stomach.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Polysaccharide	No data available	No data available	No data available

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Polysaccharide	No data available	No data available	No data available	No data available

Sensitization — This product does not contain any components suspected to be sensitizing.

Mutagenic effects — No evidence of mutagenic properties.

Carcinogenicity — No evidence of carcinogenic properties.

Reproductive toxicity — No evidence of toxicity to reproduction.

Developmental toxicity — Not known to cause birth defects or have a deleterious effect on a developing fetus.

Routes of exposure — Inhalation. Skin contact. Eye contact.

Routes of entry — Inhalation.

Specific target organ toxicity (single exposure) — Not classified

Specific target organ toxicity (repeated exposure)	Not classified.
Aspiration hazard	Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
No product level data available. See component information below.

Toxicity to fish
No product level data available. See component information below.

Toxicity to daphnia and other aquatic invertebrates
No product level data available. See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Polysaccharide	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

UN No. (DOT)	Not regulated
UN No. (TDG)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

Not regulated for transportation by DOT, TDG, IMDG and ICAO/IATA.

14.3 Hazard class(es)

DOT Hazard class	Not regulated
TDG Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
TDG Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

No

14.6 Special precautions

Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies
European Union (EINECS and ELINCS)	Complies
Philippines (PICCS)	Complies
Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

-

SARA 311/312 Hazard Categories

Not a SARA 311/312 hazard.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Polysaccharide	N/A	N/A	N/A

State Comments
Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

Canadian Classification

16. Other information

Supersedes date	23/May/2013
Revision date	25/Nov/2014
Version	7
The following sections have been revised	All sections. Updated according to GHS/CLP.

HMIS classification

Health	0
Flammability	1
Physical hazard	0
PPE	E

N/A - Not Applicable, N/D - Not Determined.

†A mark of M-I L.L.C.

Disclaimer
The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

SDS no. 10168
Version 10
Revision date 01/Sep/2015
Supersedes date 18/Mar/2015

A Schlumberger Company

Safety Data Sheet
DEFOAM-X†

1. Identification

1.1 Product identifier

Product name DEFOAM-X†

Product code 10168

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Defoamer.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I PRODUCTION TECHNOLOGIES
A Business Unit of M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
Telephone: 1 281-561-1511
www.miswaco.slb.com

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Mike McDowell

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards Not classified

2.2 Label elements

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Signal word
None

Hazard statements
This product is not classified as hazardous therefore no (H) hazard statements assigned.

Precautionary statements
This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

Unknown acute toxicity 0% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Not Applicable

Comments
No classified ingredients, or those having occupational exposure limits, present above the level of disclosure.

4. First aid measures

4.1 First-Aid Measures

Inhalation Not expected to be a respiratory hazard because of state or low volatility.

Ingestion Rinse mouth. Do not induce vomiting without medical advice. Get medical attention if symptoms occur.

Skin contact Not expected to be a hazard under anticipated use conditions.

Eye contact Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

Main symptoms

Inhalation Please see Section 11. Toxicological Information for further information.

Ingestion Please see Section 11. Toxicological Information for further information.

Skin contact Please see Section 11. Toxicological Information for further information.

Eye contact Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing media appropriate for surrounding material.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
None known.

Hazardous combustion products
Carbon oxides (COx).

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. See also section 8.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up
Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation. Keep airborne concentrations below exposure limits.

Storage precautions	Keep containers tightly closed in a dry, cool and well-ventilated place.
Packaging material	Use specially constructed containers only.

8. Exposure controls/personal protection

8.1 Control parameters

Exposure limits — **The product does not contain any hazardous materials with occupational exposure limits established.**

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection	It is good practice to wear goggles when handling any chemical. Tightly fitting safety goggles.
Hand protection	Wear chemical resistant gloves such as nitrile or neoprene.
Respiratory protection	No personal respiratory protective equipment normally required In case of insufficient ventilation wear suitable respiratory equipment
Skin and body protection	Wear suitable protective clothing, Provide eyewash station.
Hygiene measures	Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Transparent
Color	White
Odor	Mild
Odor threshold	Not applicable

Property	Values	Remarks
pH		
pH @ dilution	5 - 8 @ 1%	
Melting/freezing point	< 0 °C / 32 °F	
Boiling point/range	No information available	
Flash point	> 93 °C / 200 °F	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	

Specific gravity	0.98 - 1.02
Bulk density	No information available
Water solubility	Negligible
Solubility in other solvents	No information available
Autoignition temperature	No information available
Decomposition temperature	No information available
Kinematic viscosity	No information available
Dynamic viscosity	No information available
Log Pow	No information available
Explosive properties	No information available
Oxidizing properties	No information available

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	No information available
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Carbon oxides (COx).

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation	Inhalation of vapors in high concentration may cause irritation of respiratory system.
Eye contact	May cause slight irritation.
Skin contact	Prolonged contact may cause redness and irritation.
Ingestion	Ingestion may cause stomach discomfort.

Sensitization	This product does not contain any components suspected to be sensitizing.
Mutagenic effects	No evidence of mutagenic properties.
Carcinogenicity	No evidence of carcinogenic properties.
Reproductive toxicity	No evidence of toxicity to reproduction.
Developmental toxicity	Not known to cause birth defects or have a deleterious effect on a developing fetus.
Routes of exposure	Eye contact. Skin contact. Inhalation.
Routes of entry	No route of entry noted.
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.
Aspiration hazard	Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

UN No. (DOT)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

14.3 Hazard class(es)

DOT Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

14.6 Special precautions
Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies
European Union (EINECS and ELINCS)	Does not Comply
Philippines (PICCS)	Complies
Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

IMPORTS, Canada
No import volume restrictions.

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Not a SARA 311/312 hazard.

State Comments
Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

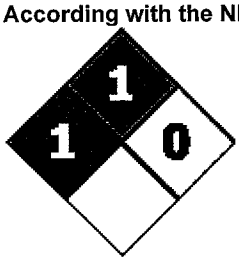
16. Other information

Supersedes date	18/Mar/2015
Revision date	01/Sep/2015
Version	10
The following sections have been revised:	Section 16: Other information.

HMIS classification

Health	0
Flammability	1
Physical hazard	0
PPE	E

According with the NFPA 704/STPS 018



Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

AMBER CHEMICAL INC.

SAFETY DATA SHEET

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE, ACCIDENT CALL CHEMTREC-DAY OR NIGHT
1-800-424-9300

SECTION 1: CHEMICAL PRODUCT & COMPANY INFORMATION

PRODUCT NAME:	**MD-C**
COMPANY NAME:	Amber Chemical Inc.
ADDRESS:	5201 Boylan Street Bakersfield, CA 93308
PHONE:	(661) 325-2072
DATE PREPARED:	March, 2014

SECTION 2: HAZARDS IDENTIFICATION

DESCRIPTION: Clear Liquid
ROUTES OF ENTRY: Inhalation, Skin, and Ingestion
EFFECTS OF OVEREXPOSURE: May irritate eyes and/ or skin.
CHRONIC & ACUTE EFFECTS OF OVEREXPOSURE: None known

SECTION3: COMPOSITION/INFORMATION ON INGREDIENTS

No hazardous ingredients per 29 CFR Part 1910

SECTION 4: FIRST AID MEASURES

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON

INHALATION: If symptoms are experienced, remove source of contamination or move victim to fresh air. If the affected person is not breathing, apply artificial respiration. If breathing is difficult, give oxygen.

SKIN CONTACT: For skin contact flush with large amounts of water. If irritation persists, get medical attention Immediately take off all contaminated clothing. Wash contaminated clothing before reuse.

EYE CONTACT: Immediately flush eyes with potable water or sterile buffer. Hold eyelids open to assure complete flushing. Seek medical attention.

INGESTION: Give large amounts of water and call a physician.

SEEK PROMT MEDICAL ATTENTION FOR EYE CONTACT OR INGESTION

SECTION 5: FIRE FIGHTING MEASURES

Explosive limits are not a safety factor due to low volatility. Extinguish fires using carbon dioxide, dry chemical, foam, water (fog, spray, or stream) or Halon media. Keep containers cool – must be hot to burn. Hazardous combustion products include carbon monoxide, carbon dioxide, toxic oxides of nitrogen and or cyanide. Water runoff from firefighting will be extremely slippery. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Self-contained breathing apparatus and protective clothing should be worn while fighting fires involving chemicals. Water run-off can cause environmental damage. Dike and collect water used to fight fire.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Isolate spill or leak area immediately. Keep unauthorized personnel away. Stay up-wind, keep out of low areas and ventilate closed spaces before entering. Do not touch or walk through spilled material. Surfaces may become slippery after spillage.

ENVIRONMENTAL PRECAUTIONS: Prevent entry into waterways, sewers, basements or confined areas.

METHODS FOR CLEANING UP: Stop leak if you can do it without risk.

SMALL LEAKS: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

LARGE LEAKS: Dike far ahead of liquid spill for later disposal. Prevent entry into waterways, sewers, or confined areas.

SECTION 7: HANDLING AND STORAGE

HANDLING: Wash thoroughly after handling. As with all chemicals, good industrial hygiene practices should be followed when handling this material.

STORAGE: Keep containers closed when not in use. Store product in a cool, dry well ventilated storage area.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits. Local exhaust is suggested for use, where possible, in enclosed or confined spaces.

RESPIRATORY: Respiratory protection generally not required. MESA or NIOSH gas mask with ammonia canister if TLV is exceeded. Use supplied air for combustion products. Ventilation is recommended whenever solutions produce mist

HAND -SKIN: Wear suitable protective clothing. Protective gloves are recommended for sensitive individuals or long contact.

EYE PROTECTION: Chemical goggles are recommended for protection. Eye wash fountain and emergency showers are recommended.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

FLASH POINT:	Not Applicable
BOILING POINT:	Not Determined
SPECIFIC GRAVITY:	0.84
Vapor Density:	Not Applicable
Evaporation Rate:	1
Solubility in Water:	Soluble
Melting Point:	Not Applicable
Color:	Clear
Order:	Mild
Appearance:	Liquid
PH:	7 - 9
Viscosity:	Not Determined

SECTION 10: STABILITY AND REACTIVITY

STABILITY:	Stable under normal conditions.
HAZARDOUS DECOMPOSITION PRODUCTS:	Carbon Monoxide, Carbon dioxide and oxides of Nitrogen.
CONDITIONS OF AVOID:	Heat and humidity
INCOMPATIBILITY:	Strong oxidizers such as Hydrogen Peroxide, Bromine and Chromic Acid.
HAZARDOUS POLYMERIZATION:	Will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE ORAL TOXICITY:	No data available		
ACUTE INHALATION TOXICITY:	No data available		
CARCINOGENICITY:	NTP: No	IARC Monographs: No	OSHA Regulated: No

SECTION 12: ECOLOGICAL INFORMATION

No Data Available

SECTION 13: DISPOSAL CONSIDERATIONS

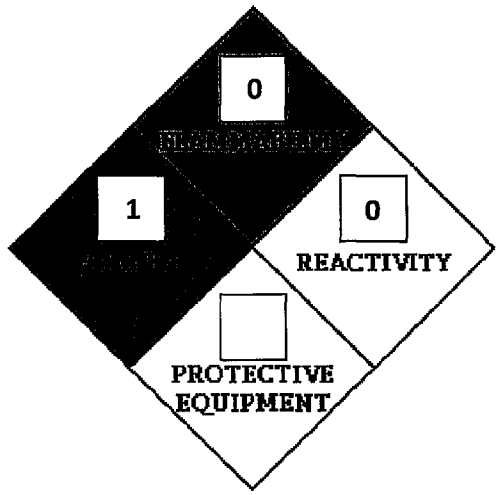
WASTE FROM RESIDUES/UNUSED PRODUCTS: No disposal method should be used which would pose an environmental or human health threat including any which would contaminate ground or surface water. Disposal of waste material must be conducted in compliance with all applicable Federal, State, and local regulations.

SECTION 14: TRANSPORT INFORMATION

DOT PROPER SHIPPIN NAME:	Refer to bill of lading or container label for DOT or other transportation hazard classification, if any.

SECTION 15: REGULATORY INFORMATION

There is not calculable reportable quantity (RQ)



SECTION 16: OTHER INFORMATION

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

SDS no. 12412
Version 8
Revision date 09/Oct/2014
Supersedes date 18/May/2012

A Schlumberger Company

Safety Data Sheet
M-I GEL†

1. Identification

1.1 Product identifier

Product name M-I GEL†

Product code 12412

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Drilling fluid additive.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Bethicia Prasek

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards

Carcinogenicity	Category 1A

Environmental hazards Not classified

Physical Hazards Not classified

2.2 Label elements

Signal word
DANGER

Hazard statements
H350 - May cause cancer

Precautionary statements
P201 - Obtain special instructions before use
P281 - Use personal protective equipment as required
P308 + P313 - IF exposed or concerned: Get medical advice/ attention

Supplementary precautionary statements
P202 - Do not handle until all safety precautions have been read and understood
P501 - Dispose of contents/ container to an approved waste disposal plant

Unknown acute toxicity 17.5% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Component	CAS-No	Weight % - range
Silica, crystalline, Cristobalite	14464-46-1	10 - 30
Silica, crystalline, quartz	14808-60-7	10 - 30
Silica, crystalline, Tridymite	15468-32-3	1 - 5

Comments
The exact percentage (concentration) of composition has been withheld as a trade secret

4. First aid measures

4.1 First-Aid Measures

Inhalation Move to fresh air. If breathing is difficult, (trained personnel should) give oxygen. Get medical attention immediately if symptoms occur.

Ingestion Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

Skin contact Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if irritation persists.

Eye contact Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

Main symptoms

Inhalation Please see Section 11. Toxicological Information for further information.

Ingestion Please see Section 11. Toxicological Information for further information.

Skin contact Please see Section 11. Toxicological Information for further information.

Eye contact Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
None known.

Hazardous combustion products
Silicon oxide.

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear suitable protective equipment. Evacuate personnel to safe areas. Prevent further leakage or spillage if safe to do so. Avoid dust formation.

6.2 Environmental precautions

Do not allow material to contaminate ground water system.

Environmental exposure controls
No information available.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Cover powder spill with plastic sheet or tarp to minimize spreading.

Methods for cleaning up
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).

6.4 Reference to other sections

No information available.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Avoid breathing dust; if exposed to high dust concentration, leave area immediately. Avoid contact with skin, eyes and clothing.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation.

Storage precautions Protect from moisture

8. Exposure controls/personal protection

8.1 Control parameters

Component Information

Component	ACGIH TLV	OSHA PEL
Silica, crystalline, Cristobalite	0.025 mg/m³	see Table Z-3
Silica, crystalline, quartz	0.025 mg/m³	see Table Z-3
Silica, crystalline, Tridymite	0.025 mg/m³	see Table Z-3

Silica, crystalline, Cristobalite
OSHA - Final PELs - Table Z-3 Mineral Dusts
(1/2)(30)/(%SiO2 + 2) mg/m³ TWA, total dust; (1/2)(250)/(%SiO2 + 5) mppcf TWA, respirable fraction; (1/2)(10)/(%SiO2 + 2) mg/m³ TWA, respirable fraction
Silica, crystalline, quartz
OSHA - Final PELs - Table Z-3 Mineral Dusts
(30)/(%SiO2 + 2) mg/m³ TWA, total dust; (250)/(%SiO2 + 5) mppcf TWA, respirable fraction; (10)/(%SiO2 + 2) mg/m³ TWA, respirable fraction
Silica, crystalline, Tridymite
OSHA - Final PELs - Table Z-3 Mineral Dusts
(1/2)(30)/(%SiO2 + 2) mg/m³ TWA, total dust; (1/2)(250)/(%SiO2 + 5) mppcf TWA, respirable fraction; (1/2)(10)/(%SiO2 + 2) mg/m³ TWA, respirable fraction

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye protection Tightly fitting safety goggles.
Hand protection Neoprene, Nitrile.

Respiratory protection

All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator. If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid
Appearance	Opaque
Color	Tan - Gray
Odor	Odorless
Odor threshold	Not applicable

Property	Values	Remarks
pH	Not applicable	
pH @ dilution		
Melting/freezing point		
Boiling point/range	No information available	
Flash point	No information available	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	2.3 - 2.6	
Bulk density	No information available	
Water solubility	slightly soluble	
Solubility in other solvents	Insoluble	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	No information available
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable. Hazardous polymerization does not occur.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
None known.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

Hydrofluoric acid (HF).

10.6 Hazardous decomposition products

Silicon oxide.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation — Inhalation of dust in high concentration may cause irritation of respiratory system. Repeated or prolonged inhalation of crystalline silica dust can cause delayed lung injury, and other diseases, including silicosis and lung cancer.

Eye contact — Dust contact with the eyes can lead to mechanical irritation.

Skin contact — Repeated exposure may cause skin dryness or cracking.

Ingestion — Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Silica, crystalline, Cristobalite	No data available	No data available	No data available
Silica, crystalline, quartz	= 500 mg/kg (Rat)	No data available	No data available
Silica, crystalline, Tridymite	No data available	No data available	No data available

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Silica, crystalline, Cristobalite	Group 1; Monograph 68 [1997] Monograph 68 [1997] (listed under Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources)	A2 Suspected Human Carcinogen	Present	No data available

Silica, crystalline, quartz	Group 1; Monograph 100C [in preparation] Group 1; Monograph 68 [1997] Monograph 100C [in preparation] (listed under Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources); Monograph 68 [1997]	A2 Suspected Human Carcinogen	Present	Known Human Carcinogen
Silica, crystalline, Tridymite	Group 1; Monograph 68 [1997] Monograph 68 [1997] (listed under Crystalline silica)	No data available	Present	No data available

Sensitization This product does not contain any components suspected to be sensitizing.

Mutagenic effects No evidence of mutagenic properties.

Carcinogenicity Contains a known or suspected carcinogen. Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled.

Reproductive toxicity No evidence of toxicity to reproduction.

Developmental toxicity Not known to cause birth defects or have a deleterious effect on a developing fetus.

Routes of exposure Skin contact. Inhalation. Eye contact.

Routes of entry Inhalation.

Specific target organ toxicity (single exposure) Not classified

Specific target organ toxicity (repeated exposure) Not classified.

Aspiration hazard Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Silica, crystalline, Cristobalite 14464-46-1 (10 - 30)	No information available	No information available	No information available
Silica, crystalline, quartz 14808-60-7 (10 - 30)	No information available	No information available	No information available

Silica, crystalline, Tridymite 15468-32-3 (1 - 5)	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No product level data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method Disposal should be made in accordance with federal, state and local regulations.

Contaminated packaging Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

UN No. (DOT)	Not regulated
UN No. (TDG)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name
Not regulated for transportation by DOT, TDG, IMDG and ICAO/IATA.

14.3 Hazard class(es)

DOT Hazard class	Not regulated
TDG Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated

TDG Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard
No

14.6 Special precautions
Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies
European Union (EINECS and ELINCS)	Does not Comply
Philippines (PICCS)	Does not Comply
Japan (ENCS)	Does not Comply
China (IECSC)	Does not Comply
Australia (AICS)	Does not Comply
Korean (KECL)	Does not Comply
New Zealand (NZIoC)	Complies

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Delayed (chronic) health hazard.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Silica, crystalline, Cristobalite	N/A	N/A	N/A
Silica, crystalline, quartz	N/A	N/A	N/A
Silica, crystalline, Tridymite	N/A	N/A	N/A

State Comments
Proposition 65: This product contains chemical(s) considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 to cause cancer and/or reproductive toxicity. See table under U.S. Federal and State Regulations for the specific chemicals.

Silica, crystalline, quartz
carcinogen

16. Other information

Supersedes date	18/May/2012
Revision date	09/Oct/2014
Version	8

The following sections have been revised	All sections. Updated according to GHS/CLP.

HMIS classification

Health	1*
Flammability	0
Physical hazard	0
PPE	E

N/A - Not Applicable, N/D - Not Determined.

Disclaimer

The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

SDS no. PID11307
Version 12
Revision date 14/Oct/2015
Supersedes date 20/Oct/2014

A Schlumberger Company

Safety Data Sheet
M-I-X† II (All grades)

1. Identification

1.1 Product identifier

Product name M-I-X† II (All grades)

Product code PID11307

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Drilling fluid additive. Lost circulation material.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

M-I SWACO, A Schlumberger Company
200 - 125, 9th Avenue SE
Calgary, Alberta T2G 0P6, Canada
Telephone: 1-780-962-8221

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Bethicia Prasek

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards

Carcinogenicity	Category 1A

Environmental hazards Not classified

Physical Hazards

Combustible dust	-

2.2 Label elements

Signal word
DANGER

Hazard statements
H350 - May cause cancer

Precautionary statements
P201 - Obtain special instructions before use
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P233 - Keep container tightly closed
P240 - Ground/bond container and receiving equipment
P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection
P308 + P313 - IF exposed or concerned: Get medical advice/ attention
P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction
P403 + P235 - Store in a well-ventilated place. Keep cool

Supplementary precautionary statements
P202 - Do not handle until all safety precautions have been read and understood
P241 - Use explosion-proof electrical/ ventilating/ lighting/ equipment
P242 - Use only non-sparking tools
P243 - Take precautionary measures against static discharge
P261 - Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray
P272 - Contaminated work clothing should not be allowed out of the workplace
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P333 + P313 - If skin irritation or rash occurs: Get medical advice/ attention
P363 - Wash contaminated clothing before reuse
P501 - Dispose of contents/ container to an approved waste disposal plant

Unknown acute toxicity 0% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Component	CAS-No	Weight % - range
Cellulose	9004-34-6	60 - 100
Silica, crystalline, quartz	14808-60-7	1 - 5

Comments
The exact percentage (concentration) of composition has been withheld as a trade secret

4. First aid measures

4.1 First-Aid Measures

Inhalation — If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Ingestion — Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

Skin contact — Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.

Eye contact — Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

General advice — The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

Main symptoms

Inhalation — Please see Section 11. Toxicological Information for further information.

Ingestion — Please see Section 11. Toxicological Information for further information.

Skin contact — Please see Section 11. Toxicological Information for further information.

Eye contact — Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician — Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
Suspended dust may present a dust explosion hazard.

Hazardous combustion products
Carbon oxides (COx).

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment identified in Section 8. Evacuate and ventilate the area. Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Prevent further leakage or spillage if safe to do so.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Use personal protective equipment as required. Avoid dust formation in confined areas. Fine dust dispersed in air may ignite. If spilled, take caution, as material can cause surfaces to become very slippery.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation.

Storage precautions Keep container/package tightly closed and in a well-ventilated place.

8. Exposure controls/personal protection

8.1 Control parameters

Exposure limits

Control as an ACGIH particulate not otherwise specified (PNOS): 10 mg/m³ (Inhalable); 3 mg/m³ (Respirable) and an OSHA particulate not otherwise regulated (PNOR): 15 mg/m³ (Total); 5 mg/m³ (Respirable).

Component	ACGIH TLV	OSHA PEL

Cellulose	10 mg/m³	15 mg/m³ (Total); 5 mg/m³ (Respirable)
Silica, crystalline, quartz	0.025 mg/m³	see Table Z-3

Silica, crystalline, quartz
OSHA - Final PELs - Table Z-3 Mineral Dusts
(30)/(%SiO2 + 2) mg/m³ TWA, total dust; (250)/(%SiO2 + 5) mppcf TWA, respirable fraction; (10)/(%SiO2 + 2) mg/m³ TWA, respirable fraction

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection	Safety glasses with side-shields.
Hand protection	Wear chemical resistant gloves such as nitrile or neoprene.
Respiratory protection	All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent. If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator. If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.
Skin and body protection	Wear suitable protective clothing.
Hygiene measures	Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid
Appearance	Powder
Color	Tan
Odor	Slight
Odor threshold	Not applicable

Property	Values	Remarks
pH	Not applicable	
pH @ dilution	Not applicable	Not Applicable
Melting/freezing point		
Boiling point/range	No information available	
Flash point	Not Applicable	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	

Specific gravity	1.4 - 1.65
Bulk density	No information available
Water solubility	Insoluble in water
Solubility in other solvents	No information available
Autoignition temperature	No information available
Decomposition temperature	No information available
Kinematic viscosity	No information available
Dynamic viscosity	No information available
Log Pow	No information available
Explosive properties	No information available
Oxidizing properties	No information available

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	No information available
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
Hazardous polymerization does not occur.

10.4 Conditions to avoid

Avoid dust formation. Heat, flames and sparks.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Carbon oxides (COx).

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation	Inhalation of dust in high concentration may cause irritation of respiratory system. Repeated or prolonged inhalation of crystalline silica dust can cause delayed lung injury, and other diseases, including silicosis and lung cancer.
Eye contact	Dust contact with the eyes can lead to mechanical irritation.

Skin contact Contact with dust can cause mechanical irritation or drying of the skin.

Ingestion Irritant; may cause pain or discomfort to mouth, throat and stomach.

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Cellulose	> 5 g/kg (Rat)	> 2 g/kg (Rabbit)	> 5800 mg/m³ (Rat) 4 h
Silica, crystalline, quartz	= 500 mg/kg (Rat)	No data available	No data available

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Cellulose	No data available	No data available	No data available	Known Human Carcinogen
Silica, crystalline, quartz	Group 1; Monograph 100C [in preparation] Group 1; Monograph 68 [1997] Monograph 100C [in preparation] (listed under Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources); Monograph 68 [1997]	A2 Suspected Human Carcinogen	Present	Known Human Carcinogen

Sensitization This product does not contain any components suspected to be sensitizing.

Mutagenic effects This substance has no evidence of mutagenic properties.

Carcinogenicity Contains a known or suspected carcinogen. Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled.

Reproductive toxicity No evidence of toxicity to reproduction.

Developmental toxicity Not known to cause birth defects or have a deleterious effect on a developing fetus.

Routes of exposure Inhalation. Skin contact. Eye contact.

Routes of entry Inhalation.

Specific target organ toxicity (single exposure) Not classified

Specific target organ toxicity (repeated exposure) Not classified.

Target organ effects Respiratory system.

Aspiration hazard Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Cellulose 9004-34-6 (60 - 100)	No information available	No information available	No information available
Silica, crystalline, quartz 14808-60-7 (1 - 5)	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

Not determined

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method Disposal should be made in accordance with federal, state and local regulations.

Contaminated packaging Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

UN No. (DOT)	Not regulated
UN No. (TDG)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name
The product is not covered by international regulation on the transport of dangerous goods

14.3 Hazard class(es)
DOT Hazard class Not regulated

TDG Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
TDG Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard
No

14.6 Special precautions
Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies
European Union (EINECS and ELINCS)	Complies
Philippines (PICCS)	Complies
Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Delayed (chronic) health hazard.

SARA 302/304, 313, CERCLA RQ, California Proposition 65
Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Cellulose	N/A	N/A	N/A
Silica, crystalline, quartz	N/A	N/A	N/A

State Comments
Proposition 65: This product contains chemical(s) considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 to cause cancer and/or reproductive toxicity. See table under U.S. Federal and State Regulations for the specific chemicals.

Silica, crystalline, quartz

carcinogen

Canadian Classification

This Safety Data Sheet has been prepared in compliance with the Hazardous Products Regulations.

-

16. Other information

Supersedes date	20/Oct/2014
Revision date	14/Oct/2015
Version	12
The following sections have been revised:	1, 8, 9, 14, 15, 16.

HMIS classification

Health	1*
Flammability	1
Physical hazard	0

According with the NFPA 704/STPS 018

N/A - Not Applicable, N/D - Not Determined.

†A mark of M-I L.L.C.

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Material Safety Data Sheet
The Dow Chemical Company

Product Name: CELLOSIZE (TM) POLYMER HEC-10 HV

Issue Date: 08/28/2009
Print Date: 18 Aug 2011

The Dow Chemical Company encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Product and Company Identification

Product Name
CELLOSIZE (TM) POLYMER HEC-10 HV

COMPANY IDENTIFICATION
The Dow Chemical Company
2030 Willard H. Dow Center
Midland, MI 48674
USA

Customer Information Number: 800-258-2436

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 989-636-4400
Local Emergency Contact: 989-636-4400

2. Hazards Identification

Emergency Overview
Color: White
Physical State: Powder
Odor: Mild
Hazards of product:

CAUTION! May cause eye irritation. May form explosive dust-air mixture. Slipping hazard. Avoid temperatures above 200°C (392°F)

OSHA Hazard Communication Standard
This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Potential Health Effects
Eye Contact: May cause slight eye irritation. Solid or dust may cause irritation or corneal injury due to mechanical action.
Skin Contact: Prolonged exposure not likely to cause significant skin irritation. Repeated contact may cause slight skin irritation with local redness.
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Inhalation: Dust may cause irritation to upper respiratory tract (nose and throat).
Ingestion: Very low toxicity if swallowed. Swallowing may result in gastrointestinal irritation.

3. Composition Information

Component	CAS #	Amount
Hydroxyethyl cellulose	9004-62-0	>= 86.0 %
Sodium acetate	127-09-3	<= 7.5 %
Water	7732-18-5	<= 5.0 %
Cellulose	9004-34-6	<= 1.5 %

4. First-aid measures

Eye Contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist. May cause injury due to mechanical action.
Skin Contact: Wash skin with plenty of water.
Inhalation: Move person to fresh air; if effects occur, consult a physician.
Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.
Notes to Physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.
Emergency Personnel Protection: If potential for exposure exists refer to Section 8 for specific personal protective equipment.

5. Fire Fighting Measures

Extinguishing Media: Water. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers.
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Soak thoroughly with water to cool and prevent re-ignition. Cool surroundings with water to localize fire zone. Hand held dry chemical or carbon dioxide extinguishers may be used for small fires. Dust explosion hazard may result from forceful application of fire extinguishing agents.
Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.
Unusual Fire and Explosion Hazards: Do not permit dust to accumulate. When suspended in air dust can pose an explosion hazard. Minimize ignition sources. If dust layers are exposed to elevated temperatures, spontaneous combustion may occur. Pneumatic conveying and other mechanical handling operations can generate combustible dust. To reduce the potential for dust explosions, electrically bond and ground equipment and do not permit dust to accumulate. Dust can be ignited by static discharge.
Hazardous Combustion Products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.

6. Accidental Release Measures

Steps to be Taken if Material is Released or Spilled: Sweep up. Use care to minimize generation of airborne dust. Do not use water for cleanup. Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

Personal Precautions: Material becomes slippery when wet. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
Environmental Precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

7. Handling and Storage

Handling

General Handling: Avoid contact with eyes. Wash thoroughly after handling. Good housekeeping and controlling of dusts are necessary for safe handling of product. No smoking, open flames or sources of ignition in handling and storage area. Electrically bond and ground all containers, personnel and equipment before transfer or use of material. Keep away from heat, sparks and flame. Powdered material may form explosive dust-air mixture. Keep container closed. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Storage

Store in a dry place. Protect from atmospheric moisture.
Shelf life: Use within 36 Months

8. Exposure Controls / Personal Protection

Exposure Limits

Component	List	Type	Value
Cellulose	ACGIH	TWA	10 mg/m3
	OSHA Table Z-1	PEL Respirable fraction.	5 mg/m3
	OSHA Table Z-1	PEL Total dust.	15 mg/m3

Personal Protection

Eye/Face Protection: Use safety glasses (with side shields). If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles.
Skin Protection: Wear clean, body-covering clothing.
Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.
Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. In dusty or misty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: Particulate filter.
Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

Engineering Controls

Ventilation: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit

requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

Physical State	Powder
Color	White
Odor	Mild
Flash Point - Closed Cup	No test data available
Flammable Limits In Air	**Lower**: No test data available **Upper**: No test data available
Autoignition Temperature	> 400 °C (> 752 °F) *Literature*
Vapor Pressure	Not applicable
Boiling Point (760 mmHg)	Not applicable.
Vapor Density (air = 1)	Not applicable
Specific Gravity (H2O = 1)	0.4 - 0.6 *Literature*
Freezing Point	Not applicable
Melting Point	No test data available
Solubility in water (by weight)	*Literature* completely miscible with water
pH	6.0 - 7.0 *Literature*
Decomposition Temperature	No test data available
Partition coefficient, n-octanol/water (log Pow)	No data available for this product.

10. Stability and Reactivity

Stability/Instability

Thermally stable at typical use temperatures. Hygroscopic.
Conditions to Avoid: Avoid temperatures above 200°C (392°F) Exposure to elevated temperatures can cause product to decompose. Avoid static discharge. Avoid moisture.

Incompatible Materials: Avoid contact with oxidizing materials.

Hazardous Polymerization

Will not occur.

Thermal Decomposition

Decomposition products depend upon temperature, air supply and the presence of other materials.

11. Toxicological Information

Acute Toxicity

Ingestion

Single dose oral LD50 has not been determined.
For the major component(s): Estimated. LD50, Rat > 8,700 mg/kg

Skin Absorption

The dermal LD50 has not been determined.

Sensitization

Skin

For the major component(s): Did not cause allergic skin reactions when tested in humans.

Repeated Dose Toxicity

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Chronic Toxicity and Carcinogenicity
Similar cellulosics did not cause cancer in long-term animal studies.

Developmental Toxicity
Similar cellulosics did not cause birth defects or other toxic effects to the fetus in laboratory animal studies.

Reproductive Toxicity
In animal studies, a similar cellulosic has been shown not to interfere with reproduction.

Genetic Toxicology
Similar cellulosics were negative in both in vitro and animal genetic toxicity studies.

12. Ecological Information

ENVIRONMENTAL FATE

Movement & Partitioning
Based largely or completely on component information. Bioconcentration potential is low (BCF less than 100 or log Pow greater than 7). For the major component(s): Expected to be relatively immobile in soil (Koc > 5000). For the minor component(s) Potential for mobility in soil is very high (Koc between 0 and 50).

Persistence and Degradability
For the major component(s): No appreciable biodegradation is expected. For the minor component(s) Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

ECOTOXICITY
For the major component(s): Not expected to be acutely toxic to aquatic organisms. For the minor component(s): Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Toxicity to Micro-organisms
IC50; bacteria, 16 h: > 1,000 mg/l

13. Disposal Considerations

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Landfill.

14. Transport Information

DOT Non-Bulk
NOT REGULATED

DOT Bulk
NOT REGULATED

IMDG
NOT REGULATED

ICAO/IATA
NOT REGULATED

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. Regulatory Information

OSHA Hazard Communication Standard
This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	No
Delayed (Chronic) Health Hazard	No
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Component	CAS #	Amount
Cellulose	9004-34-6	<= 1.5 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

US. Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30
CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

16. Other Information

Product Literature

Additional information on this and other Dow products may be obtained by visiting our web page at www.dow.com.

Recommended Uses and Restrictions

Thickener. Film former. Stabiliser. Protective colloid. Binder. We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

Revision

Identification Number: 78236 / 0000 / Issue Date 08/28/2009 / Version: 3.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation
Action Level	A value set by OSHA that is lower than the PEL which will trigger the need for activities such as exposure monitoring and medical surveillance if exceeded.

MATERIAL SAFETY DATA SHEET

HEC Liquid Polymer

Version 1.9 Revision Date 2013-12-04

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product information

Trade name	:	HEC Liquid Polymer
Material	:	1105037, 1101269, 1016918, 1016740
Use	:	Drilling Fluid Additive
Company	:	Drilling Specialties Company 10001 Six Pines Drive The Woodlands, TX 77380

Emergency telephone:

Health:
866.442.9628 (North America)
1.832.813.4984 (International)
Transport:
North America: CHEMTREC 800.424.9300 or 703.527.3887
Asia: +800 CHEMCALL (+800 2436 2255)
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Responsible Department	:	Product Safety and Toxicology Group
E-mail address	:	MSDS@CPChem.com
Website	:	www.CPChem.com

SECTION 2: Hazards identification

Emergency Overview

Physical state: Liquid **Color**: Opaque **Odor**: Hydrocarbon

OSHA Hazards : Combustible Liquid

GHS Classification

: Flammable liquids, Category 4

GHS-Labeling

Signal Word : Warning

Hazard Statements : H227: Combustible liquid

Precautionary Statements : **Prevention:**

P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P370 + P378: In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
Storage:
P403 + P235: Store in a well-ventilated place. Keep cool.
Disposal:
P501: Dispose of contents/ container to an approved waste disposal plant.

Carcinogenicity:

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

ACGIH No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

SECTION 3: Composition/information on ingredients

Synonyms : Drilling Mud Additive
Liquid HEC Polymer

Molecular formula : Mixture

Component	CAS-No.	Weight %
C12-C14 Isoalkanes	68551-19-9	0 - 60
Distillates (petroleum), hydrotreated light	64742-47-8	0 - 60

SECTION 4: First aid measures

General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited.

If inhaled : If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.

In case of skin contact : If on skin, rinse well with water. If on clothes, remove clothes.

In case of eye contact : Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

Take victim immediately to hospital.

SECTION 5: Firefighting measures

Flash point	:	85 °C (185 °F)
Suitable extinguishing media	:	Carbon dioxide (CO2).
Unsuitable extinguishing media	:	High volume water jet.
Special protective equipment for fire-fighters	:	Wear self contained breathing apparatus for fire fighting if necessary.
Further information	:	For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.
Fire and explosion protection	:	Do not spray on an open flame or any other incandescent material. Keep away from open flames, hot surfaces and sources of ignition.

SECTION 6: Accidental release measures

Personal precautions	:	Use personal protective equipment. Ensure adequate ventilation.
Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods for cleaning up	:	Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

Handling

Advice on safe handling	:	Avoid formation of aerosol. Do not breathe vapors/dust. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Provide sufficient air exchange and/or exhaust in work rooms. Dispose of rinse water in accordance with local and national regulations.
Advice on protection against fire and explosion	:	Do not spray on an open flame or any other incandescent material. Keep away from open flames, hot surfaces and sources of ignition.

Storage

Requirements for storage	:	No smoking. Keep container tightly closed in a dry and well-

areas and containers	ventilated place. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection

Ingredients with workplace control parameters

Chevron Phillips Chemical Company LP

Ingredients	Basis	Value	Control parameters	Note
C12-C14 Isoalkanes	Manufacturer	TWA	1,200 mg/m3	

US

Ingredients	Basis	Value	Control parameters	Note

Engineering measures

Adequate ventilation to control airborned concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment

Respiratory protection : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as:. Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection : Eye wash bottle with pure water. Tightly fitting safety goggles.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Flame-resistant clothing. Footwear protecting against chemicals.

Hygiene measures : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Physical state	:	Liquid
Color	:	Opaque
Odor	:	Hydrocarbon

Safety data

Flash point	:	85 °C (185 °F)
Lower explosion limit	:	No data available
Upper explosion limit	:	No data available
Molecular formula	:	Mixture
Molecular Weight	:	Not applicable
pH	:	Not applicable
Pour point	:	No data available
Boiling point/boiling range	:	217 - 237 °C (423 - 459 °F)
Vapor pressure	:	No data available
Relative density	:	0.97, 15.6 °C(60.1 °F)
Water solubility	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Viscosity, kinematic	:	91,937 cSt
Relative vapor density	:	No data available
Evaporation rate	:	No data available

SECTION 10: Stability and reactivity

Chemical stability	:	This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions

Conditions to avoid	:	Heat, flames and sparks.
Other data	:	No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

Acute oral toxicity

C12-C14 Isoalkanes	: LD50: > 3,900 mg/kg Species: rat
Distillates (petroleum), hydrotreated light	No data available

Acute inhalation toxicity

C12-C14 Isoalkanes	: LC50: > 5.3 mg/l Exposure time: 4 h Species: rat Test atmosphere: dust/mist
Distillates (petroleum), hydrotreated light	No data available

Acute dermal toxicity

C12-C14 Isoalkanes	: LD50: > 2,000 mg/kg Species: rabbit
Distillates (petroleum), hydrotreated light	No data available

HEC Liquid Polymer
Skin irritation : Repeated or prolonged contact with the mixture may cause removal of natural fat from the skin resulting in desiccation of the skin.

HEC Liquid Polymer
Eye irritation : Vapors may be irritating to eyes, nose, throat, and lungs.

HEC Liquid Polymer
Sensitization : Does not cause sensitization.

Repeated dose toxicity

C12-C14 Isoalkanes	: Species: Monkey Dose: 0, 654 ppm Exposure time: 4 wk Number of exposures: 6 h/d, 3 d/wk NOEL: > 654 ppm

HEC Liquid Polymer
Aspiration toxicity : No aspiration toxicity classification.

HEC Liquid Polymer
Further information : Solvents may degrease the skin.

SECTION 12: Ecological information

Toxicity to fish

C12-C14 Isoalkanes	:	LL50: > 1,000 mg/l Exposure time: 96 h Species: Oncorhynchus mykiss (rainbow trout) semi-static test Method: OECD Test Guideline 203 Information given is based on data obtained from similar substances.

Toxicity to daphnia and other aquatic invertebrates

C12-C14 Isoalkanes	:	EL50: > 1,000 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Method: OECD Test Guideline 202 Information given is based on data obtained from similar substances.
Distillates (petroleum), hydrotreated light		EL50: > 100 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Method: OECD Test Guideline 202 Aquatic toxicity is unlikely due to low solubility.

Toxicity to algae

C12-C14 Isoalkanes	:	EL50: > 1,000 mg/l Exposure time: 72 h Species: Pseudokirchneriella subcapitata (green algae) Growth inhibition Method: OECD Test Guideline 201 Information given is based on data obtained from similar substances.

Elimination information (persistence and degradability)

Biodegradability	:	Taking into consideration the properties of several ingredients, the product is estimated not to be readily biodegradable according to OECD classification.
Additional ecological information	:	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13: Disposal considerations

The information in this MSDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product	:	Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

SECTION 14: Transport information

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the MSDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

Testing (ASTM D4206) has shown product does not sustain combustion.

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information

National legislation

SARA 311/312 Hazards	:	Fire Hazard
CERCLA Reportable Quantity	:	This material does not contain any components with a CERCLA RQ.
SARA 302 Reportable Quantity	:	This material does not contain any components with a SARA 302 RQ.
SARA 302 Threshold Planning Quantity	:	SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 304 Reportable Quantity	:	This material does not contain any components with a section 304 EHS RQ.
SARA 313 Ingredients	:	SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

Ozone-Depletion Potential	:	This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

US State Regulations

Pennsylvania Right To Know	:	Distillates (petroleum), Hydrotreated light - 64742-47-8

New Jersey Right To Know : Distillates (petroleum), Hydrotreated light - 64742-47-8

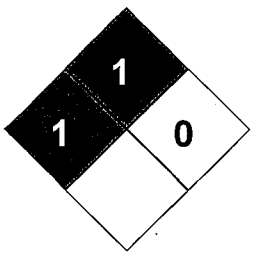
California Prop. 65 Ingredients : This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

Notification status

Europe REACH	:	A substance or substances in this product is not registered or notified to be registered. Importation or manufacture of this product is still permitted provided that it does not exceed the REACH minimum threshold quantity of the non-regulated substances.
United States of America TSCA	:	On TSCA Inventory
Canada DSL	:	All components of this product are on the Canadian DSL.
Australia AICS	:	On the inventory, or in compliance with the inventory
New Zealand NZIoC	:	On the inventory, or in compliance with the inventory
Japan ENCS	:	On the inventory, or in compliance with the inventory
Korea KECI	:	On the inventory, or in compliance with the inventory
Philippines PICCS	:	Not in compliance with the inventory
China IECSC	:	On the inventory, or in compliance with the inventory

SECTION 16: Other information

NFPA Classification : Health Hazard: 1
Fire Hazard: 1
Reactivity Hazard: 0



Further information

Legacy MSDS Number : 297870

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this MSDS pertains only to the product as shipped.

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Key or legend to abbreviations and acronyms used in the safety data sheet

ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		

Kelco Oil Field Group

A HUBER COMPANY

Material Safety Data Sheet

Revision Date 16/Nov/2006 **Revision Number** 0.1

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	BEN-EX®
Product Use	Oil field drilling fluid compound
Chemical Name	Acrylate polymer
Company	Kelco Oil Field Group Division of CP KELCO ApS 10920 W. Sam Houston Parkway North Suite 800 Houston, Texas 77064 USA
Telephone	1 800 331 3677 For additional non-emergency information +1 713 895 7575 1 8 a.m. - 5 p.m. (Central Time) weekdays
Fax	+1 713 895 7586
Emergency Telephone Number	CHEMTREC: 1 800 424 9300 or International +1 703 527 3887
Email	kofg@cpkelco.com
Internet	www.kofg.com

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	white
Physical State	granular powder
Odor	slight to none
D.O.T. Hazard Classification	Non-hazardous material
OSHA Regulatory Status	OSHA Hazard: Warning: Combustible dust. Ensure appropriate electrical classification and avoidance of ignition sources in dusty environments. Handle in a manner consistent with good industrial hygiene practices--avoid creating or inhaling aerosols of this or any other material.
Slip Hazard	Slip hazard when spilled material becomes wet.

2. HAZARDS IDENTIFICATION

Potential Health Effects

Principle Routes of Exposure Ingestion. Skin contact. Inhalation. Eye contact.

Acute Effects

Eyes Dry powder may cause foreign body irritation in some individuals.

Skin Prolonged contact with the dry powder may cause drying or chapping.

Inhalation Inhalation of dust may cause respiratory tract irritation
Excessive inhalation of dust may cause coughing and sneezing

Ingestion Not toxic if swallowed (less than a mouthful) based on available information.

Additional toxicology information Refer to Section 11

Potential Environmental Effects Refer to Section 12 for Ecological Information
Refer to Section 13 for Disposal Considerations

3. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT(S)	CAS Number
Polyacrylamide	9003-05-8
Polyacrylate	9033-79-8

Additional Information (*) Components are listed on inventory

4. FIRST AID MEASURES

General Advice Remove material from eyes, skin and clothing.
In case of doubt or when symptoms persist, seek medical attention.
Wash heavily contaminated clothing before reuse.

Eye contact Hold eyelids apart and flush eyes with a steady, gentle stream of water for several minutes. If eye irritation persists, seek medical attention.

Skin contact Wash off with soap and plenty of water.

Inhalation Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen and get immediate medial attention.

Ingestion DO NOT INDUCE VOMITING. If vomiting occurs naturally, reduce the risk of aspiration by leaning their body forward. Seek medical attention immediately.

4. FIRST AID MEASURES

5. FIRE-FIGHTING MEASURES

General Advice

Treat as "Class A" fire. Product will burn when in contact with a flame. Self extinguishes when ignition source is removed. Tends to smoulder.

Suitable Extinguishing Media

Water. Dry chemical. Carbon dioxide (CO2).

Hazardous Combustion Products

carbon dioxide
carbon monoxide

Specific Hazards

Can contain sufficient fines to cause a combustible dust explosion
Do not breath smoke, gases or vapors generated

Special Protective Equipment for Firefighters

As in any fire, wear self-contained breathing apparatus (SCBA) pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

NFPA	Health	0	Flammability	1	Instability	0
HMIS	Health	0	Flammability	1	Physical Hazard (Reactivity)	0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Wet material on walking surfaces will be extremely slippery.
Avoid dust formation.
In case of exposure to high levels of airborne dust, wear a personal respirator in compliance with national legislation.

Methods for Cleaning up

Use vacuum equipment designed specifically for combustible dust. Take precautionary measures against static discharges. The use of water wash down is not recommended unless the spilled material is aleady wet. Disposal information - Refer to Section 13.

Other information

Reportable quantities - Refer to Section 15.

7. HANDLING AND STORAGE

Handling

Remove material from eyes, skin and clothing.
Avoid dust formation. Provide appropriate exhaust ventilation in places where dust is formed. In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid conditions that generate airborne dust in handling, transfer and clean up.
Product may form combustible dust-air mixtures.
Keep away from heat, flame sparks and other ignition sources.
Avoid emptying package in or near flammable vapors. Static charges may cause flash fire.

7. HANDLING AND STORAGE

Storage Keep containers tightly closed in a cool, well-ventilated place.
Avoid storing near incompatible materials (Refer to Section 10).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits

Dust: OSHA has not established specific exposure limits for this material. However, OSHA has established limits for particulates not otherwise regulated (PNOR) which are the least stringent exposure limits applicable to dusts.

Engineering Controls Ventilation: Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits in this section. The use of local mechanical exhaust ventilation is preferred at sources of air contamination such as open process equipment.

Personal Protective Equipment

Respiratory Protection Avoid breathing dust. Use NIOSH/MSHA approved respiratory protection equipment when airborne exposures exceeds established guidelines. Consult the respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer.

Hand Protection Gloves are recommended if extended exposure is anticipated.

Eye Protection This product does not cause significant eye irritation or eye toxicity requiring special protection. Where there is significant potential for eye contact, wear chemical goggles and have eye flushing equipment available.

Skin and Body Protection Although this product does not present a significant skin concern, minimize skin contamination by following good industrial practice.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	white
Physical State	granular powder
Odor	slight to none
pH	9.0 (1% solution)
Flash point	Not applicable
Water solubility	Soluble.

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

10. STABILITY AND REACTIVITY

Stability Stable under recommended storage conditions. Hazardous polymerization does not occur.

10. STABILITY AND REACTIVITY

Conditions to Avoid Avoid dust formation Avoid wet or humid conditions

Materials to Avoid Strong oxidizing agents, acids, bases

Hazardous Decomposition Products No decomposition expected under normal storage conditions

Possibility of Hazardous Reactions None expected

11. TOXICOLOGICAL INFORMATION

General
The dry powder may cause foreign body irritation in some individuals. Prolonged contact with the dry powder may cause drying or chapping of the skin. Excessive inhalation of dust may be annoying and can mechanically impede respiration. Due to the hygroscopic properties, they can form a paste or gel in the airway.

Polyacrylamide
Carcinogenicity None of the components of this product at concentrations greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

Polyacrylate
Carcinogenicity None of the components of this product at concentrations greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

12. ECOLOGICAL INFORMATION

Ecotoxicity Microtox Toxicity: Photobacterium phosphoreum: Non-toxic.

Polyacrylamide
96-Hour LC50 Mysid shrimp in a standard drilling mud: >1,000,000 suspended particulate phase

Persistence / Degradability Components of this product are biodegradable.

Bioaccumulative Potential Inert material

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method Dispose in accordance with local, state and national regulations.

14. TRANSPORT INFORMATION

General Information The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

D.O.T. Hazard Classification Non-hazardous material

14. TRANSPORT INFORMATION

TDG	Not hazardous
IMO / IMDG	Not hazardous
ICAO / IATA	Not hazardous
RID/ADR	Not hazardous

15. REGULATORY INFORMATION

International Inventories

Component(s) of the product are on the following Inventory lists:

- TSCA
- Canada (DSL)
- EINECS: All components of this product are included on the inventory

USA

Federal Regulations

SARA Sections 302/304 313; CERCLA RQ:

.

SARA Section 302 Extremely Hazardous Substances (EHS)
This product does not contain any components regulated under Section 302 (40 CFR 355) as Extremely Hazardous Substances.

SARA Section 304 CERCLA Hazardous Subsances (RQ)
This product contains the following component(s) regulated under Section 304 (40 CFR 302) as hazardous chemicals for emergency release notifications ("CERCLA" List):
Hexanedioic acid: 124-04-9 (0.05 - 0.0%) RQ: 5000 lbs

SARA Section 313 Toxic Chemical List (TCL)
This product does not contain any component(s) listed on the Section 3131 Toxic Chemical List.

SARA 311/312 Hazardous Categorization
This product is regulated under Section 311/312 HCS (40 CFR 370):
Immediate (acute) health hazard

Clean Air Act, Section 111, Volatile Organic Compounds (VOC)
This product contains the following SOCMI Intermediate or Final Volatile Organic Compounds (VOC) as defined by the U.S. Clean Air Act Section 111 (40 CFR 60.489):
Urea, CAS 57-13-6
Hexanedioic acid, CAS 124-04-9

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
This product does not contain any Hazardous Air Pollutants (HAPS).

15. REGULATORY INFORMATION

State Regulations

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)

This product does not contain any components currently on the California list of Known Carcinogens and Reproductive Toxins

Canada

WHMIS

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class

Not a controlled product

16. OTHER INFORMATION

Prepared By

CP Kelco Regulatory Affairs
email: regulatory.affairs@cpkelco.com
tel: 1-858-467-4503
fax:1-858-467-6505
Cheryl A. Van Dyne

Reason for Version

Revised in entirety

Disclaimer

The information contained in this Safety Data Sheet to the best of CP Kelco's knowledge and belief as of the date indicated is believed to be accurate and reliable. However, no representation, warranty or guarantee is implied or expressed regarding the accuracy, reliability or completeness of this information or the use of the product. Nothing contained herein should be construed as a recommendation to use this product in conflict with National or local regulations or existing patents covering any material or its use.

END OF SAFETY DATA SHEET

SDS no. 10365
Version 8
Revision date 16/Dec/2015
Supersedes date 13/May/2015

Safety Data Sheet
TACKLE†

1. Identification

1.1 Product identifier

Product name TACKLE†

Product code 10365

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Drilling fluid additive. Deflocculant.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

M-I SWACO, A Schlumberger Company
200 - 125, 9th Avenue SE
Calgary, Alberta T2G 0P6, Canada
Telephone: 1-780-962-8221

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals)

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards Not classified

2.2 Label elements

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Signal word
None

Hazard statements
This product is not classified as hazardous therefore no (H) hazard statements assigned.

Precautionary statements
This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

Unknown acute toxicity Not Applicable.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

No classified ingredients, or those having occupational exposure limits, present above the level of disclosure.

Comments
No classified ingredients, or those having occupational exposure limits, present above the level of disclosure.

4. First aid measures

4.1 First-Aid Measures

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Ingestion Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

Skin contact Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.

Eye contact Remove contact lenses. Promptly wash eyes with lots of water while lifting eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

General advice The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

Main symptoms

Inhalation Please see Section 11. Toxicological Information for further information.

Ingestion	Please see Section 11. Toxicological Information for further information.
Skin contact	Please see Section 11. Toxicological Information for further information.
Eye contact	Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing media appropriate for surrounding material.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
None known.

Hazardous combustion products
Carbon oxides (COx).

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate and ventilate the area. Use personal protective equipment identified in Section 8. Prevent further leakage or spillage if safe to do so.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up
Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions	Ensure adequate ventilation. Keep airborne concentrations below exposure limits.
Storage precautions	Keep containers tightly closed in a dry, cool and well-ventilated place. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

8. Exposure controls/personal protection

8.1 Control parameters

Exposure limits **The product does not contain any hazardous materials with occupational exposure limits established.**

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection	Tightly fitting safety goggles.
Hand protection	Wear chemical resistant gloves such as nitrile or neoprene.
Respiratory protection	No personal respiratory protective equipment normally required In case of insufficient ventilation wear suitable respiratory equipment
Skin and body protection	Wear suitable protective clothing, Provide eyewash station.
Hygiene measures	Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Transparent
Color	Amber
Odor	Mild
Odor threshold	Not applicable

Property	Values	Remarks
pH	6 - 8	

pH @ dilution	No information available	
Melting/freezing point	No information available	
Boiling point/range	No information available	
Flash point	> 100 °C / > 212 °F	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	1.06 - 1.46	
Bulk density	No information available	
Water solubility	slightly soluble	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	150 - 500 Cp @ 25°C	
Dynamic viscosity	No information available	
Log Pow	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	No information available
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Carbon oxides (COx).

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation	Inhalation of vapors in high concentration may cause irritation of respiratory system.
Eye contact	May cause slight irritation.
Skin contact	Prolonged contact may cause redness and irritation.
Ingestion	Ingestion may cause stomach discomfort.

Sensitization	This product does not contain any components suspected to be sensitizing.
Mutagenic effects	No evidence of mutagenic properties.
Carcinogenicity	No evidence of carcinogenic properties.
Reproductive toxicity	No evidence of toxicity to reproduction.
Developmental toxicity	Not known to cause birth defects or have a deleterious effect on a developing fetus.
Routes of exposure	Eye contact. Skin contact. Inhalation.
Routes of entry	No route of entry noted.
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.
Aspiration hazard	Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

UN No. (DOT)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

The product is not covered by international regulation on the transport of dangerous goods

14.3 Hazard class(es)

DOT Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

Marine pollutant	No

14.6 Special precautions

Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	U.S. TSCA - Components are listed or exempt from listing.

Canada (DSL)	Canada DSL - Components are listed or exempt from listing.
European Union (EINECS and ELINCS)	Does not Comply
Philippines (PICCS)	Does not Comply
Japan (ENCS)	Does not Comply
China (IECSC)	China Inventory - Components are listed or exempt from listing.
Australia (AICS)	Australia AICS - Components are listed or exempt from listing.
Korean (KECL)	Does not Comply
New Zealand (NZIoC)	Does not Comply

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Not a SARA 311/312 hazard.

State Comments
Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

16. Other information

Supersedes date	13/May/2015
Revision date	16/Dec/2015
Version	8
The following sections have been revised:	Section 16: Other information.

HMIS classification

Health	0
Flammability	0
Physical hazard	0
PPE	B

Disclaimer
The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

P.W. GILLIBRAND Co., Inc.
Specialty Products

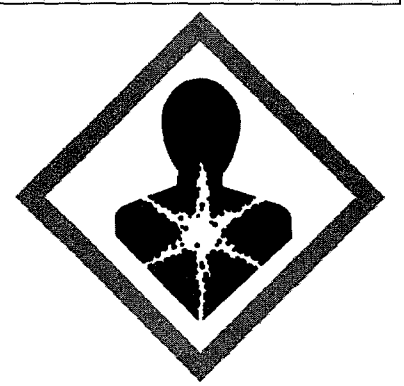
SAFETY DATA SHEET (SDS)

SECTION 1: IDENTIFICATION

Product Name:	Industrial Sand, including various Sand and Gravel Products
Common Names:	8-12-16-20-30-50-60-70-90-120 mesh sizes, including blends and oversized. #2-#3-#4-#5 gravel, silica sand, crystalline sand, quartz sand, flint sand.
Trade Names:	Feldspathic Amber Glass Sand, Silver Sand, ProCourt, ProTour, WedgeWhite, Caltega and various other names.
Common Uses:	Filter sand, filter gravel, glass sand, frac sand, construction sand, construction gravel, play sand, fill sand, volleyball sand, beach sand and different blends for various purposes, including golf courses and other sport field and recreational uses.
Manufacturer:	P.W. GILLIBRAND CO., INC 4537 ISH DRIVE SIMI VALLEY CA 93063 Tel: (805) 526-2195 Fax: (805) 522-4031
Emergency Contact:	CHEMTREC: (800) 424-9300

SECTION 2: HAZARD IDENTIFICATION

GHS Classification: Carcinogen



Signal Word: Danger

Hazard Statement: May cause damage to lungs through prolonged or repeated exposure by inhalation.

Precautionary Statements:

- Do not handle until all safety precautions have been read and understood.
- Wear respirator if prolonged exposure to dust will occur.
- If exposed or concerned: Get medical advice.
- Dispose of container in accordance with local/regional/national regulations.

Inhalation: In addition to causing cancer, prolonged exposure to respirable crystalline silica may cause silicosis, a fibrosis (scarring) of the lungs which is permanent and progressive that may lead to death. Silicosis may aggravate or increase the risk of tuberculosis, scleroderma, nephrotoxicity, bronchitis, emphysema, and asthma. Blends that contain natural peat may contain naturally occurring microorganisms. Actions taken to control hazards related to respirable crystalline silica are adequate to

control hazards from microorganisms that may be also present in some products.

Eye Contact: A mechanical irritant which can cause moderate eye irritation. This product may cause abrasion to the cornea. Avoid wearing contact lenses when working with product.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name, Chemical Compound	CAS Number	Typical % By Weight
Amorphous Silica, SiO_2	7631-86-9	76 - 87
Total Crystalline Silica (Quartz), SiO_2	14808-60-7	13 - 24
Respirable Crystalline Silica (Quartz < 4 µm), SiO_2	14808-60-7	0.06

SECTION 4: FIRST AID MEASURES

Inhalation: No specific first-aid is necessary since adverse health effects associated with exposure to crystalline silica (quartz) result from chronic exposure. In case of gross inhalation, remove the person to fresh air, give artificial respiration if needed and seek medical attention.

Eye Contact: Wash immediately with water. If irritation persists, seek medical attention.

Skin Contact: None required.

Ingestion: Not applicable.

SECTION 5: FIRE FIGHTING MEASURES

This product is not flammable, combustible or explosive. Hazardous polymerization will not occur.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Spills: Use of dustless methods (water or HEPA-A type Vacuum) to clean up if possible. Avoid breathing dust. See personal protective equipment (PPE) specified in EXPOSURE CONTROL/PERSONAL PROTECTION SECTION 8.

Waste Disposal Methods: This product is not a hazardous waste and should be disposed of in accordance with federal, state and local regulations. See SECTION 13.

SECTION 7: HANDLING AND STORAGE

Precautions During Handling and Use: Do not breathe dust. Use adequate ventilation and/or dust collection methods. Avoid breakage of bagged material or spills of bulk material. Wash or vacuum clothing which becomes dusty. If concentrations exceed applicable standards, then use proper respiratory protection. Avoid contact with eyes. The wearing of contact lenses is not recommended. See SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION.

Storage Requirements: Avoid windblown dust by shielding or covering outdoor stockpiles.

Special Sensitivity or Incompatibility: Avoid contact with strong acids and oxidizers. See SECTION 10. STABILITY AND REACTIVITY.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits	ACGIH TLV (mg/m^3)	OSHA PEL (mg/m^3)	CalOSHA PEL (mg/m^3)	NIOSH IDLH (mg/m^3)	NIOSH REL (mg/m^3)
Respirable crystalline silica:	0.025	$10 \div (\%SiO_2 + 2)$	0.1	50	0.05
Total crystalline silica:	-	$30 \div (\%SiO_2 + 2)$	0.3	-	-
Amorphous silica:	10	$80 \div (\%SiO_2)$	6	3000	6
Respirable amorphous silica:	3	5	3	-	-
Respirable nuisance dust:	3	5	5	-	-
Total nuisance dust:	10	15	10	-	-

Engineering and Administrative Controls: Natural ventilation is usually adequate for protection from inhalation hazards. Use designed ventilation systems and/or wet methods to control product in workplace air, if necessary. Use administrative controls such job rotation to supplement engineering controls. Use personal protection equipment (PPE) as a last resort to control exposure.

Respiratory Protection: Not normally required. May be required if material is further reduced in size to produce a higher fraction of respirable crystalline silica dust or dispersed into air (e.g. sandblasting). When concentrations exceed applicable standards, a NIOSH/MSHA approved air purifying respirator with HEPA cartridges or supplied air is recommended.

Eye Protection: Wear safety glasses with side shields or goggles to protect eyes from dust and particulate. Wearing of contact lenses is not recommended because dust can get under the lenses and cause abrasion of the cornea.

Skin Protection: Not required under normal circumstances

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	This product is a white, silver, gray, tan, or granular sand.
Odor:	None
Odor threshold:	Not Applicable
pH:	Not Applicable
Melting point/freezing point:	3050 °F (1677C)
Initial Boiling Point:	4046 °F (2230 C)
Flash point:	Not Applicable
Evaporation rate:	Not Applicable
Flammability:	Not Applicable
Upper/lower flammability limits:	Not Applicable
Vapor pressure:	Not Applicable
Vapor density:	Not Applicable
Relative density (H_2O = 1):	2.60 - 2.65
Solubility:	Insoluble
Partition coefficient:	Not Applicable
Auto-ignition temperature:	Not Applicable
Decomposition temperature:	Not Applicable
Viscosity:	Not Applicable

SECTION 10: STABILITY AND REACTIVITY

Reactivity:	Inert
Chemical stability:	Stable
Possibility of hazardous reactions:	Unlikely
Conditions to avoid:	Crushing this material will increase the respirable fraction and related hazards.
Incompatible materials:	Contact with strong acids or oxidizing agents such as molten magnesium, fluorine, chlorine trifluoride, manganese trioxide, oxygen difluoride, or hydrofluoric acid may cause fires or generation of corrosive gases.
Hazardous decomposition products:	None

SECTION 11: TOXICOLOGICAL INFORMATION

Likely routes of exposure: Inhalation and eye contact.

Symptoms related to the physical, chemical and toxicological characteristics:

Silicosis: Prolonged exposure to respirable crystalline silica may cause silicosis, a fibrosis (scarring) of the lungs which is permanent and progressive that may lead to death. Silicosis may aggravate or increase the risk of tuberculosis, scleroderma, nephrotoxicity, bronchitis, emphysema, and asthma.

Eye irritation: This product can cause moderate eye irritation and may cause abrasion to the cornea.

Delayed and immediate effects and also chronic effects from short- and long-term exposure:
For single or limited exposures there are no signs or symptoms of exposure to respirable crystalline silica. For routine exposure and for individuals with existing respiratory illness (e.g., bronchitis, emphysema, chronic obstructive pulmonary disease) symptoms include shortness of breath, wheezing, cough, sputum production, weight loss, fever.

Numerical Measures of Toxicity: This product is not acutely toxic. The literature search did not reveal numerical measures of toxicity (e.g., LC_{50}) other than the regulatory thresholds presented in Section 8.

Carcinogenicity: This product contains respirable crystalline silica which is classified as a Class 1 carcinogen by IARC, a known human carcinogen by NTP and OSHA, and a California Proposition 65 carcinogen.

SECTION 12: ECOLOGICAL INFORMATION

This product is not known to be ecotoxic (i.e. there is no data which suggests that this product is toxic to birds, fish, invertebrates, microorganisms or plants).

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Methods: This product is not a hazardous waste and may be landfilled. If this product is contaminated with hazardous materials, then place the waste in a properly labeled, suitable waste container. Contaminated material must be disposed in accordance with federal, state and local regulations using the proper waste classification.

SECTION 14: TRANSPORT INFORMATION

US DOT Shipping Name: Not Regulated **DOT LABEL:** None **UN/NA Number:** None

This product not listed as a hazardous substance by U.S. Department of Transportation.

SECTION 15: REGULATORY INFORMATION

TSCA/CEPA Status: Components of this product are included in the TSCA and CEPA Chemical Inventories.

CERCLA: Not applicable.

RCRA: Not applicable.

SARA Title III:

Section 302 Extremely Hazardous: Not applicable.

Section 311/312 Hazard Categories: Reportable as a hazardous substance. Check with your Local Emergency Planning Committee for reportable quantities.

Section 313 Toxic Chemicals: Not applicable.

SECTION 16: OTHER INFORMATION

DISCLAIMER: THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE CORRECT. HOWEVER, P.W. GILLIBRAND CO., INC MAKES NO GUARANTEE OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED WITH RESPECT TO THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ANY LIABILITY IN CONNECTION WITH ANY USE OF THIS INFORMATION AND OR ANY HARMFUL EFFECTS WHICH MAY BE CAUSED BY EXPOSURE TO ITS SILICA SAND. DISTRIBUTORS, CUSTOMERS AND USERS OF SILICA SAND MUST COMPLY WITH ALL APPLICABLE HEALTH AND SAFETY FEDERAL, STATE, LOCAL LAWS, REGULATIONS AND ORDERS, AND MUST SEEK MEDICAL, LEGAL, AND TECHNICAL OPINIONS REGARDING THEIR USE AND HAZARDS.

http://www.cdc.gov/niosh/npg/npgsyn-s.html
https://www.osha.gov/dsg/hazcom/pictograms/index.html
https://govt.westlaw.com/calregs/Document/I016EA5A05F8211DFBF66AC2936A1B85A?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=%28sc.Default%29
http://ntp.niehs.nih.gov/ntp/roc/content/profiles/silica.pdf#search=silica
http://www.gpo.gov/fdsys/pkg/CFR-2013-title49-vol2/pdf/CFR-2013-title49-vol2-subtitleB-chapI-subchapC.pdf

https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10099

SDS no. 10929
Version 1
Revision date 14/Oct/2014
Supersedes date None

Schlumberger

Safety Data Sheet
SAWDUST

1. Identification

1.1 Product identifier

Product name SAWDUST

Product code 10929

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use No information available.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards

Environmental hazards

Physical Hazards

2.2 Label elements

Precautionary statements

Supplementary precautionary statements

Unknown acute toxicity .?% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

3.2 Mixtures

Comments
The exact percentage (concentration) of composition has been withheld as a trade secret

4. First aid measures

4.1 First-Aid Measures

Inhalation No information available.

Ingestion No information available.

Skin contact No information available.

Eye contact No information available.

4.2 Most important symptoms and effects, both acute and delayed

Main symptoms

Inhalation Please see Section 11. Toxicological Information for further information.

Ingestion Please see Section 11. Toxicological Information for further information.

Skin contact Please see Section 11. Toxicological Information for further information.

Eye contact Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
None known.

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment.

6.2 Environmental precautions

Not applicable.

Environmental exposure controls
No information available.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).

6.4 Reference to other sections

No information available.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Ensure adequate ventilation.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation.

Storage precautions none

8. Exposure controls/personal protection

8.1 Control parameters

Component Information

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye protection	Tightly fitting safety goggles.
Hand protection	Neoprene, Nitrile.
Respiratory protection	All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent. If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator. If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Transparent
Color	Colorless
Odor	Odorless
Odor threshold	Not applicable

Property	Values	Remarks
pH		
pH @ dilution		
Melting/freezing point		
Boiling point/range	No information available	
Flash point	No information available	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	No information available	
Bulk density	No information available	
Water solubility	Slightly soluble in water.	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	No information available
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

10.4 Conditions to avoid

Avoid extreme temperatures.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Carbon oxides (COx).

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation	No information available.
Eye contact	No information available.
Skin contact	No information available.
Ingestion	No information available.

Sensitization	This product does not contain any components suspected to be sensitizing.
Mutagenic effects	No evidence of mutagenic properties.
Carcinogenicity	No evidence of carcinogenic properties.
Reproductive toxicity	No evidence of toxicity to reproduction.
Developmental toxicity	Not known to cause birth defects or have a deleterious effect on a developing fetus.
Routes of exposure	Skin contact. Inhalation. Eye contact.

Routes of entry	None known.
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.
Aspiration hazard	Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No product level data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

UN No. (DOT)	Not regulated
UN No. (TDG)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

14.3 Hazard class(es)

DOT Hazard class	Not regulated
TDG Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
TDG Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

14.6 Special precautions
Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Does not Comply
Canada (DSL)	Does not Comply
European Union (EINECS and ELINCS)	Does not Comply
Philippines (PICCS)	Does not Comply
Japan (ENCS)	Does not Comply
China (IECSC)	Does not Comply
Australia (AICS)	Does not Comply
Korean (KECL)	Does not Comply
New Zealand (NZIoC)	Does not Comply

U.S. Federal and State Regulations

State Comments
Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

16. Other information

Revision date 14/Oct/2014

Version 1

HMIS classification

N/A - Not Applicable, N/D - Not Determined.

Disclaimer
The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

SDS no. 12460
Version 4
Revision date 17/Jun/2014
Supersedes date None

A Schlumberger Company

Safety Data Sheet
THRUCARB†

1. Identification of the substance/preparation and of the Company/undertaking

1.1 Product identifier

Product name THRUCARB†
Product code 12460

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Drilling fluid additive

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.
P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com

Prepared by
Global Chemical Regulatory Compliance (GCRC) , Mike McDowell

1.4 Emergency Telephone Number

Emergency telephone - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600
Telephone Number - 281-561-1512

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards

Carcinogenicity	Category 1A

Environmental hazards Not classified

Physical Hazards Not classified

2.2 Label elements

Signal word
DANGER

Hazard statements
H350 - May cause cancer

Precautionary statements
P201 - Obtain special instructions before use
P281 - Use personal protective equipment as required
P308 + P313 - IF exposed or concerned: Get medical advice/ attention
P321 - Specific treatment (see .? on this label)

P202 - Do not handle until all safety precautions have been read and understood
P264 - Wash face, hands and any exposed skin thoroughly after handling
P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P332 + P313 - If skin irritation occurs: Get medical advice/ attention
P362 - Take off contaminated clothing and wash before reuse
P501 - Dispose of contents/ container to an approved waste disposal plant

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Component	CAS-No	Weight % - range
Stearic acid	57-11-4	1 - 5
Silica, crystalline, quartz	14808-60-7	1 - 5

Comments
The product contains other ingredients which do not contribute to the overall classification.

4. First aid measures

4.1 Description of first-aid measures

Inhalation — If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Ingestion — Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Seek medical attention if irritation occurs.

Skin contact	Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention immediately if symptoms occur.
Eye contact	Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

General advice	The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.
Main symptoms	
Inhalation	Please see Section 11. Toxicological Information for further information.
Ingestion	Please see Section 11. Toxicological Information for further information.
Skin contact	Please see Section 11. Toxicological Information for further information.
Eye contact	Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician	Treat symptomatically.

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
Suspended dust may present a dust explosion hazard.

Hazardous combustion products
Carbon oxides (COx), Nitrogen oxides (NOx), Ammonia.

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. See also section 8.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Avoid dust formation.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions — Ensure adequate ventilation. Provide appropriate exhaust ventilation at places where dust is formed. Keep airborne concentrations below exposure limits.

Storage precautions — Keep away from open flames, hot surfaces and sources of ignition. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls/personal protection

8.1 Control parameters

Component	ACGIH TLV	OSHA PEL
Stearic acid	Not Determined	Not Determined
Silica, crystalline, quartz	0.025 mg/m³	see Table Z-3

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection — It is good practice to wear goggles when handling any chemical. Tightly fitting safety goggles.

Hand protection — Use protective gloves made of:, Nitrile, Neoprene gloves.

Respiratory protection	All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent. If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator. If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.
Skin and body protection	Wear suitable protective clothing.
Hygiene measures	Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid
Appearance	Granules
Odor	Odorless
Color	Off-white
Odor threshold	Not applicable

Property	Values	Remarks
pH	No information available	
pH @ dilution		
Melting/freezing point		
Boiling point/range	No information available	
Flash point	Does not flash	
Evaporation rate (BuAc =1)		
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	Not applicable	
Lower flammability limit	Not applicable	
Vapor pressure	0 mmHg	
Vapor density	Not applicable	
Specific gravity	2.5 - 2.8	
Bulk density	No information available	
Relative density	No information available	
Water solubility	insoluble	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	Not determined	
Explosive properties	Not Applicable	
Oxidizing properties	None known.	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	None
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
Hazardous polymerization does not occur.

10.4 Conditions to avoid

Heat, flames and sparks.

10.5 Incompatible materials

Strong oxidizing agents. Acids. Bases.

10.6 Hazardous decomposition products

See also section 5.2.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation	Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.
Eye contact	Dust may cause mechanical irritation.
Skin contact	Repeated exposure may cause skin dryness or cracking.
Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Acute toxicity	2% of the mixture consists of ingredient(s) of unknown toxicity.

Component	LD50 Oral	LD50 Dermal	LD50 Inhalation
Stearic acid	No data available	> 5 g/kg (Rabbit)	No data available
Silica, crystalline, quartz	= 500 mg/kg (Rat)	No data available	No data available

Sensitization	This product does not contain any components suspected to be sensitizing.
Mutagenic effects	This substance has no evidence of mutagenic properties.

Carcinogenicity	Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled.
Reproductive toxicity	None known.
Routes of exposure	Inhalation. Skin contact. Eye contact.
Routes of entry	Inhalation.
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.
Aspiration hazard	No hazard from product as supplied.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Stearic acid 57-11-4 (1 - 5)	No information available	No information available	No information available
Silica, crystalline, quartz 14808-60-7 (1 - 5)	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known. Check for additional information in sect. 7.

13. Disposal considerations

13.1 Waste treatment methods

Waste from residues / unused products Dispose of in accordance with local regulations.

Contaminated packaging Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

The product is not covered by international regulation on the transport of dangerous goods (IMDG, IATA,ADR/RID/ADG).

14.1 UN Number
Not regulated

UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated
UN No. (DOT)	Not regulated

14.2 Proper shipping name
Not regulated

14.3 Hazard class(es)

ADR/RID/ADN Hazard class	Not regulated
IMDG Hazard class	Not Regulated
ICAO Hazard class/division	Not Regulated
DOT Hazard class	Not Regulated

14.4 Packing group

ADR/RID/ADN Packing Group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated
DOT Packing group	Not regulated

14.5 Environmental hazard
No

14.6 Special precautions
Not Applicable

15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

International inventories

USA (TSCA)	Complies
European Union (EINECS and ELINCS)	Complies
Canada (DSL)	Complies
Philippines (PICCS)	Complies

Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

-

SARA 311/312 Hazard Catagories Immediate (acute) health hazard. Delayed (chronic) health hazard.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Stearic acid	N/A	N/A	N/A
Silica, crystalline, quartz	N/A	N/A	N/A

State Comments
Proposition 65: This product contains chemical(s) considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 to cause cancer and/or reproductive toxicity. See table under U.S. Federal and State Regulations for the specific chemicals.

Silica, crystalline, quartz
carcinogen

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class D2A (Other Toxic Effects - Very Toxic Material) D2B (Other Toxic Effects - Toxic Material)

16. Other information

Revision date 17/Jun/2014

Version 4

The following sections have been revised All sections.

HMIS classification

Health	1*
Flammability	1
Physical hazard	0
PPE	E

N/A - Not Applicable, N/D - Not Determined.

†A mark of M-I L.L.C.

Disclaimer
The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SDS no. 10303
Version 7
Revision date 06/Jan/2016
Supersedes date 20/Aug/2013

Safety Data Sheet
SAFE-BREAK* L

1. Identification

1.1 Product identifier

Product name SAFE-BREAK* L

Product code 10303

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Completion fluid additive.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

M-I SWACO, A Schlumberger Company
200 - 125, 9th Avenue SE
Calgary, Alberta T2G 0P6, Canada
Telephone: 1-780-962-8221

Prepared by
, Asif Babar Global Regulatory Compliance - Chemicals (GRC - Chemicals)

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards

Acute oral toxicity	Category 4
Skin corrosion/irritation	Category 1 Subcategory 1B
Serious eye damage/eye irritation	Category 1

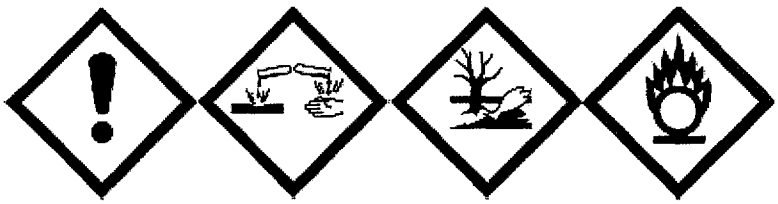
Environmental hazards

Acute aquatic toxicity	Category 1

Physical Hazards

Oxidizing Solids	Category 2

2.2 Label elements



Signal word
DANGER

Hazard statements
H302 - Harmful if swallowed
H314 - Causes severe skin burns and eye damage
H400 - Very toxic to aquatic life
H272 - May intensify fire; oxidizer

Precautionary statements
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P221 - Take any precaution to avoid mixing with combustibles
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor/ physician
P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction

P220 - Keep/Store away from clothing/ combustible materials
P221 - Take any precaution to avoid mixing with combustibles
P264 - Wash face, hands and any exposed skin thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P273 - Avoid release to the environment
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P304 + P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing
P363 - Wash contaminated clothing before reuse
P391 - Collect spillage
P501 - Dispose of contents/container in accordance with local regulations.

Unknown acute toxicity 31% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Component	CAS-No	Weight % - range
Lithium hypochlorite	13840-33-0	10 - 30
Potassium bisulfate	7646-93-7	5 - 10
Lithium chloride	7447-41-8	1 - 5
Lithium chlorate	36355-96-1	1 - 5
Lithium carbonate	554-13-2	1 - 5
Lithium hydroxide	1310-65-2	1 - 5

Comments
The product contains other ingredients which do not contribute to the overall classification. The exact percentage (concentration) of composition has been withheld as a trade secret

4. First aid measures

4.1 First-Aid Measures

Inhalation — If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult. Call a physician or Poison Control Centre immediately.

Ingestion — Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician or Poison Control Centre immediately. Obtain medical attention.

Skin contact — In case of contact, immediately flush skin with plenty of water. Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Obtain medical attention.

Eye contact — Immediately flush eyes with water for 15 minutes while holding eyelids open. Seek medical attention. Remove contact lenses.

4.2 Most important symptoms and effects, both acute and delayed

General advice — The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

Main symptoms

Inhalation — Please see Section 11. Toxicological Information for further information.

Ingestion — Please see Section 11. Toxicological Information for further information.

Skin contact — Please see Section 11. Toxicological Information for further information.

Eye contact — Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician — Treat symptomatically
Keep victim under observation

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
Do not use a solid water stream as it may scatter and spread fire.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
Oxidising material - Keep away from flammable and combustible materials. May intensify fire; oxidizer. These are strong oxidizers and will react vigorously or explosively with many materials including fuels. Heating of containers may cause pressure rise, with risk of bursting. Vapors are heavier than air and may spread along floors. Vapors may travel to source of ignition and flash back. Substance will react with water (some violently) releasing flammable, toxic or corrosive gases and runoff.

Hazardous combustion products
Thermal decomposition can lead to release of toxic and corrosive gases/vapors, When heated strongly or burned, oxides of carbon, sulfur oxides, nitrogen oxides, ammonia and harmful organic fumes are released, May release hydrogen gas (explosive) on contact with metals.

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Cool fire-exposed containers using water spray.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid contact with heat, sparks, open flame, and static discharge. Contaminated surfaces will be extremely slippery. Keep away from combustible material. Avoid breathing dust; if exposed to high dust concentration, leave area immediately.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.

Methods for cleaning up
Take precautionary measures against static discharges. Sweep up and shovel into suitable containers for disposal. Avoid dust formation. Prevent product and washings from entering drains, sewers or surface water due to high toxicity to aquatic organisms. Reacts violently with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges. Reacts violently with water. Avoid dust formation.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation.

Storage precautions Oxidising material - Keep away from flammable and combustible materials. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls/personal protection

8.1 Control parameters

Component Information

Component	ACGIH TLV	OSHA PEL
Lithium hypochlorite	Not Determined	Not Determined
Potassium bisulfate	Not Determined	Not Determined
Lithium chloride	Not Determined	Not Determined
Lithium chlorate	Not Determined	Not Determined
Lithium carbonate	Not Determined	Not Determined
Lithium hydroxide	Not Determined	Not Determined

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation. Local exhaust ventilation.

Personal protective equipment

Eye protection Tightly fitting safety goggles.

Hand protection Use protective gloves made of:, Rubber, Neoprene, PVC, Be aware that liquid may penetrate the gloves. Frequent change is advisable.

Respiratory protection All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator. If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.

Skin and body protection Wear suitable protective clothing, Eye wash and emergency shower must be available at the work place.

Hygiene measures Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state Solid
Appearance No information available
Color White
Odor Chlorine
Odor threshold Not applicable

Property	Values	Remarks
pH	No information available	
pH @ dilution	11	@ 1%
Melting/freezing point	No information available	
Boiling point/range	No information available	
Flash point	No information available	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	0.9 - 1.0	
Bulk density	No information available	
Water solubility	188 g/100 g water (43%)	@ 77 °F / 25 °C
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	135°C / 275°F	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	
9.2 Other information		
Pour point	No information available	
Molecular weight	No information available	
VOC content(%)	No information available	
Density	No information available	

10. Stability and reactivity

10.1 Reactivity

May intensify fire; oxidizer.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

10.4 Conditions to avoid

Oxidising material - Keep away from flammable and combustible materials. Avoid contact with heat, sparks, open flame, and static discharge. Avoid wet and humid conditions.

10.5 Incompatible materials

Combustible materials. Water. Acids. Bases. Reducing agents. Do not add nitrites or other nitrosating agents to this product. May cause formation of nitrosamine.

10.6 Hazardous decomposition products

See Section 5.2.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation Corrosive to respiratory system. Causes burns. May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination.

Eye contact Causes serious eye damage. Corrosive to the eyes and may cause severe damage including blindness.

Skin contact Corrosive to skin. Causes severe skin burns.

Ingestion Ingestion causes burns of the upper digestive and respiratory tracts. MAY BE FATAL IF SWALLOWED.

Toxicology data for the components

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Lithium hypochlorite	No data available	No data available	No data available
Potassium bisulfate	= 2340 mg/kg (Rat)	No data available	No data available
Lithium chloride	= 526 mg/kg (Rat)	= 1488 mg/kg (Rat)	No data available
Lithium chlorate	No data available	No data available	No data available
Lithium carbonate	= 525 mg/kg (Rat)	No data available	> 2.17 mg/L (Rat) 4 h
Lithium hydroxide	= 120 mg/kg (Rat) = 210 mg/kg (Rat)	No data available	= 960 mg/m³ (Rat) 4 h

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Lithium hypochlorite	No data available	No data available	No data available	No data available
Potassium bisulfate	No data available	No data available	No data available	No data available
Lithium chloride	No data available	No data available	No data available	No data available
Lithium chlorate	No data available	No data available	No data available	No data available
Lithium carbonate	No data available	No data available	No data available	No data available
Lithium hydroxide	No data available	No data available	No data available	No data available

Sensitization May cause sensitization by skin contact.

Mutagenic effects This product does not contain any known or suspected mutagens.

Carcinogenicity This product does not contain any known or suspected carcinogens.

Reproductive toxicity This product does not contain any known or suspected reproductive hazards.

Developmental toxicity May cause birth defects.

Routes of exposure Skin contact. Eye contact. Inhalation.

Routes of entry None known.

Specific target organ toxicity (single exposure) Not classified

Specific target organ toxicity (repeated exposure) Not classified.

Aspiration hazard Conclusive but not sufficient for classification.

12. Ecological information

12.1 Toxicity

Toxicity to algae
EC50 72h : > 100 mg/l.

Toxicity to fish
LC50 96h : > 100 mg/l.

Toxicity to daphnia and other aquatic invertebrates
EC50 48h : > 100 mg/l.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Lithium hypochlorite 13840-33-0 (10 - 30)	No information available	No information available	No information available
Potassium bisulfate 7646-93-7 (5 - 10)	No information available	No information available	No information available
Lithium chloride 7447-41-8 (1 - 5)	No information available	No information available	No information available
Lithium chlorate 36355-96-1 (1 - 5)	No information available	No information available	No information available
Lithium carbonate 554-13-2 (1 - 5)	No information available	No information available	No information available
Lithium hydroxide 1310-65-2 (1 - 5)	No information available	No information available	No information available

12.2 Persistence and degradability

Product is biodegradable.

12.3 Bioaccumulative potential

No bioaccumulation expected due to high molecular weight.

12.4 Mobility in soil

The product is water soluble, and may spread in water systems.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method — Disposal should be made in accordance with federal, state and local regulations.

Contaminated packaging — Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum. Dispose of in accordance with local regulations.

14. Transport information

14.1 UN Number

UN No. (DOT)	UN1471
UN/ID No. (ADR/RID/ADN/ADG)	UN1471
UN No. (IMDG)	UN1471
UN No. (ICAO)	UN1471

14.2 Proper shipping name
Lithium Hypochlorite Mixture

14.3 Hazard class(es)

DOT Hazard class	5.1
ADR/RID/ADN/ADG Hazard class	5.1
IMDG Hazard class	5.1
ICAO Hazard class/division	5.1

14.4 Packing group

DOT Packing group	PG II
ADR/RID/ADN/ADG Packing group	PG II
IMDG Packing group	PG II
ICAO Packing group	PG II

14.5 Environmental hazard
Marine pollutant — Yes, (Lithium hypochlorite)

14.6 Special precautions
Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	U.S. TSCA - Components are listed or exempt from listing.
Canada (DSL)	This product contains chemical(s) which is/are not listed on DSL but is/are listed on the NDSL.
European Union (EINECS and ELINCS)	Does not Comply
Philippines (PICCS)	Does not Comply
Japan (ENCS)	Does not Comply
China (IECSC)	Does not Comply
Australia (AICS)	Does not Comply
Korean (KECL)	Does not Comply
New Zealand (NZIoC)	Does not Comply

IMPORTS, Canada
Possible import volume restrictions apply. For details contact the Corporate info in SECTION 1.

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Immediate (acute) health hazard.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Lithium hypochlorite	N/A	N/A	N/A
Potassium bisulfate	N/A	N/A	N/A
Lithium chloride	N/A	N/A	N/A
Lithium chlorate	N/A	N/A	N/A
Lithium carbonate	N/A	1.0 %	N/A
Lithium hydroxide	N/A	N/A	N/A

State Comments
Proposition 65: This product contains chemical(s) considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 to cause cancer and/or reproductive toxicity. See table under U.S. Federal and State Regulations for the specific chemicals.

Lithium carbonate
developmental toxicity

16. Other information

Supersedes date	20/Aug/2013
Revision date	06/Jan/2016
Version	7
The following sections have been revised:	All sections. Updated according to GHS/CLP.

HMIS classification

Health	3
Flammability	1
Physical hazard	1
PPE	X

N/A - Not Applicable, N/D - Not Determined.

*A mark of M-I L.L.C.

Disclaimer
The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

AMERICAN COLLOID COMPANY

One North Arlington • 1500 West Shure Drive
Arlington Heights, Illinois 60004-7803 • U.S.A.
Tel. (847) 392-4600 • Telex: ITT 4330321
Fax. (847) 506-6199

MATERIAL SAFETY DATA SHEET - May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements. 1301 101

PRODUCT NAME: VOLCLAY PREMIUM GEL

Section I MANUFACTURER'S INFORMATION

Manufacturer's Name & Address:
American Colloid Company
1500 West Shure Drive
One North Arlington
Arlington Heights, Illinois 60004

Telephone Number for Information: 847-392-4600
Date Prepared: January 23, 1998

Section II HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components (Specific Chemical Identity: Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Crystalline Quartz CAS# 14808-60-7 (naturally occurring contaminant)	-	-	*	1-2%
Respirable Crystalline Quartz			NIOSH	
present (TWA)	0.1mg/m^3	0.1mg/m^3 TWA	50ug/m^3 TWA	<1-2%
proposed (TWA)		50ug/m^3 TWA	-	-
Nuisance Dust				
Respirable	5mg/m^3	5mg/m^3	-	-
Total Dust	15mg/m^3	10mg/m^3	-	-

*** WARNING:**
This clay product contains a small amount of crystalline silica (quartz) which may cause delayed respiratory disease if inhaled over a prolonged period of time. Avoid breathing dust. Use NIOSH/MSHA approved respirator where TLV for crystalline silica may be exceeded. IARC Monographs on the evaluation of the Carcinogenic Risk of Chemicals to Humans (volume 68, 1997) concludes that crystalline silica (quartz) is carcinogenic to humans in the form of quartz. IARC classification 1.

The small quantities of crystalline silica (quartz) found in this product are, under normal conditions, naturally coated with an unremovable layer of amorphous silica and/or bentonite clay. IARC (vol. 68, 1997, pp 191-192) states that crystalline silica (quartz) can differ in toxicity depending on the minerals with which it is combined, citing studies in IARC (vol. 42, 1987, p 86) which states that the toxic effect of crystalline silica (quartz) is reduced by the "protective effect.....due mainly to clay minerals....".

National Institute for Occupational Safety and Health (NIOSH) has recommended that the permissible exposure limit be changed to 50 micrograms respirable free silica per cubic meter air (0.5 mg/m^3) as determined by a full shift sample up to 10 hour working day, 40 hours per week. See: 1974 NIOSH criteria for a recommended Standard for Occupational Exposure to Crystalline Silica should be consulted for more detailed information.

PEL means OSHA Permissible Exposure Limit.
TLV means American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value.
TWA means 8 hour time weighted average.

Note: The Permissible Exposure Limits (REL) reported above are the pre-1989 limits that were reinstated by OSHA June 30, 1993 following a decision by the United States Circuit Court of Appeals for the 11th Circuit. These PELs are now being enforced by Federal OSHA. More restrictive exposure limits may be enforced by some other jurisdictions.

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Arlington Heights, Illinois 60004-7803 • U.S.A.
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PRODUCT NAME: VOLCLAY PREMIUM GEL

PRODUCT IDENTIFICATION

Chemical Name: Bentonite Clay (100%)
Chemical Family: Natural Mineral, Montmorillonite
CAS No.: 1302-78-9 Bentonite is on the TSCA inventory.
FORMULA: Naturally occurring hydrated aluminosilicate of sodium, calcium, magnesium, and iron
NFPA/HMIS: Health - 1, Fire - 0, Reactivity - 0, Specific Hazard - See Section VI
Dot Class: Not Regulated

Section III PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	- Not Applicable	**Specific Gravity (H_2O = 1)**	- 2.5
Vapor Pressure (mm Hg.)	- Not Applicable	**Melting Point**	- Not Applicable
Vapor Density (AIR = 1)	- Not Applicable	**Evaporation Rate (Butyl Acetate = 1)**	- Not Applicable
Solubility in Water	- Negligible		
Appearance and Odor	- Pale grey to buff powder or granules, odorless.		

Section IV FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used) - Not Applicable
Flammable Limits - Not Applicable **LEL**- - **UEL**- -
Extinguishing Media - Not Applicable
Special Fire Fighting Procedures - Inorganic Mineral/Non-Flammable
Unusual Fire and Explosion Hazards - Not Applicable

Section V REACTIVITY DATA

Stability: Stable - X **Conditions to Avoid** - None Known

Incompatibility (Materials to Avoid): - None Known
Hazardous Decomposition or By-products: - None Known

Hazardous Polymerization: Will Not Occur - X **Conditions to Avoid** - None Known

Section VI HEALTH HAZARD DATA

This product is chemically inert, non-combustible mineral. A single exposure will not result in serious adverse effects. Excessive occupational, uncontrolled inhalation of dust may cause lung disease, silicosis, with symptoms of shortness of breath and reduced pulmonary function.

Route(s) of Entry: Inhalation? Yes **Skin?** No **Ingestion?** No
Health Hazards (Acute and Chronic) - May cause delayed respiratory disease if dust inhaled over a prolonged period of time.

Inhalation: Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may cause irritation of the nose, throat and respiratory passages. Inhalation of dust may have the following serious chronic health effects:

Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling and sometimes fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

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PRODUCT NAME: VOLCLAY PREMIUM GEL

Cancer Status: The International Agency for Research on Cancer has determined that crystalline silica inhaled in the form quartz or crystobalite from occupational sources is carcinogenic to humans (Group 1-carcinogenic to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibers (published in June 1997) in conjunction with the use of these materials. The National Toxicology Program classifies respirable crystalline silica as "reasonable anticipated to be a carcinogen". For further information See: "Adverse effects of Crystalline Silica Exposure" published by the American Thoracic Society Medical Section of the American Lung Association, American Journal of Respiratory and Critical Care Medicine, Volume 155, page 761-765, 1997.

Other data with possible relevance to Human Health: The small quantities of crystalline (quartz) found in this product are, under normal naturally coated with an unremovable layer of amorphous silica and/or clay. IARC (Vol. 68, 1997, pp 191-192) states that crystalline silica (quartz) can differ in toxicity depending on the minerals with which it is combined, citing studies in IARC (vol 42, 1987, p 86) which states that the toxic effect of crystalline silica (quartz) is reduced by the "protective effect....due mainly to clay minerals....".

Skin Contact: No adverse effects expected.
Eye Contact: Contact may cause mechanical irritation and possible injury.
Ingestion: No adverse effects expected for normal, incidental ingestion.

Chronic Health Effects: See "Inhalation" subsection above with respect to silicosis, cancer status and other data with possible relevance to human health.
Signs and Symptoms of Exposure - There are generally no signs or symptoms of exposure to crystalline silica (quartz). See "Inhalation" subsection above for symptoms of silicosis.
Medical Conditions Generally Aggravated by Exposure - Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation should not be exposure to crystalline silica (quartz) dust.

Emergency and First Aid Procedures
Eye Contact - Flush the eyes immediately with large amounts of water. lifting the upper and lower lids occasionally. If irritation persists or for imbedded foreign body, get immediate medical attention.
Gross Inhalation - Remove to fresh air. If breathing has stopped, perform artificial respiration. If breathing is difficult, have qualified personnel administer oxygen. Get prompt medical attention.
Skin Contact No first aid should be needed since this product does not affect the skin. Wash exposed, skin with soap and water before breaks and at the end of the shift.
Ingestion If large amounts are swallowed, get immediate medical attention.

Section VII PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released or Spilled - Vacuum if possible to avoid generating airborne dust. Avoid breathing dust. Wear an approved respirator. Avoid adding water, the product will become slippery when wet.

Waste Disposal Method - Follow federal, state and local regulations for solid waste

Handling and Storing Precautions - Do not breath dust. Use normal precautions against bag breakage or spills of bulk material. Avoid creation of respirable dust. Use good housekeeping in storage and use areas to prevent accumulation of dust in work areas. Use adequate ventilation and dust collection. Maintain and use proper, clean respiratory equipment. Launder clothing that has become dusty. Empty containers (bags, bulk containers, storage tanks, etc.) retain silica residue and must be handled in accordance with the provisions of this Material Safety Data Sheet. Warn and Train employees in accordance with state and federal regulations.

Other Precautions - Slippery when wet.

WARN YOUR EMPLOYEES (AND YOUR CUSTOMERS - USERS IN CASE OF RESALE) BY POSTING AND OTHER MEANS OF THE HAZARDS AND OSHA PRECAUTIONS TO BE USED. PROVIDE TRAINING FOR YOUR EMPLOYEES ABOUT OSHA PRECAUTIONS.

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PRODUCT NAME: VOLCLAY PREMIUM GEL

Section VIII CONTROL MEASURES

Respiratory Protection: Use appropriate respiratory protection for respirable particulate based on consideration of airborne workplace concentration and duration of exposure arising from intended end use. Refer to the most recent standards of ANSI (z88.2) OSHA (29 CFR 1910.134), MSHA (30 CFR Parts 56 and 57) and NIOSH Respirator Decision Logic.

Ventilation: Use local exhaust as required to maintain exposures below applicable occupational exposure limits (See Section II). See also ACGIH "Industrial Ventilation - A Manual for Recommend Practice", (current edition).

Protective Gloves - Recommended
Eye Protection - Safety glasses or goggles recommended.
Other Protective Clothing or Equipment - As appropriate for work environment. Dusty clothing should be laundered before reuse.

Transportation Data: U.S. DOT Hazard Classification

Proper Shipping Name:	Not regulated
Technical Name:	N/A
UN Number:	N/A
Hazard Class/Packing Group:	N/A
Labels Required:	None
DOT Packaging Requirements:	N/A
Exceptions:	N/A

Section IX OTHER REGULATORY INFORMATION

SARA 311/312: Hazard Categories for SARA Section 311/312 reporting: Chronic Health
SARA 313: This product contains the following chemicals subject to annual reporting requirements under the SARA Section 313 (40 CFR 372): None

CERCLA Section 103 Reportable Quantity: None

California Proposition 65: THIS PRODUCT CONTAINS THE FOLLOWING SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND/OR REPRODUCTIVE HARM: This product contains Crystalline Silica (Respirable); However, the user should note that the small quantities of crystalline silica (quartz) found in this product are, under normal conditions, naturally coated with an unremovable layer of amorphous silica and/or bentonite clay. IARC (vol. 68, 1997, pp 191-192) states that crystalline silica (quartz) can differ in toxicity depending on the minerals with which it is combined. Citing studies in IARC (vol. 42, 1987, p 86) which states that the toxic effect of crystalline silica (quartz) is reduced by the "protective effect....due mainly to clay minerals...".

Toxic Substances Control Act: All of the components of this product are listed on the EPA TSCA Inventory or exempt from notification requirements.

European Inventory of Commercial Chemical Substances: All of the components of this product are listed on the EINECS Inventory or exempt from notification requirements. (The EINECS number for Quartz: 231-545-5).

Canadian Environmental Protection Act: All of the components of this product are listed on the Canadian Domestic Substances List or exempt from notification requirements.

Japan MITI: All of the components of this product are existing chemical substances as defined in the Chemical Substance Control Law.

Australian Inventory of Chemical Substances: All of the components of this product are listed on the AICS inventory or exempt from notification requirements.

Canadian WHMIS Classification: Class D, Division 2, Subdivision A (Very Toxic Material causing other Toxic Effects).

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PRODUCT NAME: VOLCLAY PREMIUM GEL

Section X OTHER INFORMATION

European Community Labeling Classification: Harmful (Xn)
European Community Risk and Safety Phrases: R40, R48, S22

NFPA Hazard Rating:	Health: 1	Fire: 0	Reactivity: 0
HMIS Hazard Rating:	Health: *	Fire: 0	Reactivity: 0

*Warning - Chronic health effect possible - inhalation of silica dust may cause lung injury/disease (silicosis). Take appropriate measures to avoid breathing dust. See Section II.

The information herein has been compiled from sources believed to be reliable and is accurate to the best of our knowledge. However, American Colloid Company cannot give any guarantees regarding information from other sources, and expressly does not make any warranties, nor assumes any liability, for its use.

SDS no. 10168
Version 10
Revision date 01/Sep/2015
Supersedes date 18/Mar/2015

A Schlumberger Company

Safety Data Sheet
DEFOAM-X†

1. Identification

1.1 Product identifier

Product name DEFOAM-X†

Product code 10168

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Defoamer.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I PRODUCTION TECHNOLOGIES
A Business Unit of M-I L.L.C.
P.O. Box 42842
Houston, TX 77242
Telephone: 1 281-561-1511
www.miswaco.slb.com

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Mike McDowell

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Health hazards Not classified

Environmental hazards Not classified

Physical Hazards Not classified

2.2 Label elements

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Signal word
None

Hazard statements
This product is not classified as hazardous therefore no (H) hazard statements assigned.

Precautionary statements
This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

Unknown acute toxicity 0% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Not Applicable

Comments
No classified ingredients, or those having occupational exposure limits, present above the level of disclosure.

4. First aid measures

4.1 First-Aid Measures

Inhalation Not expected to be a respiratory hazard because of state or low volatility.

Ingestion Rinse mouth. Do not induce vomiting without medical advice. Get medical attention if symptoms occur.

Skin contact Not expected to be a hazard under anticipated use conditions.

Eye contact Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

Main symptoms

Inhalation Please see Section 11. Toxicological Information for further information.

Ingestion Please see Section 11. Toxicological Information for further information.

Skin contact Please see Section 11. Toxicological Information for further information.

Eye contact Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing media appropriate for surrounding material.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
None known.

Hazardous combustion products
Carbon oxides (COx).

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. See also section 8.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls
Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up
Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation. Keep airborne concentrations below exposure limits.

Storage precautions	Keep containers tightly closed in a dry, cool and well-ventilated place.
Packaging material	Use specially constructed containers only.

8. Exposure controls/personal protection

8.1 Control parameters

Exposure limits — **The product does not contain any hazardous materials with occupational exposure limits established.**

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection	It is good practice to wear goggles when handling any chemical. Tightly fitting safety goggles.
Hand protection	Wear chemical resistant gloves such as nitrile or neoprene.
Respiratory protection	No personal respiratory protective equipment normally required In case of insufficient ventilation wear suitable respiratory equipment
Skin and body protection	Wear suitable protective clothing, Provide eyewash station.
Hygiene measures	Wash hands before eating, drinking or smoking, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Transparent
Color	White
Odor	Mild
Odor threshold	Not applicable

Property	Values	Remarks
pH		
pH @ dilution	5 - 8 @ 1%	
Melting/freezing point	< 0 °C / 32 °F	
Boiling point/range	No information available	
Flash point	> 93 °C / 200 °F	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	

Specific gravity	0.98 - 1.02
Bulk density	No information available
Water solubility	Negligible
Solubility in other solvents	No information available
Autoignition temperature	No information available
Decomposition temperature	No information available
Kinematic viscosity	No information available
Dynamic viscosity	No information available
Log Pow	No information available
Explosive properties	No information available
Oxidizing properties	No information available

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	No information available
Density	No information available

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Carbon oxides (COx).

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation	Inhalation of vapors in high concentration may cause irritation of respiratory system.
Eye contact	May cause slight irritation.
Skin contact	Prolonged contact may cause redness and irritation.
Ingestion	Ingestion may cause stomach discomfort.

Sensitization	This product does not contain any components suspected to be sensitizing.
Mutagenic effects	No evidence of mutagenic properties.
Carcinogenicity	No evidence of carcinogenic properties.
Reproductive toxicity	No evidence of toxicity to reproduction.
Developmental toxicity	Not known to cause birth defects or have a deleterious effect on a developing fetus.
Routes of exposure	Eye contact. Skin contact. Inhalation.
Routes of entry	No route of entry noted.
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.
Aspiration hazard	Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method Disposal should be made in accordance with federal, state and local regulations.

Contaminated packaging Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport information

14.1 UN Number

UN No. (DOT)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

14.3 Hazard class(es)

DOT Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

14.6 Special precautions
Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies
European Union (EINECS and ELINCS)	Does not Comply
Philippines (PICCS)	Complies
Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

IMPORTS, Canada
No import volume restrictions.

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Not a SARA 311/312 hazard.

State Comments
Proposition 65: This product is not known to contain chemicals considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 as causing cancer and/or reproductive toxicity at levels that are expected to pose a significant risk under anticipated use conditions.

16. Other information

Supersedes date	18/Mar/2015
Revision date	01/Sep/2015
Version	10
The following sections have been revised:	Section 16: Other information.

HMIS classification

Health	0
Flammability	1
Physical hazard	0
PPE	E

According with the NFPA 704/STPS 018

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:	Sodium Hypochlorite 12.5% sol.
DOCUMENT IDENTIFIER:	449610
SYNONYMS:	Bleach
CHEMICAL FAMILY NAME:	Inorganic, salt
NFPA HAZARD RATINGS (H-F-R):	2-0-1
HMIS HAZARD RATINGS (H-F-R):	2-0-1
DISTRIBUTOR:	Brenntag Southwest, Inc.
IN CASE OF EMERGENCY CALL:	1-800-424-9300
MSDS PREPARED BY:	Brenntag Southwest, inc. 610 Fisher Road Longview, TX 75604 (903) 759-7151

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS	CAS NUMBERS	Percent
Sodium chloride	007647-14-5	9-10
Sodium hydroxide	001310-73-2	<2
Sodium Hypochlorite	007681-52-9	12-13

Remainder consists of non-hazardous and/or other ingredients below reportable levels. **Trace impurities and additional material names not listed above may also appear in the Regulatory Information Section (Section 15) towards the end of the MSDS. These materials may be listed for local "Right to Know" compliance and for other reasons.**

3. HAZARDOUS IDENTIFICATION

EMERGENCY OVERVIEW: DANGER! Corrosive! May cause burns to eyes and skin. May be harmful if swallowed or inhaled.

POTENTIAL HEALTH EFFECTS:

SKIN CONTACT: May cause moderate to severe irritation consisting of discomfort, itching, reddening and swelling.
Contact with the skin can cause chemical burns.

SKIN ABSORPTION: No data available

EYES: Contact with the eyes causes redness, tearing, and blurred vision.
May cause burns to eyes.

INGESTION: Ingestion causes pain and inflammation of the mouth, gastrointestinal tract, and erosion of the mucous membranes.

INHALATION: Inhalation may cause irritation, burning sensation, coughing, wheezing, laryngitis, and shortness of breath or headache.
May cause lung damage/edema.

MEDICAL CONDITIONS AGGRAVATED:
No data available

WARNING: Contains a chemical known to the State of California to cause cancer.
Components found on one of the OSHA designated carcinogen lists are listed below.

INGREDIENT	NTP	IARC	OSHA
Sodium chloride	N	N	N
Sodium hydroxide	N	N	N
Sodium Hypochlorite	N	N	N

4. FIRST AID MEASURES

SKIN CONTACT: Remove contaminated clothing and shoes.
Wash exposed areas with soap and water.
Call a physician if irritation persists.

EYE CONTACT: Flush eyes with water for at least 15 minutes.
Get immediate medical attention.

INGESTION: Call a physician immediately!
Do not induce vomiting. Give 1-2 glasses of water to dilute. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.
Do not give anything by mouth to an unconscious person.

INHALATION: Remove to fresh air.
If breathing has stopped, give artificial respiration.
Get immediate medical attention.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSIVE PROPERTIES

FLASH POINT:	Not applicable °F
FLASH POINT:	Not applicable °C
FLASH POINT METHOD:	Not applicable
LOWER FLAMMABILITY LIMIT:	Not available
UPPER FLAMMABILITY LIMIT:	Not available
AUTOIGNITION TEMPERATURE:	Not available °F, Not available °C
FLAMMABILITY CLASSIFICATION:	Not applicable
EXTING. MEDIA:	This product is not flammable. Use extinguishing media for surrounding fire.
FIRE FIGHTING:	Use water spray to disperse vapors and to provide protection for persons attempting to stop leak. Cool fire-exposed containers with water spray.
PROTECTIVE EQUIPMENT:	Use NIOSH-approved self-contained breathing apparatus and complete protective clothing when fighting chemical fires.
FIRE HAZARDS:	Closed containers of this product may explode when exposed to excessive heat. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Avoid contact with combustible materials. May ignite or explode on contact with combustible materials. May ignite or explode on contact with combustible materials.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILLS:	Eliminate all sources of ignition. Contain spill and ventilate area. Absorb on inert media and containerize for disposal.
LARGE SPILLS:	Eliminate all sources of ignition. Contain spill and ventilate area. Permit only trained personnel wearing full protective equipment to enter the spill area. Collect the spill in a waste

container or remove with a vacuum truck. Prevent spill from entering natural watercourses.

PROTECTIVE EQUIPMENT\ SPILL-RELEASE INSTRUCTIONS:
Do not use combustible absorbents. Wear complete protective clothing when cleaning up chemical spills. Spills and releases may have to be reported to federal and/or local authorities. See the Regulatory Information section (section 14) regarding reporting requirements.

7. HANDLING AND STORAGE

HANDLING: Avoid contact with skin, eyes, and clothing.
Avoid breathing product vapors and mists.
Do not take internally.
Wash thoroughly after handling this material.
Use this material only with adequate ventilation.

STORAGE: Keep container closed when not in use.
This material should be stored in a dry, cool place. Store in well-ventilated areas and at moderate temperatures.
Protect against physical damage.
The empty container is hazardous.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:
Good general ventilation (typically 10 air changes/hour) should be used. Ventilation rates should be matched to conditions. Use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

SKIN: Wear protective gloves made of neoprene or rubber.

EYE: Wear chemical safety goggles.

RESPIRATORY: If engineering controls do not maintain airborne concentrations below recommended limits, wear a NIOSH-approved respirator for dusts and mists.

OTHER: Emergency showers, eyewash stations, and fire blankets should be accessible. Wear protective clothing.

EXPOSURE GUIDELINES:

INGREDIENT	ACGIH TLV	ACGIH STEL	OSHA PEL	OSHA STEL
Sodium chloride	N/EST	N/EST	N/EST	N/EST
Sodium hydroxide	2(c) mg/m3	N/EST	2 mg/m3	N/EST
Sodium Hypochlorite	N/EST	N/EST	N/EST	N/EST

N/EST = Not established
c = ceiling
See 29 CFR 1910.1000 (D) (2) and ACGIH "Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices" booklet (Appendix C) for the determination of exposure limits for mixtures. Consult an industrial hygienist or similar professional to confirm that the calculated exposure limits are appropriate.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
APPEARANCE	Clear, pale yellow or green
ODOR:	Chlorine
SPECIFIC GRAVITY:	1.2
SOLUBILTY (IN WATER):	Complete
BOILING POINT (°F):	Not available
BOILING POINT (°C):	Not available
FREEZING POINT (°F):	-3^{O} F
FREEZING POINT (°C):	-19^{O} C
MELTING POINT (°F):	Not available
MELTING POINT (°C):	Not available
PRODUCT pH:	12-13
VAPOR PRESSURE:	17.5 @ 20
REFERENCE PRESSURE:	mm Hg
VAPOR DENSITY:	Not available
EVAPORATION RATE:	Not available
VISCOSITY:	Not available
% VOLATILES:	Not available

10. STABILITY AND REACTIVITY

STABILITY:	Stable
CONDITIONS TO AVOID:	Exposure to high temperatures should be minimized.
INCOMPATIBILITY:	Combustible materials Acids Metals Amines Reducing agents
DECOMPOSITION:	Oxides of chlorine
POLYMERIZATION WILL OCCUR:	No

11. TOXICOLOGICAL INFORMATION

IMMEDIATE EFFECTS:	May cause burns to skin and eyes. May be harmful if swallowed or inhaled. TOXICITY DATA: 5800 mg/kg oral-mouse LD50; 8.91 g/kg oral-rat LD50; >10 g/kg dermal-rabbit LD50; 10.5 mg/L inhalation-rat
CARCINOGENICITY:	No data available
MUTAGENICITY:	Mutation in microorganisms - Salmonella typhimurium 1 mg/plate (-S9); DNA repair - Escherichia coli 20 ug/disc; DNA damage - Escherichia coli 420 umol/L; phage inhibition capacity - Escherichia coli 103 ug/well; micronucleaus test - non-mammalian species multiple 200 ppb; cytogenetic analysis - non-mammalian species multiple 120 ug/L; cytogenetic analysis - human lymphocyte 100 ppm 24 hours; sister chromatid exchange - human embryo 149 mg/L; cytogenetic analysis - hamster lung 100 mg/L
EPIDEMIOLOGY:	No data available
TERATOGENICITY:	No data available
REPRODUCTIVITY:	No data available
NEUROTOXICITY:	No data available
OTHER EFFECTS:	No data available

12. ECOLOGICAL INFORMATION

FISH TOXICITY: 94.0 ug/L 96 hours LC50 (Mortality) Cutthroat trout (Oncorhynchus clarki) INVERTABRATE TOXICITY: 31.6 ug/L 7 hours IC50 (Species Diversity) Protozoan phylum (Protozoa) ALGAL TOXICITY: 90 ug/L 96 hours LC50 (Mortality)

Algae, phytoplankton, algal mat (Algae) PHYTOTOXICITY: 230 ug/L 35 hours (Biomass) Curled pondweed (Potamogeton crispus) OTHER TOXICITY: 2.1 ug/L 2 days (Chlorophyl) Aquatic community (Aquatic community) ENVIRONMENTAL SUMMARY: Highly toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

RCRA WASTE:	Yes
RCRA ID NUMBER:	D002 (If pH >12.5)
VOC CONTENT (lbs/gal):	Not applicable
Waste Disposal Procedure:	Discharge, treatment, or disposal may be subject to Federal, State, or Local laws. State and Local regulations and restrictions are complex and may differ from Federal disposal regulation. The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA Classification and the proper disposal method.

14. TRANSPORTATION INFORMATION

D.O.T. SHIPPING NAME:	Hypochlorite solutions (Sodium Hypochlorite)
D.O.T. HAZARD CLASS:	Class 8, No division Corrosive materials
DOT ID NUMBER:	UN 1791
DOT PACKING GROUP:	III
DOT RQ (lbs):	800
CONTRIBUTING CHEMICAL:	Sodium Hypochlorite
OTHER:	Labels required: Corrosive
MARINE POLLUTANT:	No

OTHER REGULATORY INFORMATION

IMDG HAZARD CLASS: 8 - Corrosive materials
ICAO HAZARD CLASS: 8 - Corrosive

15. REGULATORY INFORMATION

FEDERAL REGULATIONS

TSCA (Toxic Substance Control Act): Yes
SECTION 311/312 HAZARD CLASS: Immediate (acute) health hazard

SARA TITLE III (Superfund Amendments and Reauthorization Act):

INGREDIENTS	CAS NUMBERS	Section 313	Section 302
Sodium chloride	007647-14-5	N	N
Sodium hydroxide	001310-73-2	N	N
Sodium Hypochlorite	007681-52-9	N	N

WHMIS CLASSIFICATION (CANADA): Class E

FOREIGN INVENTORY: EINECS (European Inventory of Existing Commercial Chemical Substances)
Canadian DSL (Domestic Substances List)

STATE RIGHT TO KNOW

CALIFORNIA PROP 65

This product does not contain any chemicals reportable under California Proposition 65.

MASSACHUSETTS SUBSTANCE LIST: Sodium Hypochlorite, asbestos
NEW JERSEY SUBSTANCE LIST: Sodium Hypochlorite
PENNSYLVANIA HAZARDOUS SUBSTANCE LIST: Sodium Hypochlorite

16. OTHER INFORMATION

CREATION DATE: 10/07/1997
REVISION DATE: 10/02/2013

DISCLAIMER:
The information herein is presented in good faith and is believed to be correct as of the date hereof. However, Brenntag Southwest, Inc. makes no representation as to the completeness and accuracy thereof. Users must make their own determination as to the suitability of the product for their purposes prior to use. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature with respect to the product or to the information herein is made hereunder. Brenntag Southwest, Inc. shall in no event be responsible for any damages of whatsoever nature directly or indirectly resulting from the publication, or use of, or reliance upon the information contained herein.

EXPLANATION OF ABBREVIATIONS:

N/EST = Not Established
N/AP = Not Applicable
N/AV = Not Available

SDS no. PID1715
Version 1
Revision date 06/Oct/2015
Supersedes date 18/Dec/2014

A Schlumberger Company

Safety Data Sheet
WALNUT NUT PLUG† FINE

1. Identification

1.1 Product identifier

Product name WALNUT NUT PLUG† FINE

Product code PID1715

This product may not be distributed or used in Canada.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Lost circulation material.

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I L.L.C.

P.O.Box 42842
Houston, TX 77242
www.miswaco.slb.com
Telephone: 1 281-561-1511

Prepared by
Global Regulatory Compliance - Chemicals (GRC - Chemicals)

1.4 Emergency Telephone Number

Emergency telephone (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

GHS - Classification

Health hazards

Carcinogenicity	Category 1A

Environmental hazards Not classified

Physical Hazards

Combustible dust

2.2 Label elements

Signal word
DANGER

Hazard statements
H350 - May cause cancer
H232 - May form combustible dust concentrations in air

Precautionary statements
P201 - Obtain special instructions before use
P281 - Use personal protective equipment as required
P308 + P313 - IF exposed or concerned: Get medical advice/ attention

P202 - Do not handle until all safety precautions have been read and understood
P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical/ ventilating/ lighting/ equipment
P243 - Take precautionary measures against static discharge
P501 - Dispose of contents/ container to an approved waste disposal plant

Unknown acute toxicity 0% of the mixture consists of ingredient(s) of unknown toxicity.

3. Composition/information on Ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

Component	CAS-No	Weight % - range
Polysaccharide	Proprietary	60 - 100
Silica, crystalline, quartz	14808-60-7	1 - 5

Comments
The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret

4. First aid measures

4.1 First-Aid Measures

Inhalation Move to fresh air. If breathing is difficult, (trained personnel should) give oxygen. Get medical attention immediately if symptoms occur.

Ingestion Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

Skin contact	Wash skin thoroughly with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if irritation persists.
Eye contact	Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

Main symptoms

Inhalation	Please see Section 11. Toxicological Information for further information.
Ingestion	Please see Section 11. Toxicological Information for further information.
Skin contact	Please see Section 11. Toxicological Information for further information.
Eye contact	Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Fog, Alcohol Foam, CO_2, Dry Chemical.

Extinguishing media which shall not be used for safety reasons
Do not use a solid water stream as it may scatter and spread fire.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
Dusts or fumes may form explosive mixtures in air.

Hazardous combustion products
Silicon oxide, Carbon oxides (COx).

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear suitable protective equipment. Evacuate personnel to safe areas. Prevent further leakage or spillage if safe to do so. Avoid dust formation. Suspended dust may present a dust explosion hazard. Avoid contact with heat, sparks, open flame, and static discharge. Avoid breathing dust; if exposed to high dust concentration, leave area immediately.

6.2 Environmental precautions

Do not allow material to contaminate ground water system.

Environmental exposure controls
Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and materials for containment and cleaning up

Methods for containment
Cover powder spill with plastic sheet or tarp to minimize spreading.

Methods for cleaning up
Ground and bond containers when transferring material. Take precautionary measures against static discharges. Prevent dust cloud. Powdered material may form explosive dust-air mixtures. Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Fine dust dispersed in air may ignite. Keep away from heat, sparks and open flame. No smoking. Avoid breathing dust; if exposed to high dust concentration, leave area immediately. Avoid contact with skin, eyes and clothing. Provide appropriate exhaust ventilation at places where dust is formed. Take precautionary measures against static discharges. Avoid static electricity build up with connection to earth.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation. Keep airborne concentrations below exposure limits.

Storage precautions Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking. Avoid heat, flames and other sources of ignition. Protect from moisture

8. Exposure controls/personal protection

8.1 Control parameters

Component Information

Component	ACGIH TLV	OSHA PEL
Polysaccharide	10 mg/m³	15 mg/m³ (Total); 5 mg/m³ (Respirable)
Silica, crystalline, quartz	0.025 mg/m³	see Table Z-3

Silica, crystalline, quartz
OSHA - Final PELs - Table Z-3 Mineral Dusts
(30)/(%SiO2 + 2) mg/m³ TWA, total dust; (250)/(%SiO2 + 5) mppcf TWA, respirable fraction; (10)/(%SiO2 + 2) mg/m³ TWA, respirable fraction

8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye protection	Tightly fitting safety goggles.
Hand protection	Neoprene, Nitrile.
Respiratory protection	All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent. If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reuseable particulate respirator. If exposed to vapors from this product use a NIOSH/MSHA-approved respirator with an Organic Vapor cartridge.
Skin and body protection	Wear suitable protective clothing.
Hygiene measures	Wash hands before breaks and immediately after handling the product, Remove and wash contaminated clothing before re-use.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid
Appearance	Opaque
Color	Light brown
Odor	Mild
Odor threshold	Not applicable

Property	Values	Remarks
pH	Not applicable	
pH @ dilution		
Melting/freezing point		
Boiling point/range	No information available	
Flash point	No information available	PMCC
Evaporation rate (BuAc =1)	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	1.1 - 1.4	
Bulk density	No information available	
Water solubility	Dispersible	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Log Pow	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

9.2 Other information

Pour point	No information available
Molecular weight	No information available
VOC content(%)	No information available
Density	No information available

10. Stability and reactivity

10.1 Reactivity

Combustible material. Dust may form explosive mixture in air.

10.2 Chemical stability

Stable. Hazardous polymerization does not occur.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerization does not occur.

10.4 Conditions to avoid

Avoid contact with heat, sparks, open flame, and static discharge.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Silicon oxide. Carbon oxides (COx).

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation — Inhalation of dust in high concentration may cause irritation of respiratory system. Repeated or prolonged inhalation of crystalline silica dust can cause delayed lung injury, and other diseases, including silicosis and lung cancer.

Eye contact — Dust contact with the eyes can lead to mechanical irritation.

Skin contact — Repeated exposure may cause skin dryness or cracking.

Ingestion — Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Toxicology data for the components

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Polysaccharide	> 5 g/kg (Rat)	> 2 g/kg (Rabbit)	> 5800 mg/m³ (Rat) 4 h
Silica, crystalline, quartz	= 500 mg/kg (Rat)	No data available	No data available

Component	IARC Group 1 or 2	ACGIH - Carcinogens	OSHA listed carcinogens	NTP
Polysaccharide	No data available	No data available	No data available	Known Human Carcinogen

Silica, crystalline, quartz	Group 1; Monograph 100C [2012] Group 1; Monograph 68 [1997] Monograph 100C [2012] (listed under Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources); Monograph 68 [1997]	A2 Suspected Human Carcinogen	Present	Known Human Carcinogen

Sensitization This product does not contain any components suspected to be sensitizing.

Mutagenic effects No evidence of mutagenic properties.

Carcinogenicity Contains a known or suspected carcinogen. Crystalline silica dust is listed by IARC in Group 1 as known to cause lung cancer in humans, if inhaled.

Reproductive toxicity No evidence of toxicity to reproduction.

Developmental toxicity Not known to cause birth defects or have a deleterious effect on a developing fetus.

Routes of exposure Skin contact. Inhalation. Eye contact.

Routes of entry Inhalation.

Specific target organ toxicity (single exposure) Not classified

Specific target organ toxicity (repeated exposure) Not classified.

Aspiration hazard Not Applicable.

12. Ecological information

12.1 Toxicity

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Component	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Polysaccharide (60 - 100)	No information available	No information available	No information available
Silica, crystalline, quartz 14808-60-7 (1 - 5)	No information available	No information available	No information available

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No product level data available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bioaccumulating nor toxic (PBT)
This preparation contains no substance considered to be very persistent nor very bioaccumulating (vPvB)

12.6 Other adverse effects.

None known.

13. Disposal considerations

13.1 Waste treatment methods

Disposal Method	Disposal should be made in accordance with federal, state and local regulations. Keep all sources of ignition away and avoid creating dust conditions. If heavey dusting cannot be avoided, ground all equipment. Empty containers should be handled in a manner not to cause dusting during collection, transporation and disposal.
Contaminated packaging	Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum. Dispose of in accordance with local regulations.

14. Transport information

14.1 UN Number

UN No. (DOT)	Not regulated
UN/ID No. (ADR/RID/ADN/ADG)	Not regulated
UN No. (IMDG)	Not regulated
UN No. (ICAO)	Not regulated

14.2 Proper shipping name

The product is not covered by international regulation on the transport of dangerous goods

14.3 Hazard class(es)

DOT Hazard class	Not regulated
ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

DOT Packing group	Not regulated
ADR/RID/ADN/ADG Packing group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard
Marine pollutant No

14.6 Special precautions
Not Applicable

15. Regulatory information

International inventories

USA (TSCA)	Complies
Canada (DSL)	Complies
European Union (EINECS and ELINCS)	Complies
Philippines (PICCS)	Complies
Japan (ENCS)	Complies
China (IECSC)	Complies
Australia (AICS)	Complies
Korean (KECL)	Complies
New Zealand (NZIoC)	Complies

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories
Delayed (chronic) health hazard.

Component	SARA 302 / TPQs	SARA 313	CERCLA RQ
Polysaccharide	N/A	N/A	N/A
Silica, crystalline, quartz	N/A	N/A	N/A

State Comments
Proposition 65: This product contains chemical(s) considered by the State of California's Safe Drinking Water and Toxic Enforcement Act of 1986 to cause cancer and/or reproductive toxicity. See table under U.S. Federal and State Regulations for the specific chemicals.

Silica, crystalline, quartz
carcinogen

16. Other information

Supersedes date	18/Dec/2014
Revision date	06/Oct/2015
Version	1
The following sections have been revised:	2. Hazards Identification 6. Accidental release measures 7. Handling and storage 13. Disposal considerations 14. Transport information Section 16: Other information.

HMIS classification

Health	1*
Flammability	1
Physical hazard	0

N/A - Not Applicable, N/D - Not Determined.

Disclaimer

The information contained herein is considered in good faith as reliable of the date issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

SDS for Products Identified

in

Attachment D

NALCO Champion
An Ecolab Company

SAFETY DATA SHEET

NALCO® EC6818A

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	NALCO® EC6818A
Other means of identification	:	Not applicable.
Recommended use	:	ODOR CONTROL, Non-Biocide Application Only
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	Nalco Champion Company 7705 Highway 90-A Sugar Land, Texas 77478 USA TEL: (281) 263-7000
Emergency telephone number	:	(800) 424-9300 (24 Hours) CHEMTREC
Issuing date	:	03/20/2015

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Oxidizing liquids	:	Category 3
Skin corrosion	:	Category 1A
Serious eye damage	:	Category 1
Specific target organ toxicity - single exposure	:	Category 3 (Respiratory system, Central Nervous System)

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : May intensify fire; oxidiser.
Causes severe skin burns and eye damage.
May cause respiratory irritation.
May cause drowsiness or dizziness.

Precautionary Statements : **Prevention:**
Keep away from heat. Keep/Store away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. Wash skin thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
IF SWALLOWED: rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated

clothing. Rinse skin with water/ shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician. Wash contaminated clothing before reuse. In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage:
Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Concentration: (%)
Acetic Acid	64-19-7	30 - 60
Peroxyacetic Acid	79-21-0	10 - 30
Hydrogen Peroxide	7722-84-1	10 - 30

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

If swallowed : Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention if symptoms occur.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders.Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media	:	None known.
Specific hazards during firefighting	:	Special protective equipment for firefighters Strong oxidizer when water is removed. Combustibles may catch fire more easily after being wetted by product and dried. May intensify combustion of other materials. Oxidizer. Contact with other material may cause fire. Materials can initiate spontaneous combustion of paper, wood, cloth, and other organic materials. Ignition may be rapid, but can be delayed for several hours. Rapid oxygen evolution from decomposition may increase the intensity of a fire. Clothing may ignite on contact.
Hazardous combustion products	:	Decomposition products may include the following materials: Carbon oxides
Special protective equipment for firefighters	:	In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.
Specific extinguishing methods	:	Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.

Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Stop leak if safe to do so. Never soak up spilled or leaked acids and bases with sawdust, wood chips or similar materials. Isolate the waste do not allow it to come into contact with incompatible materials. For small spills contain with sand or vermiculite and dilute the contained product at least 10 times with water. Transfer to an open topped container and remove to a safe place for neutralization* / disposal. For large spills contain spill and evacuate the area, leave until the reaction subsides, then collect up for disposal. Obtain consent from the local water company / authority if considering discharge to sewer. *NEUTRALIZATION : once diluted, neutralize with a suitable alkali such as sodium bicarbonate.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Do not ingest. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation. Do not mix with bleach or other chlorinated products – will cause chlorine gas.
Conditions for safe storage	:	Keep in a cool, well-ventilated place. Keep away from reducing agents. Keep away from strong bases. Keep away from combustible material. Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers. Pressure bursts may occur due to gas evolution if the container is not adequately vented.

Store between the following temperatures: -10 and 50°C.

Suitable material : The following compatibility data is suggested based on similar product data and/or industry experience: Shipping and long term storage compatibility with construction materials can vary; we therefore recommend that compatibility is tested prior to use.

Unsuitable material : not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Acetic Acid	64-19-7	TWA	10 ppm	ACGIH
		STEL	15 ppm	ACGIH
		STEL	15 ppm 37 mg/m3	NIOSH REL
		TWA	10 ppm 25 mg/m3	NIOSH REL
		TWA	10 ppm 25 mg/m3	OSHA Z1
Hydrogen Peroxide	7722-84-1	TWA	1 ppm	ACGIH
		TWA	1 ppm 1.4 mg/m3	NIOSH REL
		TWA	1 ppm 1.4 mg/m3	OSHA Z1

Engineering measures : Effective exhaust ventilation system Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Safety goggles
Face-shield

Hand protection : Wear the following personal protective equipment:
Standard glove type.
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing

Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid
Colour	:	Clear Colorless
Odour	:	Amine
Flash point	:	96.0 °C Method: closed cup
pH	:	1.8, 100 %
Odour Threshold	:	no data available
Melting point/freezing point	:	no data available
Initial boiling point and boiling range	:	> 100.0 °C
Evaporation rate	:	no data available
Flammability (solid, gas)	:	no data available
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	no data available
Relative vapour density	:	no data available
Relative density	:	1.11 (20.0 °C)
Density	:	9.2 lb/gal
Water solubility	:	completely soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition temperature	:	no data available
Viscosity, dynamic	:	no data available
Viscosity, kinematic	:	no data available
VOC	:	46.6 % Calculation method

Section: 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Do not mix with bleach or other chlorinated products – will cause chlorine gas.
Conditions to avoid	:	Extremes of temperature Direct sources of heat. Exposure to sunlight. Do not allow product to evaporate to dryness. Dried product residue can act as an oxidizer.
Incompatible materials	:	Bases Contact with strong alkalies (e.g. ammonia and its solutions, carbonates, sodium hydroxide (caustic), potassium hydroxide,

calcium hydroxide (lime), cyanide, sulfide, hypochlorites, chlorites) may generate heat, splattering or boiling and toxic vapors.

Hazardous decomposition products : Decomposition products may include the following materials: Carbon oxides

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes : Causes serious eye damage.

Skin : Causes severe skin burns.

Ingestion : Causes digestive tract burns.

Inhalation : May cause respiratory tract irritation. May cause nose, throat, and lung irritation. Inhalation may cause central nervous system effects.

Chronic Exposure : Health injuries are not known or expected under normal use.

Experience with human exposure

Eye contact : Redness, Pain, Corrosion

Skin contact : Redness, Pain, Corrosion

Ingestion : Corrosion, Abdominal pain

Inhalation : Respiratory irritation, Cough, Dizziness, Drowsiness

Toxicity

Product

Acute oral toxicity : Acute toxicity estimate : 2,390 mg/kg

Acute inhalation toxicity : Acute toxicity estimate : 26.44 mg/l
Exposure time: 4 h

Acute dermal toxicity : Acute toxicity estimate : 2,240 mg/kg

Skin corrosion/irritation : no data available

Serious eye damage/eye irritation : no data available

Respiratory or skin sensitization : no data available

Carcinogenicity

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
Reproductive effects	: no data available
Germ cell mutagenicity	: no data available
Teratogenicity	: no data available
STOT - single exposure	: no data available
STOT - repeated exposure	: no data available
Aspiration toxicity	: no data available

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects : Toxic to aquatic life.

Product

Toxicity to fish : LC50 Rainbow Trout: 8.4 mg/l
Exposure time: 96 h
Test substance: Product

NOEC Rainbow Trout: 5.0 mg/l
Exposure time: 96 h
Test substance: Product

LC50 Inland Silverside: 1.3 mg/l
Exposure time: 96 h
Test substance: Product

NOEC Inland Silverside: 4.2 mg/l
Exposure time: 96 h
Test substance: Product

Toxicity to daphnia and other aquatic invertebrates : LC50 Ceriodaphnia dubia: 2.9 mg/l
Exposure time: 48 h
Test substance: Product

NOEC Ceriodaphnia dubia: 1.3 mg/l
Exposure time: 48 h
Test substance: Product

LC50 Mysid Shrimp (Mysidopsis bahia): 10.0 mg/l
Exposure time: 96 h
Test substance: Product

NOEC Mysid Shrimp (Mysidopsis bahia): 5.0 mg/l
Exposure time: 96 h
Test substance: Product

Toxicity to algae : EC50 Pseudokirchneriella subcapitata (green algae): 15.29 mg/l
Exposure time: 96 h
Test substance: Product

IC50 Pseudokirchneriella subcapitata (green algae): 8.78 mg/l
Exposure time: 96 h
Test substance: Product

NOEC Pseudokirchneriella subcapitata (green algae): 3 mg/l
Exposure time: 96 h
Test substance: Product

Components

Toxicity to bacteria : Peroxyacetic Acid
5.1 mg/l

Persistence and degradability

The organic portion of this preparation is expected to be readily biodegradable.

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.
If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air : <5%
Water : 30 - 50%
Soil : 50 - 70%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

This preparation or material is not expected to bioaccumulate.

Other information

no data available

Section: 13. DISPOSAL CONSIDERATIONS

The information presented only applies to the material as supplied. The classification or waste code may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Hazardous Waste: : D002, D001

Disposal methods	:	The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport (DOT)

The presence of an RQ component (Reportable Quantity for U.S. EPA and DOT) in this product causes it to be regulated with an additional description of RQ for road, or as a class 9 for road and air, ONLY when the net weight in the package exceeds the calculated RQ for the product.

Proper shipping name	:	ORGANIC PEROXIDE TYPE F, LIQUID
Technical name(s)	:	PEROXYACETIC ACID
UN/ID No.	:	UN 3109
Transport hazard class(es)	:	5.2 , 8
Packing group	:	II
Reportable Quantity (per package)	:	660 lbs
RQ Component	:	PEROXYACETIC ACID

Air transport (IATA)

The presence of an RQ component (Reportable Quantity for U.S. EPA and DOT) in this product causes it to be regulated with an additional description of RQ for road, or as a class 9 for road and air, ONLY when the net weight in the package exceeds the calculated RQ for the product.

Proper shipping name	:	ORGANIC PEROXIDE TYPE F, LIQUID
Technical name(s)	:	Peroxyacetic Acid
UN/ID No.	:	UN 3109
Transport hazard class(es)	:	5.2 , 8
Packing group	:	II
Reportable Quantity (per package)	:	660 lbs
RQ Component	:	PEROXYACETIC ACID

Sea transport (IMDG/IMO)

Proper shipping name	:	ORGANIC PEROXIDE TYPE F, LIQUID
Technical name(s)	:	PEROXYACETIC ACID
UN/ID No.	:	UN 3109
Transport hazard class(es)	:	5.2 , 8
Packing group	:	II

Section: 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Acetic Acid	64-19-7	5000	15924

SARA 304 Extremely Hazardous Substances Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Peroxyacetic Acid	79-21-0	500	3289

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard

SARA 302 : The following components are subject to reporting levels established by SARA Title III, Section 302:
Peroxyacetic Acid Proprietary

Hydrogen Peroxide 7722-84-1

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:
Peroxyacetic Acid 79-21-0 10 - 30 %

California Prop 65
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

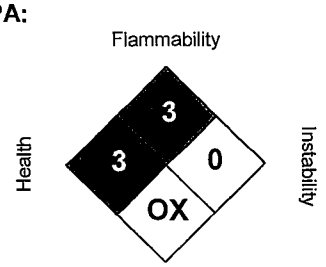
INTERNATIONAL CHEMICAL CONTROL LAWS :

TOXIC SUBSTANCES CONTROL ACT (TSCA)
The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)
The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

Section: 16. OTHER INFORMATION

NFPA:



Special hazard.

HMIS III:

HEALTH	3
FLAMMABILITY	3
PHYSICAL HAZARD	1

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date	: 03/20/2015
Version Number	: 1.0
Prepared By	: Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
For additional copies of an MSDS visit www.nalco.com and request access.

MTS-Stimulation Services, Inc.

Safety Data Sheet

Version: 2
Revision Date: 07/08/2013

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name	: MISOL (Acidizing Solvent)
Trade name	: Surfatron DP-99
Chemical family	: Blends

1.2 Relevant identified uses of the substance or mixture and uses advised against

Acidizing Solvent

1.3 Details of the supplier of the safety data sheet

Company identification	: MTS Simulation Services, Inc. 7131 Charity Avenue Bakersfield California 93308 U.S.A.
Manufacturer / Distributor	: Champion Technologies, Inc. Houston, TX
Product Information	: 1-661-589-5805
CHEMTREC	: 1-800-424-9300
Email	: msds@mts-stim.com
Website	: http://www.mts-stim.com

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

H224	: Flammable liquids (Category 1)
H350	: Carcinogenicity (Category 1A)
H301	: Acute toxicity, Oral (Category 3)
H331	: Acute toxicity, Inhalation (Category 3)
H311	: Acute toxicity, Dermal (Category 3)
H315	: Skin irritation (Category 2)
H319	: Eye irritation (Category 2)
H370	: Specific target organ toxicity - single exposure (Category 1)

For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification according to EU Directives 67/548/EEC or 1999/45/EC

R10, R23/24/25, R39/23/24/25, R45, R36/38

For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements

Labeling according to Regulation (EC) No 1272/2008

The product is classified and labeled according to the CLP regulation.

Hazard pictograms

Signal word
Warning

Hazard statement (s)

H224	: Extremely flammable liquid and vapor
H301	: Toxic if swallowed
H331	: Toxic if inhaled
H311	: Toxic in contact with skin
H315	: Causes skin irritation
H319	: Causes serious eye irritation
H370	: Causes damage to organs

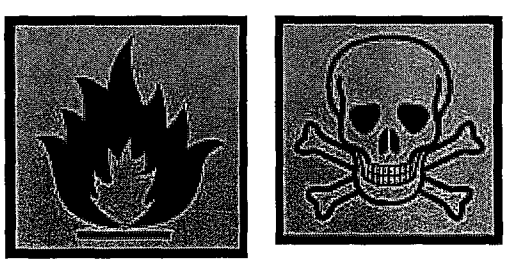
Precautionary statement (s)

P210	: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260	: Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P280	: Wear protective gloves/ protective clothing.
P301 + P310	: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P304 + P340	: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for Breathing.
P303 + P361 + P353	: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P305 + P351 + P338	: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P309 + P311	: IF exposed or you feel unwell: Call a POISON CENTER or doctor/physician.

Hazard-determining components of labeling:
Contains: Methanol; 2-Butoxyethanol & Xylene

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Symbol (s)



Signal word
Danger

Risk Phrase (s)

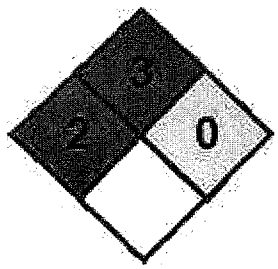
R12	: Extremely flammable.
R23/24/25	: Toxic by inhalation, in contact with skin & if swallowed.
R39	: Danger of very serious irreversible effects.
R45	: May cause cancer.
R36/38	: Irritating to eyes & Skin.

Safety Phrase (s)

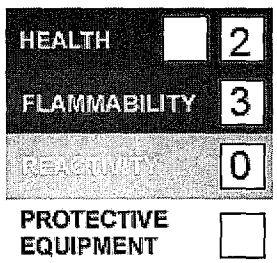
S7	: Keep container tightly closed.
S16	: Keep away from sources of ignition - No smoking.
S36/37/39	: Wear suitable protective clothing, gloves and eye/face protection
S45	: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S46	: If swallowed, seek medical advice immediately and show this container or label.
S24/25	: Avoid any inhalation, contact with skin and eyes.

2.3 Other Hazards
Rapidly absorbed through skin. (2-Butoxyethanol)

NFPA



HMIS



3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical characterization: Mixtures

Hazardous ingredients according to Regulation (EC) No 1272/2008

CAS-No. / EC-No.	Amount	Component	Classification: REGULATION (EC) No 1272/2008
CAS-No. 67-56-1	30.0 - 60.0 %	Methanol	H225: Flammable liquids (Category 2) H301: Acute toxicity, Oral (Category 3) H311: Acute toxicity, Dermal (Category 3)
EC-No.			H331: Acute toxicity, Inhalation (Category 3)

200-659-6			H370: Specific target organ toxicity – single exposure (Category 1)
CAS-No. 111-76-2 **EC-No.** 203-905-0	10.0 - 30.0 %	2-Butoxyethanol	H302: Acute toxicity, Oral (Category 4) H312: Acute toxicity, Dermal (Category 4) H315: Skin irritation (Category 2) H319: Eye irritation (Category 2) H332: Acute toxicity, Inhalation (Category 4)
CAS-No. Proprietary **EC-No.** Proprietary	1.0 – 5.0 %	Amide Surfactant	No data available
CAS-No. Proprietary **EC-No.** Proprietary	1.0 – 5.0 %	Nonylphenol ethoxylate	No data available
CAS-No. Proprietary **EC-No.** Proprietary	10.0 - 30.0 %	Amide Surfactant, Phosphate Ester Salt	No data available
CAS-No. Proprietary **EC-No.** Proprietary	1.0 – 5.0 %	Amide Surfactant, Phosphate Acid Salt	No data available

For the full text of the H-Statements mentioned in this Section, see Section 16.

Hazardous ingredients according to Directive 1999/45/EC

CAS-No. / EC-No.	**Amount**	**Component**	**Classification: 67/548/EEC**
CAS-No. 67-56-1 **EC-No.** 200-659-6	30.0 - 60.0 %	Methanol	F, T, R11 - R23/24/25 - R39/23/24/25
CAS-No. 111-76-2 **EC-No.** 203-905-0	10.0 - 30.0 %	2-Butoxyethanol	Xn R20/21/22, Xi R36/38
CAS-No. Proprietary **EC-No.** Proprietary	1.0 – 5.0 %	Amide Surfactant	No data available
CAS-No. Proprietary	1.0 – 5.0 %	Nonylphenol ethoxylate	No data available

EC-No. Proprietary			
CAS-No. Proprietary	10.0 - 30.0 %	Amide Surfactant, Phosphate Ester Salt	No data available
EC-No. Proprietary			
CAS-No. Proprietary	1.0 – 5.0 %	Amide Surfactant, Phosphate Acid Salt	No data available
EC-No. Proprietary			

For the full text of the Risk Phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General information
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

After inhalation
Get medical attention immediately. Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

After skin contact
Get medical attention immediately. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

After eye contact
Get medical attention immediately. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

After swallowing
Get medical attention immediately. Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person.

Protection of first-aiders
No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Information for doctor
No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

4.2 Most important symptoms and effects, both acute and delayed

No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media:
Use dry chemical, CO2, water spray (fog) or foam.

Not suitable
Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. This material is toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous combustion products
carbon dioxide, carbon monoxide

5.3 Advice for firefighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

5.4 Further information

Flash point 53 °F (11.7 °C), Pensky-Martens. Closed cup

Flammability of the product
Highly flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

6.2 Environmental precautions

Avoid contact of spilled material with soil and prevent runoff entering surface waterways. Inform the relevant authorities if the product has caused environmental pollution (sewers ,waterways, soil or air). Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

6.3 Methods and material for containment and cleaning up

Small Spill
Stop leak, if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tool and explosion proof equipment. Dispose of via a licensed waste disposal contractor.

Large Spill
Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal

6.4 Reference to other sections

See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Use only with adequate ventilation. Put on appropriate personal protective equipment (see section 8). Wear appropriate respirator when ventilation is inadequate. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Avoid release to the environment. Do not enter storage areas and confined spaces unless adequately ventilated. Eliminate all ignition sources. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container. Workers should wash hands and face before eating, drinking and smoking.

7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Keep container in a well-ventilated area. Store in the original container or an approved alternative made from a compatible material. Keep tightly closed when not in use. Separate from oxidizing materials. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

7.3 Specific end uses

No data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Name	Source	Type	ppm	Mg/m3
Methanol	ACGIH	TWA STEL	200 ppm 250 ppm	
	OSHA PEL	TWA	200 ppm	260 mg/m3
	NIOSH	IDLH	6000 ppm	

2-Butoxyethanol	ACGIH	TWA	20 ppm	
	OSHA PEL	TWA	25 ppm	120 mg/m3
		TWA(Skin)	50 ppm	240 mg/m3
	NIOSH	IDLH	700 ppm	
		TWA	5 ppm	24 mg/m3

SKIN - Skin absorption can contribute significantly to overall exposure.

8.2 Exposure controls

Appropriate engineering controls

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Personal protective equipment

Eye/face protection: Tightly fitting safety goggles. Face shield (8-inch minimum) other full-face protection should be worn if there is a risk of direct exposure to aerosols or splashes. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. Follow general industrial hygiene practice. Use chemical-resistant, impervious gloves.

Body Protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory : If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Emergency baths, showers, or other equipment appropriate for the potential level of exposure should be located close to the workstation location.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance form	: Clear yellow liquid
Odor	: Sweet
Odor threshold	: No data available
Ph	: 6.5 – 7.5 ,Method (1 - 10% in deionized water)

Melting point / freezing point	: No data available
Initial boiling point and boiling range	: No data available
Flash point	: 53 °F (12 °C) PMCC
Evaporation rate	: No data available
Flammability (solid, gas)	: No data available
Upper/lower flammability or explosive limits	: No data available
Vapor pressure (mm Hg)	: No data available
Vapor density (AIR=1)	: Not applicable
Relative density @ 75 °F (24 °C)	: 0.8643 – 0.8743 @ 75 °F (23.9 °C)
Water solubility	: Soluble
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	:
Kinematic	No data available
Dynamic	5 – 20 cPs @ 75 °F (23.9 °C)
Pour Point	: -40 °F (-40 °C)
Explosive properties	: No data available
Oxidizing properties	: No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available.

10.2 Chemical stability

The product is stable.

10.3 Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous polymerization will not occur.

10.4 Conditions to avoid

Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Avoid release to the environment. Refer to special instructions/safety data sheet.

10.5 Incompatible materials

oxidizing materials

10.6 Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Methanol – Classification- not applciable

LD50 Oral	Rat	5,600 mg/kg
LD50 Oral	Mouse	5,800 mg/kg
LD50 Oral	Rabbit	14,200 mg/kg
LC50 Inhalation	Mouse	41000 ppm
LC50 Inhalation	Rat	64000 ppm
LD50 Inhalation	Rabbit	81,000 mg/m3
LD50 Dermal	Rabbit	15,800 mg/kg

2-Butoxyethanol - Classification- not applciable

LD50 Oral	Rabbit	300 mg/kg
LD50 Oral	Rat	470 mg/kg
LD50 Oral	Mouse	1,167 mg/kg
LC50 Oral	Guinea Pig	1,200 ppm
LC50 Inhalation	Rat	450 ppm
LD50 Inhalation	Mouse	700 mg/m3
LD50 Dermal	Rabbit	220 mg/kg

Skin corrosion/irritation

Methanol

Skin – rabbit - No skin irritation

2-Butoxyethanol

Causes Skin Irritation (Skin irritation Category 2)

Amide Surfactant

No data available

Nonylphenol ethoxylate

No data available

Amide Surfactant, Phosphate Ester Salt

No data available

Amide Surfactant, Phosphoric Acid Salt

No data available

Serious eye damage/eye irritation

Methanol

No data available

2-Butoxyethanol

Eyes - rabbit - Moderate eye irritation - 24 h

Amide Surfactant

No data available

Nonylphenol ethoxylate

No data available

Amide Surfactant, Phosphate Ester Salt

No data available

Amide Surfactant, Phosphoric Acid Salt
No data available

Respiratory or skin sensitization

Methanol
Maximization test - guinea pig- does not cause skin sensitization. (OECD Test Guideline 406)

2-Butoxyethanol
No data available.

Amide Surfactant
No data available

Nonylphenol ethoxylate
No data available

Amide Surfactant, Phosphate Ester Salt
No data available

Amide Surfactant, Phosphoric Acid Salt
No data available

Germ cell mutagenicity

Hydrochloric acid
No data available.

Methanol
No data available.

2-Butoxyethanol
No data available.

Amide Surfactant
No data available

Nonylphenol ethoxylate
No data available

Amide Surfactant, Phosphate Ester Salt
No data available

Amide Surfactant, Phosphoric Acid Salt
No data available

Carcinogenicity

Methanol
IARC: No components of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

2-Butoxyethanol

ACGIH	A3	Confirmed animal carcinogen with unknown relevance to humans.
IARC	3	Classification not possible from current data.

Amide Surfactant
No data available

Nonylphenol ethoxylate
No data available

Amide Surfactant, Phosphate Ester Salt
No data available

Amide Surfactant, Phosphoric Acid Salt
No data available

Reproductive toxicity

Methanol
Damage to fetus not classifiable. Fertility classification not possible from current data

2-Butoxyethanol
Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.

Amide Surfactant
No data available

Nonylphenol ethoxylate
No data available

Amide Surfactant, Phosphate Ester Salt
No data available

Amide Surfactant, Phosphoric Acid Salt

No data available

Specific target organ toxicity - single exposure

Methanol

Damage to fetus not classifiable. Fertility classification not possible from current data

2-Butoxyethanol

Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.

Amide Surfactant

No data available

Nonylphenol ethoxylate

No data available

Amide Surfactant, Phosphate Ester Salt

No data available

Amide Surfactant, Phosphoric Acid Salt

No data available

Specific target organ toxicity - repeated exposure

Methanol

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

2-Butoxyethanol

No data available.

Aspiration hazard

Methanol

No data available.

2-Butoxyethanol

No data available.

Amide Surfactant

No data available

Nonylphenol ethoxylate

No data available

Amide Surfactant, Phosphate Ester Salt

No data available

Amide Surfactant, Phosphoric Acid Salt

No data available

Other Information

Methanol

May be fatal or cause blindness if swallowed. Effects due to ingestion may include: headache, dizziness, drowsiness, metabolic acidosis, coma, seizures. Symptoms may be delayed. Damage of the: liver, kidney, central nervous system , breathing difficulties - based on human evidence

2-Butoxyethanol

No data available.

Amide Surfactant

No data available

Nonylphenol ethoxylate

No data available

Amide Surfactant, Phosphate Ester Salt

No data available

Amide Surfactant, Phosphoric Acid Salt

No data available

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity:

Methanol		
	Toxicity to fish	LC50 - Lepomis macrochirus (Bluegill) - 15.400,0 mg/l - 96 h
		NOEC - Oryzias latipes - 7.900 mg/l - 200 h
	Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - > 10.000,00 mg/l - 48 h
	Toxicity to algae Growth inhibition	EC50 - Scenedesmus capricornutum (fresh water algae) - 22.000,0 mg/l - 96 h
2-Butoxyethanol		
	Toxicity to fish	LC50 - other fish - 220 mg/l - 96 h
	Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 1.815 mg/l - 24 h
Amide Surfactant		
	No data available	
Nonylphenol ethoxylate		
	No data available	
Amide Surfactant, Phosphate Ester Salt		
	No data available	
Amide Surfactant, Phosphoric Acid Salt		
	No data available	

12.2 Persistence and degradability

Behavior in environmental systems:

Methanol	Readily biodegradable 99% (OECD Test Guideline 301D , 30 day) BOD: 600-1200 mg/g (IUCLID) COD: 1400 mg/g (IUCLID)
2-Butoxyethanol	No data available
Amide Surfactant	
	No data available
Nonylphenol ethoxylate	
	No data available
Amide Surfactant, Phosphate Ester Salt	
	No data available
Amide Surfactant, Phosphoric Acid Salt	
	No data available

12.3 Bio accumulative potential

Methanol	Not expected (experimental log Pow: -0.77)
2-Butoxyethanol	No data available
Amide Surfactant	
	No data available
Nonylphenol ethoxylate	

No data available

Amide Surfactant, Phosphate Ester Salt

No data available

Amide Surfactant, Phosphoric Acid Salt

No data available

12.4 Mobility in Soil

Methanol	No data available
2-Butoxyethanol	No data available

Amide Surfactant

No data available

Nonylphenol ethoxylate

No data available

Amide Surfactant, Phosphate Ester Salt

No data available

Amide Surfactant, Phosphoric Acid Salt

No data available

12.5 Results of PBT and vPvB assessment

PBT	: No data available
vPvB	: No data available

12.6 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. Advice on disposal - do not dump into any sewers, on the ground, or into any body of water.

14. TRANSPORT INFORMATION

14.1 UN number

ADR/RID, IMDG, IATA : UN 1993

14.2 UN proper shipping name

ADR/RID, IMDG, IATA : Flammable liquids, n.o.s. (Methanol, 2-Butoxyethanol)

14.3 Transport hazard class (es)

ADR/RID, IMDG, IATA : Class 3

14.4 Packaging group

ADR/RID, IMDG, IATA : PG II

14.5 Environmental hazards

Marine pollutant : No

14.6 Special precautions for user
No data available.

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

No data available.

15.2 Chemical safety assessment

No data available.

15.3 OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	No
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

SARA Title III Section 302 Extremely hazardous substances (40 CFR Part 355):
This product contains no components listed which require reporting under this statute.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This product contains the below components listed which require reporting under this statute.

Methanol	30.0 - 60.0 %
2-Butoxyethanol	10.0 – 30.0 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
This product contains the below components listed which require reporting under this statute.

Methanol	30.0 - 60.0 %
Xylene	0.1 – 1.0 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
This product contains the below components listed which require reporting under this statute.

Methanol	30.0 - 60.0 %

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains the below components listed which require reporting under this statute.

Component	Toxicity	No significant risk level	Maximum acceptable dosage level
Ethylbenzene	Cancer- Yes, Reprotox - No	No	No
Toluene	Cancer- No, Reprotox - Yes	No	13000 µg/day
	Cancer- No, Reprotox - Yes	No	7000 µg/day
Benzene	Cancer- Yes, Reprotox - No	6.4 µg/day	No
	Cancer- Yes, Reprotox - No	No	24 µg/day
	Cancer- Yes, Reprotox - No	No	49 µg/day
	Cancer- Yes, Reprotox - No	13 µg/day	No
Ethylene Oxide	Cancer- Yes, Reprotox - Yes	2 µg/day	No
	Cancer- Yes, Reprotox - Yes	No	20 µg/day

US. Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

CERCLA: Hazardous substances - Reportable quantity:

Substance	Reportable quantity
Methanol	5000 lbs
2-Butoxyethanol	N/A

Product Reportable quantity	Substance
9,086 lb, 1,235 gal US	Methanol

Product spills equal to or exceeding the threshold above trigger the reporting requirements under CERCLA for the listed hazardous substance. Report the spill or release to the National Response Center (NRC) at (800) 424-8802.

Clean Water Act (CWA) 307:
The following components are listed: Ethylbenzene. Toluene. Benzene.

Clean Water Act (CWA) 311:
The following components are listed: Xylene. Ethylbenzene. Toluene. Sulfuric acid. Benzene.

Clean Air Act (CAA) 112 accidental release prevention:
The following components are listed: Sulfur dioxide. Ethylene oxide.

Clean Air Act (CAA) 112 regulated flammable substances:
None of the components are listed.

Clean Air Act (CAA) 112 regulated toxic substances:
None of the components are listed.

Massachusetts Spill:
None of the components are listed

Massachusetts Substances:
The following components are listed: Methanol. 2-Butoxyethanol.

New Jersey Hazardous Substances:
The following components are listed: 2-Butoxyethanol. Methanol.

New Jersey Spill:
None of the components are listed.

New Jersey Toxic Catastrophe Prevention Act:
None of the components are listed.

Canadian WHMIS
Class B2 — Flammable Liquids: Flashpoint of < 37.8°C (100°F)
D1B - Poisonous and infectious material - Immediate and serious effects - Toxic
D2A - Poisonous and infectious material - Other effects - Very toxic
D2B - Poisonous and infectious material - Other effects - Toxic
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

16. OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases

Hazard statement (s)

H224	: Extremely flammable liquid and vapor
H350	: May cause cancer
H301	: Toxic if swallowed
H331	: Toxic if inhaled
H311	: Toxic in contact with skin
H315	: Causes skin irritation
H319	: Causes serious eye irritation
H370	: Causes damage to organs

Precautionary statement (s)

P210	: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260	: Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P280	: Wear protective gloves/ protective clothing.
P301 + P310	: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P304 + P340	: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for Breathing.
P303 + P361 + P353	: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P305 + P351 + P338	: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P309 + P311	: IF exposed or you feel unwell: Call a POISON CENTER or doctor/physician

Risk Phrases

R12	: Extremely flammable
R23/24/25	: Toxic by inhalation, in contact with skin & if swallowed
R39	: Danger of very serious irreversible effects
R45	: May cause cancer
R36/38	: Irritating to eyes & skin

Safety Phrases

S7	: Keep container tightly closed.
S16	: Keep away from sources of ignition - No smoking.
S36/37/39	: Wear suitable protective clothing, gloves and eye/face protection.
S45	: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S46	: If swallowed, seek medical advice immediately and show this container or label
S24/25	Avoid any inhalation, contact with skin and eyes.

Abbreviations and acronyms:

ADR	Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road).
RID	Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail).
IMDG	International Maritime Code for Dangerous Goods
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
PBT	Persistent Bioaccumalative Toxic chemical
vPvB	Very Persistent and Very Bioaccumulative
OSHA	Occupational Safety and Health Administration
ACGIH	American Conference of Governmental Industrial Hygienists
TLV(s)	Threshold Limit Values
STEL	Short term exposure limit
NIOSH	National Institute for Occupational Safety and Health.
LDLo	lethal dose low
TCLo	Lowest published toxic concentration
IARC	International Agency For Research On Cancer
NTP	National Toxicology Program
EPA	Environment Protection Agency
EC	European Commission
EU	European Union
CLP	Classification, labeling and Packaging of substances
PG	Packing Group

MSDS Issuing Department: Safety

MSDS ID #104402.12

DISCLAIMER:
This information was obtained from sources MTS-Simulation Service, Inc. believes to be reliable. However, the information is provided without any warranty, express or implied, regarding its thoroughness and accuracy. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For these reasons sources MTS-Simulation Service, Inc. does not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of, or in any way connected with the handling, storage, use or disposal of the product. This information was prepared for this product only. If the product is used as a component in another product some of the information may not apply.

MTS-Stimulation Services, Inc.

Safety Data Sheet

Version: 2
Revision Date: 07/08/2013

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name	: AI-205
Trade name	: Cortron RA-501
CAS	: Mixture
EC#	: Not Applicable

1.2 Relevant identified uses of the substance or mixture and uses advised against

Corrosion Inhibitor

1.3 Details of the supplier of the safety data sheet

Company identification	: MTS Simulation Services, Inc. 7131 Charity Avenue Bakersfield California 93308 U.S.A.
Manufacturer / Distributor	: Champion Technologies, Inc. Houston, TX
Product Information	: 1-661-589-5805
CHEMTREC	: 1-800-424-9300
Email	: msds@mts-stim.com
Website	: http://www.mts-stim.com

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

H225	: Flammable liquids (Category 3)
H301	: Acute toxicity, Oral (Category 3)
H311	: Acute toxicity, Dermal (Category 3)
H331	: Acute toxicity, Inhalation (Category 3)
H370	: Specific target organ toxicity - single exposure (Category 1)
H318	: Serious eye damage / eye irritation (Category 1)
H411	: Aquatic Chronic (Category 2)

For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification according to EU Directives 67/548/EEC or 1999/45/EC

R11, R39/23/24/25, R41, R36/38 R51/53.

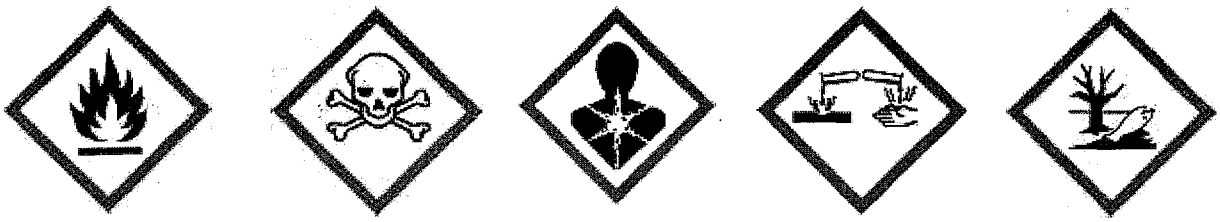
For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements

Labeling according to Regulation (EC) No 1272/2008

The product is classified and labeled according to the CLP regulation.

Hazard pictograms



Signal word

Danger

Hazard statement (s)

H225	: Highly flammable liquid and vapor
H301	: Toxic if swallowed
H311	: Toxic in contact with skin
H331	: Toxic if inhaled
H370	: Causes damage to organs
H318	: Causes serious eye damage
H411	: Toxic to aquatic life with long lasting effects

Precautionary statement (s)

P210	: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260	: Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P280	: Wear protective gloves/ protective clothing.
P301 + P310	: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P304 + P340	: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for Breathing.
P303 + P361 + P353	: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. rinse skin with water/shower
P305 + P351 + P338	: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P309 + P311	: IF exposed or you feel unwell: Call a POISON CENTER or doctor/physician
P273	: Avoid release to the environment

Hazard-determining components of labeling:

Contains: methanol, acetophenone, ethyl octynol, propargyl alcohol, isoquinoline, quinaldine

Classification according to EU Directives 67/548/EEC or 1999/45/EC Symbol (s)

Signal word
Toxic

Risk Phrase (s)

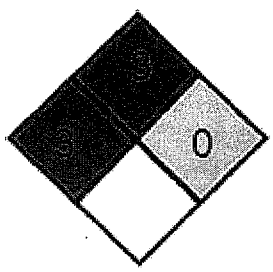
R11	: Highly Flammable.
R23/24/25	: Toxic by inhalation, in contact with skin & if swallowed.
R39	: Danger of very serious irreversible effects.
R36/38	: Irritating to eyes & skin
R41	: Risk of serious damage to the eyes.
R51/53	: Toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

Safety Phrase (s)

S7	: Keep container tightly closed.
S16	: Keep away from sources of ignition - No smoking.
S36/37/39	: Wear suitable protective clothing, gloves and eye/face protection
S45	: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S46	: If swallowed, seek medical advice immediately and show this container or label.
S24/25	: Avoid any inhalation, contact with skin and eyes.
S61	: Avoid release to the environment. Refer to special instructions/safety data sheet

2.3 Other Hazards
None

NFPA Rating



HMIS Rating

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical characterization: Mixture

Hazardous ingredients according to Regulation (EC) No 1272/2008

CAS-No. / EC-No.	Amount	Component	Classification: REGULATION (EC) No 1272/2008
CAS-No. 67-56-1 **EC-No.** 200-659-6	30.0 - 60.0 %	Methanol	H225: Flammable liquids (Category 2) H301: Acute toxicity, Oral (Category 3) H311: Acute toxicity, Dermal (Category 3) H331: Acute toxicity, Inhalation (Category 3) H370: Specific target organ toxicity – single exposure (Category 1)
CAS-No. Proprietary **EC-No.** Proprietary	10.0 - 30.0 %	Aromatic Amines	No data available
CAS-No. Proprietary **EC-No.** Proprietary	5.0 - 10.0 %	Nonylphenol Ethoxylate	No data available
CAS-No. 107-19-7 **EC-No.** 203-471-2	1.0 – 5.0 %	Propargyl alcohol	H226 Flammable liquids (Category 3) H301 Acute toxicity, Swallowed (Category 3) H311 Acute toxicity, Dermal (Category 3) H314 Skin corrosion (Category 1B) H331 Acute toxicity, Inhalation (Category 3) H411 Chronic aquatic toxicity (Category 2)
CAS-No. 119-65-3 **EC-No.** 204-341-8	1.0 – 5.0 %	Isoquinoline	H302 Acute toxicity, Oral (Category 4) H310 Acute toxicity, Dermal (Category 2) H315 Skin irritation (Category 2)
CAS-No. 8002-09-3 **EC-No.** 232-688-5	1.0 – 5.0 %	Terpene hydrocarbon	H315 Skin Irr. (Category 2) H319 Eye Irr. (Category 2)
CAS-No. 91-63-4 **EC-No.** 202-051-6	1.0 – 5.0 %	Quinaldine	H302 Acute toxicity, Oral (Category 4), H312 Acute toxicity, Dermal (Category 4)
CAS-No. 5877-42-9 **EC-No.** 227-545-9	1.0 – 5.0 %	Ethyl Octynol	H311 Acute toxicity, Dermal (Category 3), H400 Acute aquatic toxicity (Category 1),

CAS-No. Proprietary	5.0 - 10.0 %	Aromatic Amines, TOFA Salt	No data available
EC-No. Proprietary			

For the full text of the H-Statements mentioned in this Section, see Section 16.

Hazardous ingredients according to Directive 1999/45/EC

CAS-No. / EC-No.	Amount	Component	Classification: REGULATION (EC) No 1272/2008
CAS-No. 67-56-1	30.0 - 60.0 %	Methanol	F, T, R11 - R23/24/25 - R39/23/24/25
EC-No. 200-659-6			
CAS-No. Proprietary	10.0 - 30.0 %	Aromatic Amines	No data available
EC-No. Proprietary			
CAS-No. Proprietary	5.0 - 10.0 %	Nonylphenol Ethoxylate	No data available
EC-No. Proprietary			
CAS-No. 107-19-7	1.0 – 5.0 %	Propargyl alcohol	R10 T R23/24/25, CR34 , NR51/53
EC-No. 203-471-2			
CAS-No. 119-65-3	1.0 – 5.0 %	Isoquinoline	Xn R22, R24, Xi R38
EC-No. 204-341-8			
CAS-No. 8002-09-3	1.0 – 5.0 %	Terpene hydrocarbon	Xi R36/38
EC-No. 232-688-5			
CAS-No. 91-63-4	1.0 – 5.0 %	Quinaldine	Xn R21/22
EC-No. 202-051-6			

CAS-No. 5877-42-9 **EC-No.** 227-545-9	1.0 – 5.0 %	Ethyl Octynol	T, N, R22 - R24 - R50/53
CAS-No. Proprietary **EC-No.** Proprietary	5.0 - 10.0 %	Aromatic Amines, TOFA Salt	No data available

For the full text of the Risk Phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General information

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

After inhalation

Get medical attention immediately. Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

After skin contact

Get medical attention immediately. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

After eye contact

Get medical attention immediately. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

After swallowing

Get medical attention immediately. Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person.

Protection of first-aiders

No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Information for doctor

No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

4.2 Most important symptoms and effects, both acute and delayed

No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5. FIREFIGHTING MEASURES

Highly flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

5.1 Extinguishing media

Suitable extinguishing media: use water spray(fog), alcohol-resistant foam, dry chemical or carbon dioxide. Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. This material is harmful to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. Hazardous combustion products may include carbon monoxide, carbon dioxide and nitrogen oxides.

5.3 Advice for firefighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

5.4 Further information

No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

6.2 Environmental precautions

Avoid contact of spilled material with soil and prevent runoff entering surface waterways. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

6.3 Methods and material for containment and cleaning up

Small Spill

Stop leak, if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tool and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large Spill

Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

6.4 Reference to other sections

See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Use only with adequate ventilation. Put on appropriate personal protective equipment (see section 8). Wear appropriate respirator when ventilation is inadequate. Eating, drinking, smoking should be prohibited in areas where this material is handled, stored and processed. Avoid exposure – obtain special instructions before use. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not enter storage areas and confined spaces unless adequately ventilated. Eliminate all ignition sources. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container. Workers should wash hands and face before eating, drinking and smoking.

7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Keep container in a well-ventilated area. Store in the original container or an approved alternative made from a compatible material. Keep tightly closed when not in use. Separate from oxidizing materials. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination..

7.3 Specific end uses

No data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Name	Source	Type	ppm	Mg/m3
Methanol	OSHA PEL	TWA	200 ppm	260 mg/m3
	NIOSH REL SKIN	TWA	200 ppm	260 mg/m3
		STEL	250 ppm	325 mg/m3
	ACGIH TLV SKIN	TWA	200 ppm	262 mg/m3
		STEL	250 ppm	328 mg/m3
Propargyl alcohol	ACGIH TLV SKIN	TWA	1 ppm	2.3 mg/m3
	NIOSH REL SKIN	TWA	1ppm	2 mg/m3

SKIN - Skin absorption can contribute significantly to overall exposure

8.2 Exposure controls

Appropriate engineering controls

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Personal protective equipment

Eye/face protection: Goggles, face shield or other full-face protection should be worn if there is a risk of direct exposure to aerosols or splashes.

Hand protection: Use chemical-resistant, impervious gloves.

Body Protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory Protection: If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hygiene measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Emergency baths, showers, or other equipment appropriate for the potential level of exposure should be located close to the workstation location.

Environmental exposure controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance form	: Opaque Black liquid
Odor	: Strong, Pungent
Odor threshold	: No data available
pH	: 5.2 – 6.2 (1:1 in Deionized Water)
Melting point / freezing point	: No data available
Initial boiling point and boiling range	: No data available
Flash point	: <62°F (<16.7°C) PMCC
Evaporation rate	: No data available
Flammability (solid, gas)	: No data available
Upper/lower flammability or explosive limits	: No data available
Vapor pressure (mm Hg)	: No data available
Vapor density (AIR=1)	: No data available
Relative density	: 0.9232 – 0.9532 @ 68 °F (20 °C)
Water solubility	: Soluble
Partition coefficient: n-octanol/water	: No data available

Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	:
Kinematic	No data available
Dynamic	3 - 9 cPs @ 68°F (20°C)
Pour Point	: - 40 °F (- 40 °C)
Explosive properties	: No data available
Oxidizing properties	: No data available

Note: Typical values only - not to be interpreted as sales specifications

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available.

10.2 Chemical stability

The product is stable.

10.3 Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous polymerization will not occur.

10.4 Conditions to avoid

Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Avoid exposure - obtain special instructions before use.

10.5 Incompatible materials

Oxidizing materials

10.6 Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Methanol		
LD50 Oral	Rat	5,600 mg/kg
LD50 Oral	Mouse	5,800 mg/kg
LD50 Oral	Rabbit	14,200 mg/kg
LC50 Inhalation	Mouse	41000 ppm
LC50 Inhalation	Rat	64000 ppm

LC50 Inhalation	Rabbit	81,000 mg/m3
LD50 Dermal	Rabbit	15,800 mg/kg

Aromatic Amines

LD50 Oral	Rat	737 mg/kg
LD50 Dermal	Rabbit	>2000 mg/kg

Nonylphenol Ethoxylate

LD50 Oral	Rat	3310 mg/kg
LD50 Dermal	Rabbit	>2000 mg/kg

Propargyl Alcohol

LD50 Oral	Rat	20 mg/kg
LD50 Oral	Mouse	50 mg/kg
LD50 Oral	Guinea Pig	60 mg/kg

Ethyl Octynol

LD50 Oral	Rat	174 mg/kg

Isoquinoline

No data available

Aromatic Amine, TOFA Salt

No data available

Terpene hydrocarbon

No data available

Quinaldine

No data available

Skin corrosion/irritation

Methanol

Skin	Rabbit	No skin irritation.

Aromatic Amines

Skin	Rabbit	4 hours Moderately irritating to the skin

Isoquinoline

No data available

Terpene hydrocarbon

No data available

Quinaldine

No data available

Nonylphenol Ethoxylate

No data available

Ethyl Octynol

No data available

Propargyl alcohol

No data available

Aromatic Amine, TOFA Salt

No data available

Serious eye damage/eye irritation

Methanol

Eye	Rabbit	No Eye irritation.

Aromatic Amines
No data available

Isoquinoline
No data available

Terpene hydrocarbon
No data available

Quinaldine
No data available

Nonylphenol Ethoxylate
No data available

Ethyl Octynol
No data available

Propargyl alcohol
No data available

Aromatic Amine, TOFA Salt
No data available

Respiratory or skin sensitization

Methanol
Maximization test - guinea pig- does not cause skin sensitization. (OECD Test Guideline 406)

Aromatic Amines
No data available

Isoquinoline
No data available

Terpene hydrocarbon
No data available

Quinaldine
No data available

Nonylphenol Ethoxylate
No data available

Ethyl Octynol
No data available

Propargyl alcohol
No data available

Aromatic Amine, TOFA Salt
No data available

Germ cell mutagenicity

Methanol
Not Mutagenic

Aromatic Amines
No data available

Isoquinoline
No data available

Terpene hydrocarbon
No data available

Quinaldine
No data available

Nonylphenol Ethoxylate
No data available

Ethyl Octynol

No data available

Propargyl alcohol

No data available

Aromatic Amine, TOFA Salt

No data available

Carcinogenicity

Methanol

IARC: No components of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Aromatic Amines

No data available

Isoquinoline

No data available

Terpene hydrocarbon

No data available

Quinaldine

No data available

Nonylphenol Ethoxylate

No data available

Ethyl Octynol

No data available

Propargyl alcohol

No data available

Aromatic Amine, TOFA Salt

No data available

Reproductive toxicity

Methanol

Damage to fetus not classifiable. Fertility classification not possible from current data.

Aromatic Amines

No data available

Isoquinoline

No data available

Terpene hydrocarbon

No data available

Quinaldine

No data available

Nonylphenol Ethoxylate

No data available

Ethyl Octynol

No data available

Propargyl alcohol

No data available

Aromatic Amine, TOFA Salt

No data available

Specific target organ toxicity - single exposure

Methanol

Causes damage to organs. Ingestion may cause blindness.

Aromatic Amines

No data available

Isoquinoline

No data available

Terpene hydrocarbon

No data available

Quinaldine

No data available

Nonylphenol Ethoxylate

No data available

Ethyl Octynol

No data available

Propargyl alcohol

No data available

Aromatic Amine, TOFA Salt

No data available

Specific target organ toxicity - repeated exposure

Methanol

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aromatic Amines

No data available

Isoquinoline

No data available

Terpene hydrocarbon

No data available

Quinaldine

No data available

Nonylphenol Ethoxylate

No data available

Ethyl Octynol

No data available

Propargyl alcohol

No data available

Aromatic Amine, TOFA Salt

No data available

Aspiration hazard

Methanol

No data available

Aromatic Amines

No data available

Isoquinoline

No data available

Terpene hydrocarbon

No data available

Quinaldine

No data available

Nonylphenol Ethoxylate

No data available

Ethyl Octynol

No data available

Propargyl alcohol

No data available

Aromatic Amine, TOFA Salt

No data available

Other Information

Methanol

May be fatal or cause blindness if swallowed. Effects due to ingestion may include: headache, dizziness, drowsiness, metabolic acidosis, coma, seizures. Symptoms may be delayed. Damage of the: liver, kidney, central nervous system, breathing difficulties - based on human evidence.

Aromatic Amines

No data available

Isoquinoline

No data available

Propargyl alcohol

No data available

Terpene hydrocarbon

No data available

Quinaldine

No data available

Nonylphenol Ethoxylate

No data available

Ethyl Octynol

No data available

Aromatic Amine, TOFA Salt

No data available

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity:

Methanol

Toxicity to fish	LC50 - Lepomis macrochirus (Bluegill) - 15.400,0 mg/l - 96 h
	NOEC - Oryzias latipes - 7.900 mg/l - 200 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - > 10.000,00 mg/l - 48 h
Toxicity to algae Growth inhibition	EC50 - Scenedesmus capricornutum (fresh water algae) - 22.000,0 mg/l - 96 h

Aromatic Amines

Toxicity to fish	LC50, 96 h Rainbow trout, Donaldson trout 3mg/1
Toxicity to daphnia and other aquatic invertebrates	No data available
Toxicity to algae Growth inhibition	No data available

Nonylphenol Ethoxylate

Toxicity to fish	LC50, 96h Fish 1-10 mg/1

Toxicity to daphnia and other aquatic invertebrates	No data available
Toxicity to algae Growth inhibition	No data available

Terpene hydrocarbon

No data available

Quinaldine

No data available

Isoquinoline

No data available

Nonylphenol Ethoxylate

No data available

Ethyl Octynol

No data available

Propargyl alcohol

No data available

Aromatic Amine, TOFA Salt

No data available

12.2 Persistence and degradability

Behavior in environmental systems:

Methanol

Biodegradability aerobic - Exposure time 5 d	
Result: 72 % - rapidly biodegradable	
Biochemical Oxygen Demand (BOD)	600 - 1.120 mg/g
Chemical Oxygen Demand (COD)	1.420 mg/g
Theoretical oxygen demand	1.500 mg/g

Terpene hydrocarbon

No data available

Quinaldine

No data available

Aromatic Amines

No data available

Isoquinoline

No data available

Nonylphenol Ethoxylate

No data available

Ethyl Octynol

No data available

Propargyl alcohol

No data available

Aromatic Amine, TOFA Salt

No data available

12.3 Bio accumulative potential

Methanol

Bioaccumulation cyprinus carpio (Carp) - 72 d at 20 °C - 5 mg/l
Bio concentration factor (BCF): 1,0

Terpene hydrocarbon

No data available

Quinaldine

No data available

Aromatic Amines

No data available

Isoquinoline

No data available

Nonylphenol Ethoxylate

No data available

Ethyl Octynol

No data available

Propargyl alcohol

No data available

Aromatic Amine, TOFA Salt

No data available

12.4 Mobility in soil

Methanol

No data available

Terpene hydrocarbon

No data available

Quinaldine

No data available

Aromatic Amines

No data available

Isoquinoline	
	No data available
Nonylphenol Ethoxylate	
	No data available
Ethyl Octynol	
	No data available
Propargyl alcohol	
	No data available
Aromatic Amine, TOFA	
Salt	No data available

12.5 Results of PBT and vPvB assessment

PBT	: No data available
vPvB	: No data available

12.6 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. Advice on disposal - do not dump into any sewers, on the ground, or into any body of water.

14. TRANSPORT INFORMATION

14.1 UN number

ADR/RID, IMDG, IATA	: UN 1993

14.2 UN proper shipping name

ADR/RID, IMDG, IATA	: Flammable liquids, n.o.s. (Contains Methanol)

14.3 Transport hazard class (es)

ADR/RID, IMDG, IATA	: Class 3

14.4 Packaging group

ADR/RID, IMDG, IATA	: PG II

14.5 Environmental hazards

Marine pollutant : No

14.6 Special precautions for user

No data available.

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

No data available.

15.2 Chemical safety assessment

No data available.

15.3 OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III Section 302 Extremely hazardous substances (40 CFR Part 355)
None of the components are listed

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	Yes
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This product contains the below components listed which require reporting under this statute.

Methanol	30 – 60 %
Propargyl Alcohol	1 – 5 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
This product contains the below components listed which require reporting under this statute.

Methanol	30 – 60 %
Propargyl alcohol.	1 – 5 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
This product contains the below components listed which require reporting under this statute.

Methanol	30 – 60 %

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains the below components listed which require reporting under this statute

Component	Amount	Toxicity	No significant risk level	Maximum acceptable dosage level
Formaldehyde	--	Cancer- Yes, Reprotox - No	No	No
Quinoline	1 – 5 %	Cancer- Yes, Reprotox - No	40 µg/day	No
Ethylene Oxide	--	Cancer- Yes, Reprotox - Yes	2 µg/day	No
		Cancer- Yes, Reprotox - Yes	No	20 µg/day

US Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Canadian WHMIS
B2 : Flammable Liquids: Flashpoint of < 37.8°C (100°F)
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

CERCLA: Hazardous substances - Reportable quantity:

Substance	Reportable quantity
Methanol	5000 lbs
Propargyl alcohol	1000 lbs

Product Reportable quantity Substance

Substance	Reportable quantity
Methanol	12,562 lb / 1,605 gal US 5000 lbs

Product spills equal to or exceeding the threshold above trigger the reporting requirements under CERCLA for the listed hazardous substance. Report the spill or release to the National Response Center (NRC) at (800) 424-8802.

Clean Water Act (CWA) 307
None of the components are listed.

Clean Water Act (CWA) 311
The following components are listed: Quinoline. Formaldehyde.

Clean Air Act (CAA) 112 accidental release prevention
The following components are listed: Formaldehyde. Ethylene oxide.

Clean Air Act (CAA) 112 regulated flammable substances
None of the components are listed.

Clean Air Act (CAA) 112 regulated toxic substances
None of the components are listed.

Massachusetts Substances: The following components are listed:

Methanol	30 – 60 %
Propargyl Alcohol	1 – 5 %

New Jersey Hazardous Substances: The following components are listed:

Methanol	30 – 60 %

Propargyl Alcohol	1 – 5 %
Terpene hydrocarbon	1 – 5 %

16. OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases

Hazard statement (s)

H225	: Highly flammable liquid and vapor
H301	: Toxic if swallowed
H311	: Toxic in contact with skin
H331	: Toxic if inhaled
H370	: Causes damage to organs
H318	: Causes serious eye damage
H411	: Toxic to aquatic life with long lasting effects

Precautionary statement (s)

P210	: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260	: Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P280	: Wear protective gloves/ protective clothing.
P301 + P310	: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P304 + P340	: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for Breathing.
P303 + P361 + P353	: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P305 + P351 + P338	: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P309 + P311	: IF exposed or you feel unwell: Call a POISON CENTER or doctor/physician
P273	: Avoid release to the environment

Risk Phrase (s)

R11	: Highly Flammable.
R23/24/25	: Toxic by inhalation, in contact with skin & if swallowed.

R39	: Danger of very serious irreversible effects.
R36/38	: Irritating to eyes & skin
R41	: Risk of serious damage to the eyes.
R51/53	: Toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

Safety Phrase (s)

S7	: Keep container tightly closed.
S16	: Keep away from sources of ignition - No smoking.
S36/37/39	: Wear suitable protective clothing, gloves and eye/face protection
S45	: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S46	: If swallowed, seek medical advice immediately and show this container or label.
S24/25	: Avoid any inhalation, contact with skin and eyes.
S61	: Avoid release to the environment. Refer to special instructions/safety data sheet

Abbreviations and acronyms:

ADR	Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road).
RID	Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail).
IMDG	International Maritime Code for Dangerous Goods
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
PBT	Persistent Bioaccumalative Toxic chemical
vPvB	Very Persistent and Very Bioaccumulative
OSHA	Occupational Safety and Health Administration
ACGIH	American Conference of Governmental Industrial Hygienists
TLV(s)	Threshold Limit Values
STEL	Short term exposure limit
NIOSH	National Institute for Occupational Safety and Health.
LDLo	lethal dose low
TCLo	Lowest published toxic concentration
IARC	International Agency For Research On Cancer
NTP	National Toxicology Program
EPA	Environment Protection Agency
EC	European Commission

EU	European Union
CLP	Classification, labeling and Packaging of substances
PG	Packing Group

MSDS Issuing Department: Safety
MSDS I.D. #: 104003.03

DISCLAIMER:
This information was obtained from sources MTS-Simulation Service, Inc. believes to be reliable. However, the information is provided without any warranty, express or implied, regarding its thoroughness and accuracy. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For these reasons sources MTS-Simulation Service, Inc. does not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of, or in any way connected with the handling, storage, use or disposal of the product. This information was prepared for this product only. If the product is used as a component in another product some of the information may not apply.

MTS-Stimulation Services, Inc.

Safety Data Sheet

Version: 2
Revision Date: 07/08/2013

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name	: SS-26 (NON-EMULSIFYING AGENT)
Trade name	: Emulsotron X-606
Chemical family	: Blends
CAS	: Mixture
EC#	: Not Applicable

1.2 Relevant identified uses of the substance or mixture and uses advised against

Non-Emulsifying Agent

1.3 Details of the supplier of the safety data sheet

Company identification	: MTS Simulation Services, Inc. 7131 Charity Avenue Bakersfield California 93308 U.S.A.
Manufacturer / Distributor	: Champion Technologies, Inc., Houston, TX 77245
Product Information	: 1-661-589-5805
CHEMTREC	: 1-800-424-9300
Email	: msds@mts-stim.com
Website	: http://www.mts-stim.com

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

H225	: Flammable liquids (Category 2)
H301	: Acute toxicity, Oral (Category 3)
H331	: Acute toxicity, Inhalation (Category 3)
H311	: Acute toxicity, Dermal (Category 3)
H370	: Specific target organ toxicity - single exposure (Category 1)
H335	: Specific target organ toxicity- (single exposure) (Category 3)
H315	: Skin irritation (Category 2)

For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification according to EU Directives 67/548/EEC or 1999/45/EC

R11, R39/23/24/25, Xi R37/38, Xi R41

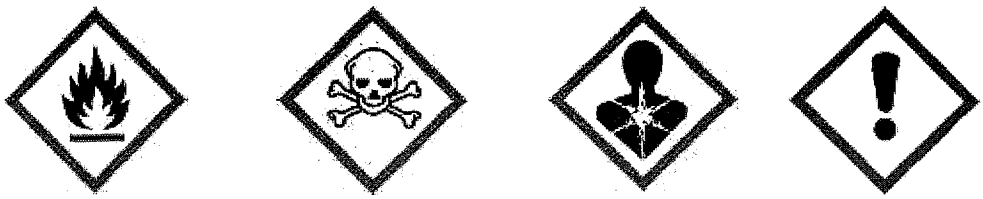
For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements

Labeling according to Regulation (EC) No 1272/2008

The product is classified and labeled according to the CLP regulation.

Hazard pictograms



Signal word

Danger

Hazard statement (s)

H225	Highly flammable liquid and vapor.
H301	Toxic if swallowed
H311	Toxic in contact with skin.
H331	Toxic if inhaled.
H370	Causes damage to organs.
H335	May cause respiratory irritation
H315	Causes skin irritation

Precautionary statement (s)

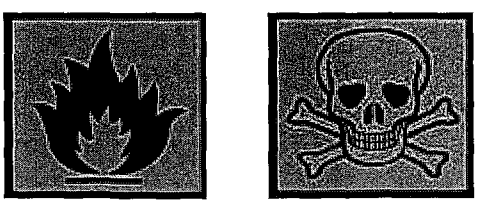
P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P280	Wear protective gloves/ protective clothing.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P311	Call a POISON CENTER or doctor/ physician.

Hazard-determining components of labeling:

Contains: Methanol, DDBSA salt

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Symbol (s)



Signal word

Danger

Risk Phrase (s)

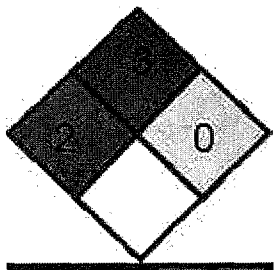
R11	: Highly flammable liquid and vapor.
R23/24/25	: Toxic if swallowed, in contact with skin or if inhaled
R37/38	: Irritating to respiratory system and skin.
R41	: Risk of serious damage to eyes.
R39/23/24/25	: Causes damage to organs.

Safety Phrase (s)

S16	: Keep away from sources of ignition - No smoking
S1	: Keep locked up
S45	: In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)
S62	: If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label where possible

2.3 Other Hazards

NFPA



HMIS

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical characterization: Mixture

Hazardous ingredients according to Regulation (EC) No 1272/2008

CAS-No. / EC-No.	Amount	Component	Classification: REGULATION (EC) No 1272/2008
CAS-No. 67-56-1 **EC-No.** 200-659-6	30.0 – 60.0 %	Methanol	H225 Flammable liquids (Category 2), H331 Acute toxicity, Inhalation (Category 3), H311Acute toxicity, Dermal (Category 3), H301 Acute toxicity, Oral (Category 3), H370 Specific target organ toxicity - single exposure (Category 1),
CAS-No. Proprietary **EC-No.** Proprietary	30.0 – 60.0 %	DDBSA Salt	No data available

For the full text of the H-Statements mentioned in this Section, see Section 16.

Hazardous ingredients according to Directive 1999/45/EC

CAS-No. / EC-No.	Amount	Component	Classification:67/548/EEC
CAS-No. 67-56-1	30.0 – 60.0 % 	Methanol	F R11 ,T R23/24/25 , R39/23/24/25
EC-No. 200-659-6			
CAS-No. Proprietary	30.0 – 60.0 % 	DDBSA Salt	Xn R22, Xi R37/38, Xi R41
EC-No. Proprietary			

For the full text of the Risk Phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General information
Consult a physician. Show this safety data sheet to the doctor in attendance.

After inhalation

If breathed in, move person into fresh air, if not breathing give artificial respiration. Consult a physician.

After skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

After eye contact
Flush eyes with water as a precaution.

After swallowing
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician..

Information for doctor
Attending physician should treat exposed individual symptomatically.

4.2 Most important symptoms and effects, both acute and delayed

No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Vapors are heavier than air and may travel considerable distance along the ground or be moved by ventilation to ignition sources. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld or expose containers to flame or other sources of ignition.

5.3 Advice for firefighters

Wear positive-pressure self-contained breathing apparatus (SCBA) and full protective fire fighting gear. Equipment should be thoroughly decontaminated after use. Evacuate area and fight fire from safe distance. Use water spray to cool fire exposed structures and to protect personnel. Shut off source of flow if possible. If a leak or spill has not ignited, use water spray to disperse the vapors.

5.4 Further information

Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and material for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of material from eyes, skin and clothing. Wash thoroughly after handling. Avoid breathing vapor. Use only with adequate ventilation. Keep away from heat and sources of ignition. Take precautionary measures against static discharges

.7.2 Conditions for safe storage, including any incompatibilities

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

7.3 Specific end uses

A part from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Name	Source	Type	ppm	mg/m3
Methanol	ACGIH	TWA	200 ppm	
		STEL	250 ppm	
	OSHA PEL	TWA	200 ppm	260 mg/m3
	NIOSH	IDLH	6000 ppm	
DDBSA salt	No data available			

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling

the product..

Personal protective equipment

Eye/face protection: Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection: Complete suit protecting against chemicals, the type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance form	: Dark Amber Liquid
Odor	: No data available
Odor threshold	: No data available
pH	: 3.5 – 5.0 (10% in 3:1 IPA : Distilled Water)
Melting point / freezing point	: No data available
Initial boiling point and boiling range	: No data available
Flash point	: 69°F (21°C) PMCC
Evaporation rate	: No data available
Flammability (solid, gas)	: No data available
Upper/lower flammability or explosive limits	: No data available
Vapor pressure	: No data available
Vapor density (AIR=1)	: No data available
Specific Gravity @ 60°F (16°C)	: 0.9641 – 0.9941
Water solubility	: No data available
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available

Viscosity	:
Kinematic	No data available
Dynamic	10 – 30 cPs
Pour Point	: -40°F (-40°C)
Explosive properties	: No data available
Oxidizing properties	: No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

Heat, flames and sparks. Extremes of temperature and direct sunlight..

10.5 Incompatible materials

Strong oxidizers

10.6 Hazardous decomposition products

Oxides of carbon, nitrogen, and sulfur

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Methanol

Acute oral toxicity LD50	Rat	5628 mg/kg (IUCLID) 143 mg/kg (RTECS)
Acute oral LDLO	Human	64000 ppm 4 hours (RTECS)
Acute inhalation toxicity	Rabbit	15800 mg/kg (RTECS)
Acute dermal toxicity LD50		

DDBSA Salt

No data available

Skin corrosion/irritation

Methanol

Skin	--	Irritation, may cause burns on long term exposure

DDBSA Salt

No data available

Serious eye damage/eye irritation

Methanol

Eye	--	Risk of serious damage to eyes. Risk of blindness.

DDBSA Salt

No data available

Respiratory or skin sensitization

Methanol

Maximization Test - guinea pig
Does not cause skin sensitization.
(OECD Test Guideline 406)

DDBSA Salt

No data available

Germ cell mutagenicity

Methanol

Ames test
S. typhimurium
Result: negative
in vitro assay
fibroblast
Result: negative
Mutation in mammalian somatic cells.
Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)
mouse - male and female
Result: negative

DDBSA Salt

No data available

Carcinogenicity

Methanol

IARC: 3 – No component of this product present at levels greater than or equal to 0.1% is identified as probable,
possible or confirmed human carcinogen by IARC.

DDBSA Salt

No data available

Reproductive toxicity

Methanol

Damage to fetus not classifiable
Fertility classification not possible from current data.

DDBSA Salt

No data available

Specific target organ toxicity - single exposure

Methanol

Causes damage to organs.

DDBSA Salt

No data available

Specific target organ toxicity - repeated exposure

Methanol

The substance or mixture is not classified as specific target organ toxicant, repeated exposure

DDBSA Salt

No data available

Aspiration hazard

Methanol

No aspiration toxicity classification

DDBSA Salt

No data available

Other Information

Methanol

Methyl alcohol may be fatal or cause blindness if swallowed.
Effects due to ingestion may include:, Headache, Dizziness, Drowsiness, metabolic acidosis, Coma,
Seizures.
Symptoms may be delayed., Damage of the:, Liver, Kidney.

DDBSA Salt

No data available

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity:

Methanol

Toxicity to fish	mortality LC50 - Lepomis macrochirus (Bluegill) - 15.400,0 mg/l - 96 h NOEC - Oryzias latipes - 7.900 mg/l - 200 h
Toxicity to daphnia and other aquatic invertebrates	>10000 mg/L; (IUCLID: 24 hour, Daphnia magna)
Toxicity to algae Growth inhibition	8000 mg/L (IUCLID: 16 hr. Scenedesmus quadricauda)

DDBSA Salt

Toxicity to fish	No data available
Toxicity to daphnia and other aquatic invertebrates	No data available
Toxicity to algae Growth inhibition	No data available

12.2 Persistence and degradability

Behavior in environmental systems:

Methanol	Readily biodegradable 99% (OECD Test Guideline 301D , 30 day)
	BOD: 600-1200 mg/g (IUCLID) COD: 1400 mg/g (IUCLID)
DDBSA Salt	No data available

12.3 Bio accumulative potential

Methanol	Not expected (experimental log Pow: -0.77)
DDBSA Salt	No data available

12.4 Mobility on soil

Methanol	Not expected (experimental log Pow: -0.77)
DDBSA Salt	No data available

12.5 Results of PBT and vPvB assessment

PBT	No data available
vPvB	No data available

12.6 Other adverse effects

Additional ecological information
Avoid release to the environment.
Stability in water at 19 °C83 - 91 % - 72 h

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. Advice on disposal - do not dump into any sewers, on the ground, or into any body of water.

14. TRANSPORT IFORMATION

14.1 UN number

ADR/RID, IMDG, IATA : UN 1230

14.2 UN proper shipping name

ADR/RID, IMDG, IATA : Methanol Solution

14.3 Transport hazard class (es)

ADR/RID, IMDG, IATA : Class 3

14.4 Packaging group

ADR/RID, IMDG, IATA :PG II

14.5 Environmental hazards

Marine pollutant : No

14.6 Special precautions for user

No data available.

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

No data available.

15.2 Chemical safety assessment

No data available.

15.3 OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	Yes
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This product contains the below components listed which require reporting under this statute.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:

This product contains the below components listed which require reporting under this statute.

Methanol	30.0 – 60.0 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Methanol	30.0 – 60.0 %

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains the below components listed which require reporting under this statute.

Methanol	30.0 – 60.0 %

US Toxic Substances Control Act

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Canadian WHMIS
B2 - Flammable and combustible material - Flammable liquid
D1B - Poisonous and infectious material - Immediate and serious effects - Toxic
D2A - Poisonous and infectious material - Other effects - Very toxic
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

16. OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases

Hazard statement (s)

H225	: Highly flammable liquid and vapor.
H301	: Toxic if swallowed
H311	: Toxic in contact with skin.
H331	: Toxic if inhaled.
H370	: Causes damage to organs.
H335	: May cause respiratory irritation
H315	: Causes skin irritation

Precautionary statement (s)

P210	: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260	: Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P280	: Wear protective gloves/ protective clothing.
P301 + P310	: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P305 + P351 + P338	: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P311	: Call a POISON CENTER or doctor/ physician.

Risk Phrase (s)

R11	: Highly flammable liquid and vapor.
R23/24/25	: Toxic if swallowed, in contact with skin or if inhaled
R37/38	: Irritating to respiratory system and skin.
R41	: Risk of serious damage to eyes.
R39/23/24/25	: Causes damage to organs.

Safety Phrase (s)

S16	: Keep away from sources of ignition - No smoking
S1	: Keep locked up
S45	: In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)
S62	: If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label where possible

Abbreviations and acronyms:

ADR	Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road).
RID	Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail).
IMDG	International Maritime Code for Dangerous Goods
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
PBT	Persistent Bioaccumalative Toxic chemical
vPvB	Very Persistent and Very Bioaccumulative
OSHA	Occupational Safety and Health Administration
ACGIH	American Conference of Governmental Industrial Hygienists
TLV(s)	Threshold Limit Values
STEL	Short term exposure limit
NIOSH	National Institute for Occupational Safety and Health.
LDLo	lethal dose low
TCLo	Lowest published toxic concentration
IARC	International Agency For Research On Cancer
NTP	National Toxicology Program
EPA	Environment Protection Agency
EC	European Commission
EU	European Union
CLP	Classification, labeling and Packaging of substances
PG	Packing Group

MSDS Issuing Department: Safety
MSDS I.D. #104805.13

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This information was obtained from sources MTS Stimulation Services, Inc. believes to be reliable. However, the information is provided without any warranty, express or implied, regarding its thoroughness and accuracy. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For these reasons MTS Stimulation Services, Inc. does not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of, or in any way connected with the handling, storage, use or disposal of the product. This information was prepared for this product only. If the product is used as a component in another product some of the information may not apply.

MTS-Stimulation Services, Inc.

Safety Data Sheet

Version: 2
Revision Date: 07/08/2013

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name	: XYLENE
Trade name	: Xylene 625101
Chemical family	: Petroleum hydrocarbon solvent
Synonyms	: Xylol; Mixed Xylenes; Xylene Isomers and Ethylbenzene; Dimethylbenzenes and Ethylbenzene; C8 Alkylbenzenes; C8 Aromatics; C8 Aromatic Hydrocarbon Solvent; Industrial-grade Xylene (meets ASTM D-364 Specifications); "Ten-degree" Xylene (meets ASTM D-846 specifications).
CAS	: Mixture
EC#	: Not applicable

1.2 Relevant identified uses of the substance or mixture and uses advised against

Dissolve asphaltines

1.3 Details of the supplier of the safety data sheet

Company identification	: MTS Simulation Services, Inc. 7131 Charity Avenue Bakersfield California 93308 U.S.A
Manufacturer / Distributor	: Ashland/Univar Columbus, OH 43216/Redmond, Wa
Product Information	: 1-661-589-5805
CHEMTREC	: 1-800-424-9300
Email	: msds@mts-stim.com
Website	: http://www.mts-stim.com

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

H226	: Flammable liquids (Category 3)
H304	: Aspiration hazard (Category 1),
H315	: Skin irritation (Category 2)
H361d	: Reproductive toxicity (Category 2),
H373	: Specific target organ toxicity - repeated exposure (Category 2),
H336	: Specific target organ toxicity - single exposure (Category 3),
H336	: Acute Toxicity, Dermal (Category 4)
H332	: Acute Toxicity, Inhalation (Category 4)

For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification according to EU Directives 67/548/EEC or 1999/45/EC
R10, Xn R20/21, R63, R48/20, R65, Xi R38, R67
For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements

Labeling according to Regulation (EC) No 1272/2008
The product is classified and labeled according to the CLP regulation.

Hazard pictograms

Signal word
Danger

Hazard statement (s)

H226	: Flammable liquid and vapor
H304	: May be fatal if swallowed and enters airways
H312	: Harmful in contact with skin
H315	: Causes skin irritation
H336	: May cause drowsiness or dizziness
H361d	: Suspected of damaging the unborn child
H373	: May cause damage to organs through prolonged or repeated exposure
H332	: Harmful if inhaled

Precautionary statement (s)

P210	: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P261	: Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P280	: Wear protective gloves/ protective clothing.
P301 + P310	: IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician
P331	: Do NOT induce vomiting.

Hazard-determining components of labeling:
Contains: Xylene, Ethylbenzene, Toluene

Classification according to EU Directives 67/548/EEC or 1999/45/EC
Symbol (s)

Signal word
Toxic

Risk Phrase (s)

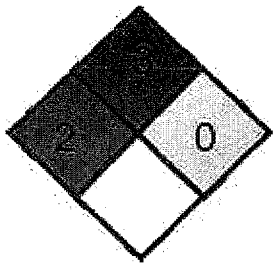
R10	: Flammable
R20/21	: Harmful by inhalation and in contact with skin
R63	: Possible risk of harm to the unborn child.
R48	: Danger of serious damage to health by prolonged exposure
R65	: Harmful: may cause lung damage if swallowed.
R38	: Irritating to skin.
R67	: Vapors may cause drowsiness and dizziness.

Safety Phrase (s)

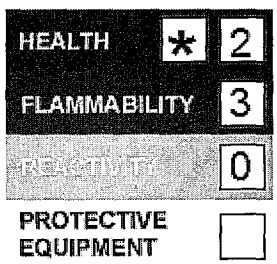
S36/37	: Wear suitable protective clothing and gloves.
S16	: Keep away from sources of ignition - No smoking
S23	: Do not breathe gas/fumes/vapor/spray
S 24/25	: Avoid contact with skin and eyes

2.3 Other Hazards
None

NFPA Rating



HMIS



*** = Chronic Health Hazard**

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical characterization: Mixture

Hazardous ingredients according to Regulation (EC) No 1272/2008

CAS-No. / EC-No.	Amount	Component	Classification: REGULATION (EC) No 1272/2008
CAS-No. 1330-20-7 **EC-No.**	60.0 -100.0 %	Xylene	Flammable liquids (Category 2), H225 Reproductive toxicity (Category 2), H361d Aspiration hazard (Category 1), H304 Specific target organ toxicity - repeated exposure

215-535-7			(Category 2), H373 Skin irritation (Category 2), H315 Specific target organ toxicity - single exposure (Category 3), H336;
CAS-No. 100-41-4 **EC-No.** 202-849-4	10.0 -30.0 % 	Ethylbenzene 	Flammable liquids (Category 2), H225 Acute Toxicity. (Category 4); H332
CAS-No. **108-88-3** **EC-No.** **203-625-9**	<1.0 % 	Toluene 	Flammable liquids (Category 2), H225 Reproductive toxicity (Category 2), H361d Aspiration hazard (Category 1), H304 Specific target organ toxicity - repeated exposure (Category 2), H373 Skin irritation (Category 2), H315 Specific target organ toxicity - single exposure (Category 3), H336

For the full text of the H-Statements mentioned in this Section, see Section 16.

Hazardous ingredients according to Directive 1999/45/EC

CAS-No. / EC-No.	Amount	Component	Classification: 67/548/EEC
CAS-No. 1330-20-7 **EC-No.** 215-535-7	60.0 -100.0 % 	Xylene 	Xn, R10 - R20/21 - R38
CAS-No. 100-41-4 **EC-No.** 202-849-4	10.0 -30.0 % 	Ethylbenzene 	F- R11, Xn R20
CAS-No. **108-88-3** **EC-No.** **203-625-9**	<1.0 % 	Toluene 	F R11, R63, Xn R48/20, R65, Xi R38, R67

For the full text of the Risk Phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Carbon oxides.

5.3 Advice for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information

Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the buildup of electrostatic charge. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities.

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened be carefully resealed and kept upright to prevent leakage.

7.3 Specific end use(s)

A part from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Name	Source	Type	ppm	mg/m3
Xylene, all isomers	ACGIH (United States)	TWA	100 ppm 8 hours	
		STEL	150 ppm 15 minutes	
	OSHA (United States)	TWA	100 ppm 8 hours	
Ethylbenzene	ACGIH (United States)	TWA	100 ppm 8 hours	
		STEL	125 ppm 15 minutes	
	OSHA (United States)	TWA	100 ppm 8 hours	
Toluene	ACGIH (United States)	TWA, Skin	20 ppm 8 hours	
	OSHA (United States)	TWA	200 ppm 8 hours	
		CEIL	300 ppm	
		PEAK:	500 ppm 1 times per shift, 10 minutes	

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection: Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection: Complete suit protecting against chemicals, the type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection: If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance form	: Transparent, Colorless Liquid
Odor	: Sweet, pungent aromatic hydrocarbon
Odor threshold	: No data available
pH	: No data available
Melting point / freezing point	: -48 to -25°C (-54 to -13°F)
Initial boiling point and boiling range	: 138 – 142°C (280 – 288°F)
Flash point	: Closed cup: 27°C (81°F)
Evaporation rate	: No data available
Flammability (solid, gas)	: No data available
Upper/lower flammability or explosive limits	: No data available
Vapor pressure (at 20°C)	: 0.9 kPa (7 mm Hg)
Vapor density (AIR=1)	: 3.70
Specific Gravity (Water = 1)	: 0.87
Water solubility	: Very slighty soluble in cold water (<0.1% w/w)
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	:
Kinematic	No data available
Dynamic	No data available

Pour Point	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Hazardous Polymerization will not occur.

10.4 Conditions to avoid

Heat, flames and sparks. Extremes of temperature and direct sunlight.

10.5 Incompatible materials

Strong Oxidizing agents

10.6 Hazardous decomposition products

No data available.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Xylene, all isomers		
LD50 Oral	Rat	4300 mg/kg .
LC50 Inhalation	Rat	4 h - 4550 ppm
LD50 Dermal	Rabbit	14,100 uL/kg
Ethylbenzene		
LD50 Dermal	Rabbit	15.433 mg/kg
Toluene		
LD50 Oral	Rat	> 5.580 mg/kg
LC50 Inhalation	Rat	4 h - 112.500 - 28.800 mg/m3
LD50 Dermal	Rabbit	12.196 mg/kg

Skin corrosion/irritation

No data available.

Serious eye damage/eye irritation

No data available.

Respiratory or skin sensitization

No data available.

Germ cell mutagenicity

No data available.

Carcinogenicity

Xylene	**IARC:** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
Ethylbenzene	**IARC:** 2B - Group 2B: Possibly carcinogenic to humans.
Toluene	**IARC:** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity

Xylene	No data available
Ethylbenzene	No data available
Toluene	Damage to fetus possible Suspected human reproductive toxicant Reproductive toxicity - rat – Inhalation Paternal Effects: Spermatogenesis (including genetic material, sperm morphology,motility, and count). Experiments have shown reproductive toxicity effects in male and female laboratory animals. Developmental Toxicity - rat – Oral Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Other Information

No data available

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity:

Xylene

Toxicity to fish	No data available.
Toxicity to daphnia and other aquatic invertebrates	No data available.
Toxicity to algae Growth inhibition	No data available.

Ethylbenzene

Toxicity to fish	LC50 - Cyprinodon variegatus (sheepshead minnow) - 88,00 mg/l - 96 h LC50 - Lepomis macrochirus (Bluegill) - 80,00 mg/l - 96 h NOEC - Cyprinodon variegatus (sheepshead minnow) - 88 mg/l - 96 h LC50 - Oncorhynchus mykiss (rainbow trout) - 4,2 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 2,90 mg/l - 48 h
Toxicity to algae Growth inhibition	No data available.

Toluene

Toxicity to fish	LC50 - Lepomis macrochirus (Bluegill) - 74,00 - 340,00 mg/l - 96 h LC50 - Oncorhynchus mykiss (rainbow trout) - 7,63 mg/l - 96 h NOEC - Pimephales promelas (fathead minnow) - 5,44 mg/l - 7 d LOEC - Pimephales promelas (fathead minnow) - 8,04 mg/l - 7 d
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 8,00 mg/l - 24 h Immobilization EC50 - Daphnia magna (Water flea) - 6 mg/l - 48 h
Toxicity to algae Growth inhibition	EC50 - Chlorella vulgaris (Fresh water algae) - 245,00 mg/l - 24 h EC50 - Pseudokirchneriella subcapitata (green algae) - 10,00 mg/l - 24 h

12.2 Persistence and degradability

Behavior in environmental systems:

No data available

12.3 Bio accumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT	: No data available
vPvB	: No data available

12.6 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. Advice on disposal - do not dump into any sewers, on the ground, or into any body of water.

14. TRANSPORT IFORMATION

14.1 UN number

ADR/RID, IMDG, IATA : UN 1307

14.2 UN proper shipping name

ADR/RID, IMDG, IATA : Xylenes

14.3 Transport hazard class (es)

ADR/RID, IMDG, IATA : Class 3

14.4 Packaging group

ADR/RID, IMDG, IATA : PG II

14.5 Environmental hazards

Marine pollutant : No

14.6 Special precautions for user
No data available.

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
No data available.

15.2 Chemical safety assessment
No data available.

15.3 OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	Yes
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This product contains the below components listed which require reporting under this statute.

Xylene	60.0 – 100.0 %
Ethylbenzene	10.0 – 30.0 %
Toluene	<1 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
This product contains the below components listed which require reporting under this statute.

Xylene	60.0 – 100.0 %
Ethylbenzene	10.0 – 30.0 %
Toluene	<1 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains the below components listed which require reporting under this statute.

Ethylbenzene	CRT Carcinogen	10.0 – 30.0 %
Toluene	Female Reproductive Toxin, CRT developmental Toxin,	<1 %

US. Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Canadian WHMIS
B2 - Flammable and combustible material - Flammable liquid
D2A - Poisonous and infectious material - Other effects - Very toxic
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

16. OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases

Hazard statement (s)

H226	: Flammable liquid and vapor
H304	: May be fatal if swallowed and enters airways
H312	: Harmful in contact with skin
H315	: Causes skin irritation
H336	: May cause drowsiness or dizziness
H361d	: Suspected of damaging the unborn child
H373	: May cause damage to organs through prolonged or repeated exposure
H332	: Harmful if inhaled

Precautionary statement (s)

P210	: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P261	: Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P280	: Wear protective gloves/ protective clothing.
P301 + P310	: IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician
P331	: Do NOT induce vomiting.

Risk Phrase (s)

R10	: Flammable
R20/21	: Harmful by inhalation and in contact with skin
R63	: Possible risk of harm to the unborn child.
R48	: Danger of serious damage to health by prolonged exposure
R65	: Harmful: may cause lung damage if swallowed.
R38	: Irritating to skin.
R67	: Vapors may cause drowsiness and dizziness.

Safety Phrase (s)

S36/37	: Wear suitable protective clothing and gloves.
S16	: Keep away from sources of ignition - No smoking
S23	: Do not breathe gas/fumes/vapour/spray
S 24/25	: Avoid contact with skin and eyes

Abbreviations and acronyms:

ADR	Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road).
RID	Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail).
IMDG	International Maritime Code for Dangerous Goods
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
PBT	Persistent Bioaccumalative Toxic chemical
vPvB	Very Persistent and Very Bioaccumulative
OSHA	Occupational Safety and Health Administration
ACGIH	American Conference of Governmental Industrial Hygienists
TLV(s)	Threshold Limit Values
STEL	Short term exposure limit
NIOSH	National Institute for Occupational Safety and Health.
LDLo	lethal dose low
TCLo	Lowest published toxic concentration
IARC	International Agency For Research On Cancer
NTP	National Toxicology Program
EPA	Environment Protection Agency
EC	European Commission
EU	European Union
CLP	Classification, labeling and Packaging of substances
PG	Packing Group

MSDS Issuing Department: Safety
MSDS I.D. #105005.12

DISCLAIMER:
This information was obtained from sources MTS-Simulation Service, Inc. believes to be reliable. However, the information is provided without any warranty, express or implied, regarding its thoroughness and accuracy. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For these reasons sources MTS-Simulation Service, Inc. does not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of, or in any way connected with the handling, storage, use or disposal of the product. This information was prepared for this product only. If the product is used as a component in another product some of the information may not apply.

MTS-Stimulation Services, Inc.

Safety Data Sheet

Version: 2
Revision Date: 07/08/2013

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name	: SSD-921 (Solvent Dispersant)
Trade name	: SA-101 Acid Surfactant
CAS Number	: 64742-94-5
EC Number	: 265-198-5

1.2 Relevant identified uses of the substance or mixture and uses advised against

Solvent Dispersant

1.3 Details of the supplier of the safety data sheet

Company identification	: MTS Simulation Services, Inc. 7131 Charity Avenue Bakersfield California 93308 U.S.A.
Manufacturer / Distributor	: Chemex Chemicals Inc., Bakersfield, CA, (661) 864-1600
Product Information	: 1-661-589-5805
CHEMTREC	: 1-800-424-9300
Email	: msds@mts-stim.com
Website	: http://www.mts-stim.com

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

H227	: Combustible liquids
H304	: Aspiration hazard, category 1
H350	: Carcinogenicity, category 2
H340	: Mutagenic (Category 1A)
H411	: Aquatic toxicity (chronic), Category 2

For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification according to EU Directives 67/548/EEC or 1999/45/EC

R45, R46, R65

For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements

Labeling according to Regulation (EC) No 1272/2008

The product is classified and labeled according to the CLP regulation.

Hazard pictograms

Signal word
Warning

Hazard statement (s)

H227	: Combustible liquid.
H304	: May be fatal if swallowed and enters airways
H350	: May cause cancer
H340	: May cause genetic defects.
H411	: Toxic to aquatic life with long lasting effects

Precautionary statement (s)

P210	: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260	: Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P280	: Wear protective gloves/ protective clothing.
P301 + P310	: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P304 + P340	: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for Breathing.
P303 + P361 + P353	: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P305 + P351 + P338	: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P309 + P311	: IF exposed or you feel unwell: Call a POISON CENTER or doctor/physician.

Hazard-determining components of labeling:
Contains: Aromatic petroleum distillates

Classification according to EU Directives 67/548/EEC or 1999/45/EC
Symbol (s)

Signal word
Danger

Risk Phrase (s)

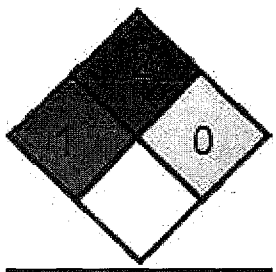
R45	: May cause cancer
R46	: May cause heritable genetic damage
R65	: Harmful: may cause lung damage if swallowed.

Safety Phrase (s)

S7	: Keep container tightly closed.
S16	: Keep away from sources of ignition - No smoking.
S36/37/39	: Wear suitable protective clothing, gloves and eye/face protection
S45	: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S46	: If swallowed, seek medical advice immediately and show this container or label.
S24/25	: Avoid any inhalation, contact with skin and eyes.

2.3 Other Hazards
None

NFPA Rating



HMIS Rating

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical characterization: Mixtures

Hazardous ingredients according to Regulation (EC) No 1272/2008

CAS-No. / EC-No.	Amount	Component	Classification: REGULATION (EC) No 1272/2008
CAS-No. 64742-94-5 **EC-No.** 232-349-1	Not Available	Aromatic petroleum distillates	H227 : Combustible liquids H304 : Aspiration hazard, category 1 H350 : Carcinogenicity, category 2 H340 : Mutagenic (Category 1A) H411 : Aquatic toxicity (chronic), Category 2

For the full text of the H-Statements mentioned in this Section, see Section 16.

Hazardous ingredients according to Directive 1999/45/EC

CAS-No. / EC-No.	Amount	Component	Classification: 67/548/EEC
CAS-No. 64742-94-5	Not Available	Aromatic petroleum distillates	T R45, R46, Xn R65

EC-No.
232-349-1

For the full text of the Risk Phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General information
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

After inhalation
If Inhaled, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

After skin contact
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

After eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

After swallowing
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Information for doctor
Attending physician should treat exposed individual symptomatically.

4.2 Most important symptoms and effects, both acute and delayed

No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media:

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

No data available.

5.3 Advice for firefighters

Wear self-contained breathing apparatus for fire-fighting if necessary.

5.4 Further information

The product itself does not burn.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas. For personal protection see section 8.

6.2 Environmental precautions

Prevent spills from entering sewers, watercourses or low areas.

6.3 Methods and material for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. Keep away from sources of ignition - no smoking. Take measures to prevent the build-up of electrostatic charge. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

7.3 Specific end uses

No data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Name	Source	Type	ppm	Mg/m3
	No data available			

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection: Tightly fitting safety goggles. Face shield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. Follow general industrial hygiene practice.

Body Protection: Complete suit protecting against chemicals, the type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance form	: water-white liquid
Odor	: aromatic
Odor threshold	: No data available
pH	: No data available
Melting point / freezing point	: < - 20°F
Initial boiling point and boiling range	: 360 – 400°F
Flash point	: 140°F(60°C) (Combustible Liquid)
Evaporation rate	: < 1
Flammability (solid, gas)	: No data available
Upper/lower flammability or explosive limits	: No data available
Vapor pressure mm Hg @ 68°F	: 2.5
Vapor density (AIR=1)	: 4.0
Specific Gravity (water = 1)	: 0.96
Water solubility	: Dispersible
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	:

Kinematic	No data available
Dynamic	No data available
Pour Point	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No data available.

10.4 Conditions to avoid

Heat, flames and sparks, extremes of temperature and direct sunlight.

10.5 Incompatible materials

Strong oxidizing agents, Strong acids, Strong bases, Copper.

10.6 Hazardous decomposition products

No data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LC50 Inhalation	Rat	5 h - 300.000 mg/m3

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

Eyes	Human	Moderate eye irritation

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

In vivo tests showed mutagenic effects

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Other Information

No data available

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity:

Toxicity to fish	Expected to be toxic: 1 < LC/EC/IC50 <= 10 mg/l
Toxicity to daphnia and other aquatic invertebrates	Expected to be toxic: 1 < LC/EC/IC50 <= 10 mg/l
Toxicity to algae Growth inhibition	Expected to be toxic: 1 < LC/EC/IC50 <= 10 mg/l

12.2 Persistence and degradability

Behavior in environmental systems:

: No data available

12.3 Bio accumulative potential

: No data available

12.4 Mobility in Soil

: No data available

12.5 Results of PBT and vPvB assessment

PBT	: No data available
vPvB	: No data available

12.6 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. Advice on disposal - do not dump into any sewers, on the ground, or into any body of water.

14. TRANSPORT INFORMATION

14.1 UN number

ADR/RID, IMDG, IATA : UN 3082□

14.2 UN proper shipping name

ADR/RID, IMDG, IATA : Environmentally Hazardous Substance, Liquid, N.O.S. (Alkyl (C3-C8) Benzenes)

14.3 Transport hazard class (es)

ADR/RID, IMDG, IATA : Class 9

14.4 Packaging group

ADR/RID, IMDG, IATA : PG III

14.5 Environmental hazards

Marine pollutant : Yes

14.6 Special precautions for user

No data available.

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
No data available.

15.2 Chemical safety assessment
No data available.

15.3 OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
This product contains the below components listed which require reporting under this statute.

Aromatic petroleum distillates	Not Available

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute

US. Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Canadian WHMIS
B3: Combustible Liquids: Flashpoint of 37.8°C–93.3°C (100°F–200°F)
D2B: Materials causing toxic effect (Toxic)
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

16. OTHER INFORMATION
This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases

Hazard statement (s)

H227	: Combustible liquid.
H304	: May be fatal if swallowed and enters airways

H350	: May cause cancer
H340	: May cause genetic defects.
H411	: Toxic to aquatic life with long lasting effects

Precautionary statement (s)

P210	: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260	: Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P280	: Wear protective gloves/ protective clothing.
P301 + P310	: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P304 + P340	: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for Breathing.
P303 + P361 + P353	: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P305 + P351 + P338	: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P309 + P311	: IF exposed or you feel unwell: Call a POISON CENTER or doctor/physician

Risk Phrase (s)

R45	: May cause cancer
R46	: May cause heritable genetic damage
R65	: Harmful: may cause lung damage if swallowed.

Safety Phrase (s)

S7	: Keep container tightly closed.
S16	: Keep away from sources of ignition - No smoking.
S36/37/39	: Wear suitable protective clothing, gloves and eye/face protection
S45	: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S46	: If swallowed, seek medical advice immediately and show this container or label.
S24/25	: Avoid any inhalation, contact with skin and eyes.

Abbreviations and acronyms:

ADR	Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road).
RID	Règlement international concernant le transport des marchandises dangereuses

	par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail).
IMDG	International Maritime Code for Dangerous Goods
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
PBT	Persistent Bioaccumalative Toxic chemical
vPvB	Very Persistent and Very Bioaccumulative
OSHA	Occupational Safety and Health Administration
ACGIH	American Conference of Governmental Industrial Hygienists
TLV(s)	Threshold Limit Values
STEL	Short term exposure limit
NIOSH	National Institute for Occupational Safety and Health.
LDLo	lethal dose low
TCLo	Lowest published toxic concentration
IARC	International Agency For Research On Cancer
NTP	National Toxicology Program
EPA	Environment Protection Agency
EC	European Commission
EU	European Union
CLP	Classification, labeling and Packaging of substances
PG	Packing Group

MSDS Issuing Department: Safety
MSDS I.D. #104170.15

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MTS-Stimulation Services, Inc.

Safety Data Sheet

Version: 2
Revision Date: 07/08/2013

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name	: ISA-100 (LIQUID CITRIC ACID)
Trade name	: Citric Acid Solution 50%
CAS	: 77-92-9
EC#	: 201-069-1

1.2 Relevant identified uses of the substance or mixture and uses advised against

Iron Control

1.3 Details of the supplier of the safety data sheet

Company identification	: MTS Simulation Services, Inc. 7131 Charity Avenue Bakersfield California 93308 U.S.A.
Manufacturer / Distributor	: Amber Chemical, Inc. Bakersfield, CA
Product Information	: 1-661-589-5805
CHEMTREC	: 1-800-424-9300
Email	: msds@mts-stim.com
Website	: http://www.mts-stim.com

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

H319 Eye irritation (Category 2)

For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification according to EU Directives 67/548/EEC or 1999/45/EC

R36

For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements

Labeling according to Regulation (EC) No 1272/2008

The product is classified and labeled according to the CLP regulation.

Hazard pictograms

Signal word

Warning

Hazard statement (s)

H319	Causes serious eye irritation

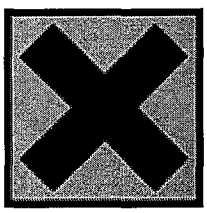
Precautionary statement (s)

P280	Wear protective gloves/protective clothing/eye protection/face protection

Hazard-determining components of labeling:
Contains: Citric Acid (50%)

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Symbol (s)



Signal word
Harmful

Risk Phrase (s)

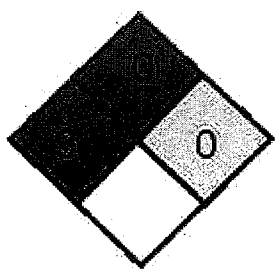
R36	Irritating to eyes.

Safety Phrase (s)

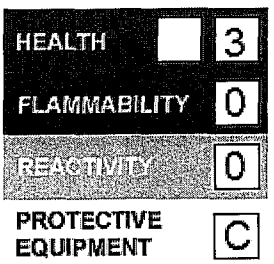
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

2.3 Other Hazards
None

NFPA Rating



HMIS



3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical characterization : Substance

Hazardous ingredients according to Regulation (EC) No 1272/2008

CAS-No. / EC-No.	Amount	Component	Classification: REGULATION (EC) No 1272/2008
CAS-No. 77-92-9	50.0%	Citric Acid	Eye irritation (Category 2) H319

EC-No.
201-069-1

For the full text of the H-Statements mentioned in this Section, see Section 16.

Hazardous ingredients according to Directive 1999/45/EC

CAS-No. / EC-No.	Amount	Component	Classification: 67/548/EEC
CAS-No. 77-92-9	50.0%	Citric Acid	Xi R36

EC-No.
201-069-1

For the full text of the Risk Phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General information
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

After inhalation
If breathed in, move person into fresh air. If not breathing give artificial respiration Consult a physician.

After skin contact
Wash off with soap and plenty of water. Consult a physician.

After eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

After swallowing
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Information for doctor
Attending physician should treat exposed individual symptomatically.

4.2 Most important symptoms and effects, both acute and delayed

Vomiting, Diarrhoea, Damage to tooth enamel., Dermatitis, to the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

4.3 Indication of any immediate medical attention and special treatment needed
No further relevant information available.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

no data available

5.3 Advice for firefighters

Wear self-contained breathing apparatus for fire fighting if necessary.

5.4 Further information

No special measures required.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Avoid breathing dust.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and material for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed..

7.2 Conditions for safe storage, including any incompatibilities

Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

7.3 Specific end uses

No data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Name	Source	Type	ppm	mg/m3
Citric Acid	No information available			

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment
Eye/face protection: Tightly fitting safety goggles. Face shield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. General industrial hygiene practice.

Body Protection: Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance form	: Clear white to medium yellow liquid
Odor	: odourless to very slight sugar odour
Odor threshold	: No data available
pH	: 2
Melting point / freezing point	: No data available
Initial boiling point and boiling range	: 219°F
Flash point	: No data available
Evaporation rate	: 1
Flammability (solid, gas)	: No data available
Upper/lower flammability or explosive limits	: No data available

Vapor pressure (mm Hg)	: 16 mmHg @ 20°C
Vapor density (AIR=1)	: 0.62
Specific Gravity	: 1.24 – 1.26
Water solubility	: Complete
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	: No data available
Kinematic	No data available
Dynamic	No data available
Pour Point	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available.

10.2 Chemical stability
Stable.

10.3 Possibility of hazardous reactions
Does not polymerize.

10.4 Conditions to avoid
No data available.

10.5 Incompatible materials
Oxidizing agents, Bases, Reducing agents, Nitrates

10.6 Hazardous decomposition products
No data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral	Rat	5.400 mg/kg
LD50 Dermal	Rat	> 2.000 mg/kg

Skin corrosion/irritation

Skin	rabbit	Mild skin irritation - 24 h (OECD Test Guideline 404)

Serious eye damage/eye irritation

Eyes	rabbit	Irritating to eyes (OECD Test Guideline 405)

Respiratory or skin sensitization

Prolonged or repeated exposure may cause allergic reactions in certain sensitive individuals.

Germ cell mutagenicity

No data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Potential Health effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	Causes serious eye irritation.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity:

Citric Acid (50%)

Toxicity to fish	mortality LC50 - Leuciscus idus melanotus - 440 mg/l - 48 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	static test - Daphnia magna (Water flea) - 1.535 mg/l - 24 h

12.2 Persistence and degradability

Behavior in environmental systems:

No data available

12.3 Bio accumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT	: No data available
vPvB	: No data available

12.6 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. Advice on disposal - do not dump into any sewers, on the ground, or into any body of water.

14. TRANSPORT IFORMATION

14.1 UN number

ADR/RID, IMDG, IATA : Not dangerous goods

14.2 UN proper shipping name

ADR/RID, IMDG, IATA : Not dangerous goods

14.3 Transport hazard class (es)

ADR/RID, IMDG, IATA : Not dangerous goods

14.4 Packaging group

ADR/RID, IMDG, IATA : Not dangerous goods

14.5 Environmental hazards

Marine pollutant : no

14.6 Special precautions for user

No data available.

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
No data available.

15.2 Chemical safety assessment
No data available

15.3 OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	No
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

US. Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Canadian WHMIS
E - Corrosive Material
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

16. OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases

Hazard statement (s)

H319	Causes serious eye irritation

Precautionary statement (s)

P280	Wear protective gloves/protective clothing/eye protection/face protection

Risk Phrases

R36	Irritating to eyes.

Safety Phrases

S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Abbreviations and acronyms:

ADR	Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road).
RID	Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail).
IMDG	International Maritime Code for Dangerous Goods
IATA	International Air Transport Association
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
PBT	Persistent Bioaccumalative Toxic chemical
vPvB	Very Persistent and Very Bioaccumulative
OSHA	Occupational Safety and Health Administration
NIOSH	National Institute for Occupational Safety and Health.
LDLo	lethal dose low
TCLo	Lowest published toxic concentration
IARC	International Agency For Research On Cancer
NTP	National Toxicology Program
EPA	Environment Protection Agency
EC	European Commission
EU	European Union
CLP	Classification, labeling and Packaging of substances
PG	Packing Group

MSDS Issuing Department: Safety
MSDS I.D. #104300.04

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MTS-Stimulation Services, Inc.

Safety Data Sheet

Version: 2
Revision Date: 07/03/2013

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name	: SSM-50 (mutual solvent)
General or Generic I.D.	: Glycol Ether EB, Glycol Ether EB 20130
CAS	: 111-76-2
EC#	: 203-905-0

1.2 Relevant identified uses of the substance or mixture and uses advised against

Mutual solvent in oilfield acidizing applications

1.3 Details of the supplier of the safety data sheet

Company identification	: MTS Simulation Services, Inc. 7131 Charity Avenue Bakersfield California 93308 U.S.A.
Manufacturer / Distributor	: Ashland Distribution Co., Columbus, OH
Product Information	: 1-661-589-5805
CHEMTREC	: 1-800-424-9300
Email	: msds@mts-stim.com
Website	: http://www.mts-stim.com

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

H332	: Acute toxicity, Inhalation (Category 4)
H312	: Acute toxicity, Dermal (Category 4)
H302	: Acute toxicity, Oral (Category 4)
H319	: Eye irritation (Category 2)
H315	: Skin irritation (Category 2)

For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification according to EU Directives 67/548/EEC or 1999/45/EC

XnR20/21/22, Xi R36/38.

For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements

The product is classified and labeled according to the CLP regulation.

Hazard pictograms

Signal word
Danger

Hazard statement (s)

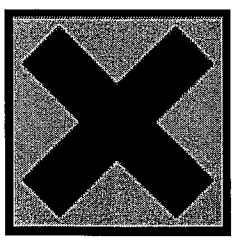
H332	Harmful if inhaled
H312	Harmful in contact with skin
H302	Harmful if swallowed.
H319	Causes serious eye irritation
H315	Causes skin irritation

Precautionary statement (s)

P280	Wear protective gloves/ protective clothing
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Hazard-determining components of labeling:
Contains: 2-butoxyethanol, <=100%

Classification according to EU Directives 67/548/EEC or 1999/45/EC



Signal word
Harmful

Risk Phrase (s)

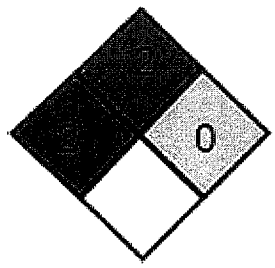
R20/21/22	: Harmful by inhalation, in contact with skin and if swallowed.
R36/38	: Causes burns.

Safety Phrase (s)

S36/37	: Wear suitable protective clothing and gloves
S46	: If swallowed, seek medical advice immediately and show this container or label.

2.3 Other Hazards
None

NFPA Rating



HMIS

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical characterization: Substance

Hazardous ingredients according to Regulation (EC) No 1272/2008

CAS-No. / EC-No.	Amount	Component	Classification: REGULATION (EC) No 1272/2008
CAS-No. 111-76-2	<=100.00%	Ethylene Glycol Monobutyl Ether	H332 Acute toxicity, Inhalation (Category 4) H312 Acute toxicity, Dermal (Category 4) H302 Acute toxicity, Oral (Category 4) H319 Eye irritation (Category 2) H315 Skin irritation (Category 2)
EC-No. 203-905-0			

For the full text of the H-Statements mentioned in this Section, see Section 16.

Hazardous ingredients according to Directive 1999/45/EC

CAS-No. / EC-No.	Amount	Component	Classification:67/548/EEC
CAS-No. 111-76-2	<=100.00%	Ethylene Glycol Monobutyl Ether	Xn R20/21/22, Xi R36/38
EC-No. 203-905-0			

For the full text of the Risk Phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures
General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician..

4.2 Most important symptoms and effects, both acute and delayed

Human exposure above 200 ppm can be expected to cause narcosis, damage to the kidney and liver and present an abnormal blood picture showing erythropenia, reticulocytosis, granulocytosis, leukocytosis, and would be likely to cause fragility of erythrocytes and hematuria. Swallowing of 2-butoxyethanol results in a sour taste that turns to a burning sensation and is followed by numbness of the tongue which indicates paralysis of the sensory nerve endings., Central nervous system depression, Headache, narcosis

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Carbon oxides

5.3 Advice for firefighters

Wear self-contained breathing apparatus for fire-fighting if necessary.

5.4 Further information

No further relevant information available.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

6.2 Environmental precautions

Prevent spills from entering sewers, watercourses or low areas.

6.3 Methods and material for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place

in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. Keep away from sources of ignition – No smoking. Take measures to prevent the buildup of electrostatic charge.

7.2 Conditions for safe storage, including any incompatibilities

Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

7.3 Specific end uses

No data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Name	Source	Type	ppm	mg/m3
Ethylene Glycol Monobutyl Ether	ACGIH (US)	TWA	20 ppm	
	OSHA PEL (US)	TWA	50 ppm	240 mg/m3
	NIOSH	SKIN TWA	-----	24mg/m3
		TWA	5 ppm	

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment
Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance form	: colorless liquid
Odor	: No data available
Odor threshold	: No data available
pH	: 7
Melting point / freezing point	: -94 °F (-70 °C)
Initial boiling point and boiling range	: 340 – 342 °F (171 - 172°C)
Flash point	: 143.06°F (61.70 °C) Closed Cup
Evaporation rate	: 0.06 (N-Butyl Acetate)
Flammability (solid, gas)	: No data available
Upper/lower flammability or explosive limits	: No data available
Vapor pressure	: 0.11 kPa @ 77 °F (25 °C)
Vapor density (AIR=1)	: 4.1
Relative density	: 0.9 g/cm3 @ 68°F (20 °C) : 7.51 lbs/gal @ 68°F (20°C)
Water solubility (g/cc)(%)	: Completely miscible in water
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	:
Kinematic	No data available
Dynamic	No data available
Pour Point	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No data available.

10.4 Conditions to avoid

Heat, flames and sparks

10.5 Incompatible materials

Strong oxidizing agents

10.6 Hazardous decomposition products

No data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Ethylene Glycol Monobutyl Ether

LD50 Oral	Rat	470 mg/kg
LC50 Inhalation	Rat	4 h - 450 ppm Remarks: Behavioral: Ataxia. Nutritional and Gross Metabolic: Weight loss or decreased weight gain.
LD50 Dermal	Rabbit	220 mg/kg
LD50 Intraperitoneal	Rat	220 mg/kg
LD50 Intravenous	Rat	307 mg/kg

Skin corrosion/irritation

Skin	**Rabbit**	Open irritation test

Serious eye damage/eye irritation

Eyes	Rabbit	Moderate eye irritation - 24 h

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans

Reproductive toxicity

Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Other Information

Human exposure above 200 ppm can be expected to cause narcosis, damage to the kidney and liver and present an abnormal blood picture showing erythropenia, reticulocytosis, granulocytosis, leukocytosis, and would be likely to cause fragility of erythrocytes and hematuria. Swallowing of 2-butoxyethanol results in a sour taste that turns to a burning sensation and is followed by numbness of the tongue which indicates paralysis of the sensory nerve endings., Central nervous system depression, Headache, narcosis

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity:

2-Butoxyethanol

Toxicity to fish	LC50 - other fish - 220 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 1.815 mg/l - 24 h

12.2 Persistence and degradability

Behavior in environmental systems:

Ethylene Glycol Monobutyl Ether	No data available

12.3 Bio accumulative potential

Ethylene Glycol Monobutyl Ether No data available

12.4 Mobility in soil

Ethylene Glycol Monobutyl Ether No data available

12.5 Results of PBT and vPvB assessment

PBT : No data available

vPvB : No data available

12.6 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. Advice on disposal - do not dump into any sewers, on the ground, or into any body of water.

14. TRANSPORT INFORMATION

14.1 UN number

ADR/RID, IMDG, IATA : Not Regulated

14.2 UN proper shipping name

ADR/RID, IMDG, IATA : Not Regulated

14.3 Transport hazard class (es)

ADR/RID, IMDG, IATA : Not Regulated

14.4 Packaging group

ADR/RID, IMDG, IATA : Not Regulated

14.5 Environmental hazards

Marine pollutant : No

14.6 Special precautions for user

No data available.

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

No data available.

15.2 Chemical safety assessment

No data available.

15.3 OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	Yes
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This product contains the below components listed which require reporting under this statute.

Ethylene Glycol Monobutyl Ether	<=100.0 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:

This product contains the below components listed which require reporting under this statute.

Ethylene Glycol Monobutyl Ether	<=100.0 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

US. Toxic Substances Control Act

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

CEPA - Domestic Substances List (DSL)

All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Canadian WHMIS

B3 Combustible liquid 1.
D1A Very Toxic Material Causing Immediate and Serious Toxic Effects.
D2B Toxic Material Causing Other Toxic Effects eye irritation in animals; skin irritation in animal.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

16. OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant Phrases

Hazard statement (s)

H332	Harmful if inhaled
H312	Harmful in contact with skin
H302	Harmful if swallowed.
H319	Causes serious eye irritation
H315	Causes skin irritation

Precautionary statement (s)

P280	Wear protective gloves/ protective clothing
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Risk Phrase (s)

R20/21/22	: Toxic if swallowed.
R36/38	: Causes burns.

Safety Phrase (s)

S36/37	: Wear suitable protective clothing and gloves
S46	: If swallowed, seek medical advice immediately and show this container or label.

Abbreviations and acronyms:

ADR	Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road).
RID	Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail).
IMDG	International Maritime Code for Dangerous Goods
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
GHS	Globally Harmonized System of Classification and Labeling of Chemicals

LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
PBT	Persistent Bioaccumalative Toxic chemical
vPvB	Very Persistent and Very Bioaccumulative
OSHA	Occupational Safety and Health Administration
ACGIH	American Conference of Governmental Industrial Hygienists
TLV(s)	Threshold Limit Values
STEL	Short term exposure limit
NIOSH	National Institute for Occupational Safety and Health.
LDLo	lethal dose low
TCLo	Lowest published toxic concentration
IARC	International Agency For Research On Cancer
NTP	National Toxicology Program
EPA	Environment Protection Agency
EC	European Commission
EU	European Union
CLP	Classification, labeling and Packaging of substances
PG	Packing Group

MSDS Issuing Department: Safety
MSDS I.D. #104406.04

DISCLAIMER:
This information was obtained from sources MTS-Simulation Service, Inc. believes to be reliable. However, the information is provided without any warranty, express or implied, regarding its thoroughness and accuracy. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For these reasons sources MTS-Simulation Service, Inc. does not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of, or in any way connected with the handling, storage, use or disposal of the product. This information was prepared for this product only. If the product is used as a component in another product some of the information may not apply.

MTS-Stimulation Services, Inc.

Safety Data Sheet

Version: 2
Revision Date: 06/18/2013

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name	: SW-211 (clay stabilizer)
Trade name	: Cortron WRN-211
Chemical family	: Blends
CAS	: Mixture
EC#	: Not applicable

1.2 Relevant identified uses of the substance or mixture and uses advised against

Clay stabilizer

1.3 Details of the supplier of the safety data sheet

Company identification	: MTS Simulation Services, Inc. 7131 Charity Avenue Bakersfield California 93308 U.S.A.
Manufacturer / Distributor	: Champion Technologies, Inc. Houston, TX
Product Information	: 1-661-589-5805
CHEMTREC	: 1-800-424-9300
Email	: msds@mts-stim.com
Website	: http://www.mts-stim.com

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

H226	: Flammable liquids (Category 3)
H331	: Acute toxicity, Inhalation (Category 3)
H301	: Acute toxicity, Oral (Category 3)
H311	: Acute toxicity, Dermal (Category 3)
H370	: Specific target organ toxicity - single exposure (Category 1)
H314	: Skin corrosion (Category 1A)

For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification according to EU Directives 67/548/EEC or 1999/45/EC

F; R11, T; R23/24/25-39/23/24/25, C R34

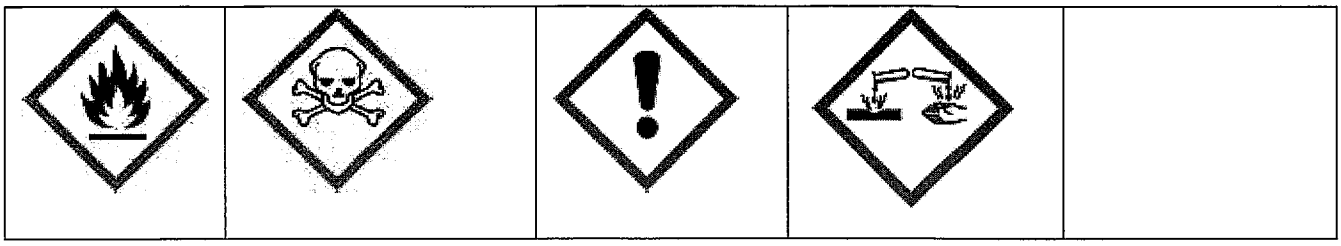
For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements

Labeling according to Regulation (EC) No 1272/2008

The product is classified and labeled according to the CLP regulation.

Hazard pictograms



Signal word

Danger

Hazard statement (s)

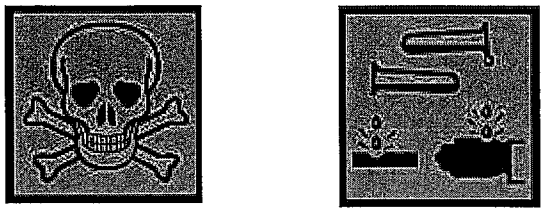
H226	: Flammable liquid and vapor
H330	: Fatal if inhaled
H301	: Toxic if swallowed
H311	: Toxic in contact with skin.
H370	: Causes damage to organs.
H314	: Causes severe skin burns and eye damage

Precautionary statement (s)

P210	: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260	: Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P280	: Wear protective gloves/ protective clothing.
P301 + P310	: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P311	: Call a POISON CENTER or doctor/ physician..

Hazard-determining components of labeling:
Contains: Methanol

Classification according to EU Directives 67/548/EEC or 1999/45/EC
Symbol (s)



Signal word
Danger

Risk Phrase (s)

R10	: Flammable.
R23/24/25	: Toxic by inhalation, in contact with skin and if swallowed.
R39/23/24/25	: Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
R34	: Causes burns

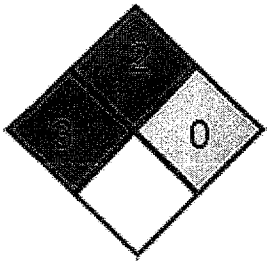
Safety Phrase (s)

S16	: Keep away from sources of ignition - No smoking.
S36/37	: Wear suitable protective clothing and gloves.
S45	: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S7	: Keep container tightly closed.

2.3 Other Hazards

None

NFPA Rating



HMIS

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical characterization: Mixture

Hazardous ingredients according to Regulation (EC) No 1272/2008

CAS-No. / EC- No.	Amount	Component	Classification: REGULATION (EC) No 1272/2008
CAS-No. 67-56-1 **EC-No.** 200-659-6	10.0 - 30.0 %	Methanol	H225 : Flammable liquids (Category 2) , H301: Acute toxicity, Oral (Category 3), H311: Acute toxicity, Dermal (Category 3), H331 : Acute toxicity, Inhalation (Category 3), H370: Specific target organ toxicity – single exposure, (Category 1),

CAS-No. Propreitary **EC-No.** Propreitary	10.0 - 30.0 %	Ionic Surfactants	H302 : Harmful if swallowed H312 : Harmful in contact with skin H332 : Harmful if inhaled H314: Causes severe skin burns and eye damage

For the full text of the H-Statements mentioned in this Section, see Section 16.

Hazardous ingredients according to Directive 1999/45/EC

CAS-No. / EC-No.	Amount	Component	Classification: 67/548/EEC
CAS-No. 67-56-1 **EC-No.** 200-659-6	10.0 - 30.0 %	Methanol	F, T, R11 - R23/24/25 - R39/23/24/25
CAS-No. Propreitary **EC-No.** Propreitary	10.0 - 30.0 %	Ionic Surfactants	Xn 20,21,22- C34

For the full text of the Risk Phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
Get medical attention immediately. Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

In case of skin contact
Get medical attention immediately. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

In case of eye contact
Get medical attention immediately. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician..

If swallowed
Get medical attention immediately. Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person.

Protection of first-aiders
No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Notes to physician
No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

5. FIRE FIGHTING MEASURES

Flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

5.1 Extinguishing media

Suitable extinguishing media

Use dry chemical, CO2, water spray (fog) or foam. Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Hazardous combustion products

carbon dioxide, carbon monoxide, nitrogen oxides, halogenated compounds

5.3 Advice for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information

Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

6.2 Environmental precautions

Avoid contact of spilled material with soil and prevent runoff entering surface waterways. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and materials for containment and cleaning up

Small spill

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spill

Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Use only with adequate ventilation. Put on appropriate personal protective equipment (see section 8). Wear appropriate respirator when ventilation is inadequate. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not enter storage areas and confined spaces unless adequately ventilated. Eliminate all ignition sources. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. To avoid fire or | explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container. Workers should wash hands and face before eating, drinking and smoking

7.2 Conditions for safe storage, including any incompatibilities.

Store in accordance with local regulations. Store in a segregated and approved area. Keep container in a well-ventilated area. Store in the original container or an approved alternative made from a compatible material. Keep tightly closed when not in use. Separate from oxidizing materials. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination..

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Name	Source	Type	ppm	mg/m3
Methanol	ACGIH TLV- SKIN	TWA STEL	200 ppm 250 ppm	262 mg/m3 328 mg/m3
	OSHA PEL	TWA	200 ppm	260 mg/m3
	NIOSH REL- SKIN	TWA STEL	200 ppm 250 ppm	260 mg/m3 325 mg/m3

SKIN - Skin absorption can contribute significantly to overall exposure.

8.2 Exposure controls

Appropriate engineering controls
Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Personal protective equipment
Eye/face protection: Goggles, face shield or other full-face protection should be worn if there is a risk of direct exposure to aerosols or splashes.

Skin protection: Handle with gloves. Use chemical-resistant, impervious gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection: If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hygiene measures
Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Emergency baths, showers, or other equipment appropriate for the potential level of exposure should be located close to the workstation location.

Control of environmental exposure
Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance form	: Clear Colorless Paste
Odor	: No data available
Odor threshold	: No data available
pH	: 4.5 - 7.5
Melting point / freezing point	: No data available
Initial boiling point and boiling range	: No data available
Flash point	: 101 °F (38.3 °C), Pensky-Martens. Closed cup
Evaporation rate	: No data available
Flammability (solid, gas)	: No data available

Upper/lower flammability or explosive limits	: No data available
Vapor pressure (mm Hg)	: No data available
Vapor density (AIR=1)	: No data available
Relative density @ 68 °F (20 °C)	: 0.9410 - 0.9710
Water solubility	: Soluble
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	:
Kinematic	No data available
Dynamic	2 - 8 cPs
Pour Point	: < -20 °F (< -28.9 °C)
Explosive properties	: No data available
Oxidizing properties	: No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous polymerization will not occur.

10.4 Conditions to avoid

Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

10.5 Incompatible materials

Oxidizing agents

10.6 Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced..

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Methanol

LD50 Oral	Rat	5,600 mg/kg
LD50 Oral	Mouse	5,800 mg/kg
LD50 Oral	Rabbit	14,200 mg/kg
LC50 Inhalation	Mouse	41000 ppm
LC50 Inhalation	Rat	64000 ppm
LD50 Inhalation	Rabbit	81,000 mg/m3
LD50 Dermal	Rabbit	15,800 mg/kg

Ionic surfactant

LD50 Oral	Rat	426 mg/kg
LD50 Oral	Mouse	919 mg/kg

Skin corrosion/irritation

Methanol

Skin	Rabbit	No skin irritation

Ionic surfactant

No data available

Serious eye damage/eye irritation

Methanol

Eyes	Rabbit	No eye irritation

Ionic surfactant

No data available

Respiratory or skin sensitization

Methanol

Maximization Test	guinea pig	No skin sensitization

Ionic surfactant

No data available

Germ cell mutagenicity

Methanol

Ames test
S. typhimurium
Result: negative

in vitro assay
fibroblast
Result: negative
Mutation in mammalian somatic cells.

Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)

mouse - male and female
Result: negative

Ionic surfactant

No data available

Carcinogenicity

Methanol

IARC: No component of this product presents at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Ionic surfactant

No data available

Reproductive toxicity

Methanol

Damage to fetus not classifiable. Fertility classification not possible from current data.

Ionic surfactant

No data available

Specific target organ toxicity - single exposure

Methanol

Causes damage to organs.

Ionic surfactant

No data available

Specific target organ toxicity - repeated exposure

Methanol

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Ionic surfactant

No data available

Aspiration hazard

Methanol

No data available

Ionic surfactant

No data available

Other Information

Methanol

Methyl alcohol may be fatal or cause blindness if swallowed. Effects due to ingestion may include: headache, dizziness, drowsiness, metabolic acidosis, coma, seizures. symptoms may be delayed., damage of the: Liver, Kidney

Ionic surfactant

No data available

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity:

Methanol

Toxicity to fish	Mortality LC50 - Lepomis macrochirus (Bluegill) - 15.400,0 mg/l - 96 h
	NOEC - Oryzias latipes - 7.900 mg/l - 200 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - > 10.000,00 mg/l - 48 h
Toxicity to algae Growth inhibition	Growth inhibition EC50 - Scenedesmus capricornutum (fresh water algae) -
	22.000,0 mg/l - 96 h

Ionic surfactant

No data available

12.2 Persistence and degradability

Behavior in environmental systems:

Methanol

Biodegradability	Aerobic - Exposure time 5 d Result: 72 % - rapidly biodegradable
Biochemical Oxygen Demand (BOD)	600 - 1.120 mg/g
Chemical Oxygen Demand (COD)	1.420 mg/g
Theoretical oxygen demand	1.500 mg/g

Ionic surfactant

No data available

12.3 Bio accumulative potential

Methanol

Bioaccumulation	Cyprinus carpio (Carp) - 72 d at 20 °C - 5 mg/l Bioconcentration factor (BCF): 1,0

Ionic surfactant

No data available

12.4 Mobility in soil

Methanol

No data available

Ionic surfactant

No data available

12.5 Results of PBT and vPvB assessment

PBT : No data available

vPvB : No data available

12.6 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. Advice on disposal - do not dump into any sewers, on the ground, or into any body of water.

14. TRANSPORT IFORMATION

14.1 UN number

ADR/RID, IMDG, IATA : UN 1992

14.2 UN proper shipping name

ADR/RID, IMDG, IATA : Flammable Liquids, n.o.s. (Methanol)

14.3 Transport hazard class (es)

ADR/RID, IMDG, IATA : Class 3

14.4 Packaging group

ADR/RID, IMDG, IATA : PG II

14.5 Environmental hazards

Marine pollutant : No

14.6 Special precautions for user

No data available.

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

No data available.

15.2 Chemical safety assessment

No data available.

15.3 OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	Yes
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

SARA Title III Section 302 Extremely hazardous substances (40 CFR Part 355):
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This product contains the below components listed which require reporting under this statute.

Methanol	10.0 – 30.0 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
This product contains the below components listed which require reporting under this statute.

Methanol	10.0 – 30.0 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
This product contains the below components listed which require reporting under this statute.

Methanol	10.0 – 30.0 %

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains the below components listed which require reporting under this statute.

Methanol	10.0 – 30.0 %

US Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

CERCLA: Hazardous substances - Reportable quantity:

Substance	**Reportable quantity**
Methanol	5000 lbs

Product Reportable quantity	**Substance**
21,848 lb, 2,750 gal US	Methanol

Product spills equal to or exceeding the threshold above trigger the reporting requirements under CERCLA for the listed hazardous substance. Report the spill or release to the National Response Center (NRC) at (800) 424-8802.

Clean Water Act (CWA) 307:
None of the components are listed.

Clean Water Act (CWA) 311:
None of the components are listed.

Clean Air Act (CAA) 112 accidental release prevention:
None of the components are listed.

Clean Air Act (CAA) 112 regulated flammable substances:
None of the components are listed.

Clean Air Act (CAA) 112 regulated toxic substances:
None of the components are listed.

Massachusetts Substances:
The following components are listed: Methanol.

New Jersey Hazardous Substances:
The following components are listed: Methanol.

Canadian WHMIS
B2 - Flammable and combustible material - Flammable liquid
D1B - Poisonous and infectious material - Immediate and serious effects - Toxic
D2A - Poisonous and infectious material - Other effects - Very toxic
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

16. OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases

Hazard statement (s)

H226	: Flammable liquid and vapor
H330	: Fatal if inhaled
H301	: Toxic if swallowed
H311	: Toxic in contact with skin.
H370	: Causes damage to organs.
H314	: Causes severe skin burns and eye damage

Precautionary statement (s)

P210	: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260	: Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P280	: Wear protective gloves/ protective clothing.
P301 + P310	: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P311	: Call a POISON CENTER or doctor/ physician.

Risk Phrase (s)

R10	: Flammable.
R23/24/25	: Toxic by inhalation, in contact with skin and if swallowed.
R39/23/24/25	: Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
R34	: Causes Burns

Safety Phrase (s)

S16	: Keep away from sources of ignition - No smoking.
S36/37	: Wear suitable protective clothing and gloves.
S45	: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S7	: Keep container tightly closed.

Abbreviations and acronyms:

ADR	Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road).
RID	Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail).
IMDG	International Maritime Code for Dangerous Goods
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
PBT	Persistent Bioaccumalative Toxic chemical
vPvB	Very Persistent and Very Bioaccumulative
OSHA	Occupational Safety and Health Administration

ACGIH	American Conference of Governmental Industrial Hygienists
TLV(s)	Threshold Limit Values
STEL	Short term exposure limit
NIOSH	National Institute for Occupational Safety and Health.
LDLo	lethal dose low
TCLo	Lowest published toxic concentration
IARC	International Agency For Research On Cancer
NTP	National Toxicology Program
EPA	Environment Protection Agency
EC	European Commission
EU	European Union
CLP	Classification, labeling and Packaging of substances
PG	Packing Group

MSDS issuing Department: Safety
MSDS I.D. #104841.04

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NALCO Champion
An Ecolab Company

SAFETY DATA SHEET

Flotron® M-154

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Flotron® M-154
Other means of identification	:	Not applicable.
Recommended use	:	PARAFFIN DISPERSANT, Asphaltene Dispersant, PARAFFIN AND/OR ASPHALTENE CHEMICAL
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	Nalco Champion Company 7705 Highway 90-A Sugar Land, Texas 77478 USA TEL: (281) 263-7000
Emergency telephone number	:	(800) 424-9300 (24 Hours) CHEMTREC
Issuing date	:	02/20/2015

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids	:	Category 2
Acute toxicity (Oral)	:	Category 4
Acute toxicity (Inhalation)	:	Category 4
Skin corrosion	:	Category 1B
Serious eye damage	:	Category 1
Germ cell mutagenicity	:	Category 1B
Carcinogenicity	:	Category 1B
Reproductive toxicity	:	Category 2
Specific target organ toxicity - single exposure	:	Category 3 (Respiratory system, Central Nervous System)
Specific target organ toxicity - repeated exposure	:	Category 2
Aspiration hazard	:	Category 1

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : Highly flammable liquid and vapour.
Harmful if swallowed or if inhaled
May be fatal if swallowed and enters airways.
Causes severe skin burns and eye damage.
May cause respiratory irritation.
May cause drowsiness or dizziness.

May cause genetic defects.
May cause cancer.
Suspected of damaging fertility or the unborn child.
May cause damage to organs through prolonged or repeated exposure.

Precautionary Statements : **Prevention:**
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ ventilating/ lighting/ equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe dust/fume/gas/mist/vapours/spray. Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/ protective clothing/ eye protection/ face protection. Use personal protective equipment as required.
Response:
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. IF SWALLOWED: rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice/attention. Immediately call a POISON CENTER or doctor/ physician. Wash contaminated clothing before reuse. In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
Storage:
Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Chemical Name	CAS-No.	Concentration: (%)
Toluene	108-88-3	60 - 100
Light Aliphatic Naphtha	64742-89-8	10 - 30
Organic sulfonic acid	Proprietary	5 - 10
Organic sulfonic acid	Proprietary	1 - 5

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes.

		Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
If swallowed	:	Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Aspiration hazard if swallowed - can enter lungs and cause damage. Get medical attention immediately.
If inhaled	:	Remove to fresh air. Treat symptomatically. Get medical attention if symptoms occur.
Protection of first-aiders	:	In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders.Use personal protective equipment as required.
Notes to physician	:	Treat symptomatically.
Most important symptoms and effects, both acute and delayed	:	See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	High volume water jet
Specific hazards during firefighting	:	Fire Hazard Keep away from heat and sources of ignition. Flash back possible over considerable distance. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Hazardous combustion products	:	Carbon oxides Sulphur oxides
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Use water spray to cool unopened containers. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.

Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Remove all sources of ignition. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.

Methods and materials for containment and cleaning up : Eliminate all ignition sources if safe to do so. Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Do not flush into surface water or sanitary sewer system.

Section: 7. HANDLING AND STORAGE

Advice on safe handling : Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Do not ingest. Keep away from fire, sparks and heated surfaces. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation.

Conditions for safe storage : Keep away from heat and sources of ignition. Keep in a cool, well-ventilated place. Keep away from oxidizing agents. Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers.

Suitable material : Keep in properly labelled containers.

Unsuitable material : not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Toluene	108-88-3	TWA	20 ppm	ACGIH
		TWA	100 ppm 375 mg/m3	NIOSH REL
		STEL	150 ppm 560 mg/m3	NIOSH REL
		TWA	200 ppm	OSHA/Z2
		CEIL	300 ppm	OSHA/Z2
		Peak	500 ppm	OSHA/Z2
Light Aliphatic Naphtha	64742-89-8	TWA	500 ppm 2,000 mg/m3	OSHA Z1

Engineering measures : Effective exhaust ventilation system Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Safety goggles
Face-shield

Hand protection : Wear the following personal protective equipment:
Standard glove type.

		Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin protection	:	Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing
Respiratory protection	:	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Colour	:	brown
Odour	:	hydrocarbon-like
Flash point	:	-3.9 °C Method: Tag closed cup
pH	:	Not applicable.
Odour Threshold	:	no data available
Melting point/freezing point	:	pour point: -40 °C
Initial boiling point and boiling range	:	no data available
Evaporation rate	:	no data available
Flammability (solid, gas)	:	no data available
Upper explosion limit	:	no data available
Lower explosion limit	:	no data available
Vapour pressure	:	no data available
Relative vapour density	:	no data available
Relative density	:	0.8314 - 0.8714 (15.6 °C)
Density	:	0.828 - 0.8679 g/cm3
Water solubility	:	insoluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition temperature	:	no data available
Viscosity, dynamic	:	2 - 10 mPa.s (23.9 °C)
Viscosity, kinematic	:	4.6 mm2/s (40 °C)

VOC	:	no data available

Section: 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	Heat, flames and sparks.
Incompatible materials	:	Strong bases Strong oxidizing agents
Hazardous decomposition products	:	Carbon oxides Sulphur oxides

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Causes serious eye damage.
Skin	:	May be harmful in contact with skin. Causes severe skin burns.
Ingestion	:	May be fatal if swallowed and enters airways. Causes digestive tract burns.
Inhalation	:	May cause respiratory tract irritation. May cause nose, throat, and lung irritation. Inhalation may cause central nervous system effects.
Chronic Exposure	:	May cause cancer. May cause damage to organs through prolonged or repeated exposure. May cause genetic defects.

Experience with human exposure

Eye contact	:	Redness, Pain, Corrosion
Skin contact	:	Redness, Pain, Corrosion
Ingestion	:	Corrosion, Vomiting, Abdominal pain
Inhalation	:	Respiratory irritation, Cough, Dizziness, Drowsiness

Toxicity

Product

Acute oral toxicity	:	Acute toxicity estimate : 1,660 mg/kg
Acute inhalation toxicity	:	Acute toxicity estimate : 16.92 mg/l Exposure time: 4 h

Acute dermal toxicity	:	no data available
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	no data available
Reproductive effects	:	no data available
Germ cell mutagenicity	:	no data available
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	no data available

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects : Toxic to aquatic life.
Harmful to aquatic life with long lasting effects.

Components

Toxicity to fish : Organic sulfonic acid
LC50 Fish: 5.07 mg/l
Exposure time: 96 h

Components

Toxicity to algae : Toluene
EC50 Chlamydomonas angulosa: 134 mg/l
Exposure time: 3 h

Components

Toxicity to bacteria : Toluene
EC50 Nitrosomonas Sp.: 84 mg/l
Exposure time: 24 h

Components

Toxicity to fish (Chronic toxicity) : Toluene
NOEC: 1.39 mg/l
Exposure time: 40 d
Species: Coho Salmon

Components

Toxicity to daphnia and other aquatic invertebrates : Toluene
NOEC: 0.74 mg/l

(Chronic toxicity)	Exposure time: 7 d Species: Ceriodaphnia dubia

Persistence and degradability

no data available

Mobility

no data available

Bioaccumulative potential

no data available

Other information

no data available

Section: 13. DISPOSAL CONSIDERATIONS

Disposal methods	:	The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.
Disposal considerations	:	Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport (DOT)

The presence of an RQ component (Reportable Quantity for U.S. EPA and DOT) in this product causes it to be regulated with an additional description of RQ for road, or as a class 9 for road and air, ONLY when the net weight in the package exceeds the calculated RQ for the product.

Proper shipping name	:	FLAMMABLE LIQUID, CORROSIVE, N.O.S.
Technical name(s)	:	Toluene, Alkylbenzene sulfonic acid
UN/ID No.	:	UN 2924
Transport hazard class(es)	:	3, 8
Packing group	:	II
Reportable Quantity (per package)	:	1,538 lbs
RQ Component	:	Toluene

Air transport (IATA)

The presence of an RQ component (Reportable Quantity for U.S. EPA and DOT) in this product causes it to be regulated with an additional description of RQ for road, or as a class 9 for road and air, ONLY when the net weight in the package exceeds the calculated RQ for the product.

Proper shipping name	:	FLAMMABLE LIQUID, CORROSIVE, N.O.S.
Technical name(s)	:	Toluene, Alkylbenzene sulfonic acid

UN/ID No.	:	UN 2924
Transport hazard class(es)	:	3, 8
Packing group	:	II
Reportable Quantity (per package)	:	1,538 lbs
RQ Component	:	Toluene

Sea transport (IMDG/IMO)

Proper shipping name	:	FLAMMABLE LIQUID, CORROSIVE, N.O.S.
Technical name(s)	:	Toluene, Alkylbenzene sulfonic acid
UN/ID No.	:	UN 2924
Transport hazard class(es)	:	3, 8
Packing group	:	II

Section: 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Toluene	108-88-3	1000	1538

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard
Chronic Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Toluene	108-88-3	60 - 100 %

California Prop 65
WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Toluene	108-88-3

INTERNATIONAL CHEMICAL CONTROL LAWS :

TOXIC SUBSTANCES CONTROL ACT (TSCA)
On the inventory, or in compliance with the inventory

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)
This product contains the following components listed on the Canadian NDSL. All other components are on the Canadian DSL.

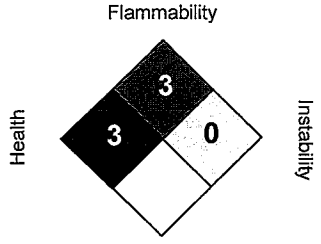
AUSTRALIA
Not in compliance with the inventory

CHINA
On the inventory, or in compliance with the inventory

NEW ZEALAND
On the inventory, or in compliance with the inventory

Section: 16. OTHER INFORMATION

NFPA:



Special hazard.

HMIS III:

HEALTH	3*
FLAMMABILITY	3
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date	:	02/20/2015
Version Number	:	1.0
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
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NALCO Champion
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SAFETY DATA SHEET

Surfatron® DQ-88

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Surfatron® DQ-88
Other means of identification	:	Not applicable.
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	Nalco Champion Company 7705 Highway 90-A Sugar Land, Texas 77478 USA TEL: (281) 263-7000
Emergency telephone number	:	(800) 424-9300 (24 Hours) CHEMTREC
Issuing date	:	03/20/2015

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Oral)	:	Category 4
Skin corrosion	:	Category 1B
Serious eye damage	:	Category 1
Skin sensitization	:	Category 1
Reproductive toxicity	:	Category 2

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : Harmful if swallowed.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
Suspected of damaging fertility or the unborn child.

Precautionary Statements : **Prevention:**
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/ protective clothing/ eye protection/ face protection. Use personal protective equipment as required.
Response:
IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. IF SWALLOWED: rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/ Take off immediately all

contaminated clothing. Rinse skin with water/ shower. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice/attention. If skin irritation or rash occurs: Get medical advice/ attention. Wash contaminated clothing before reuse.

Storage:
Store locked up.

Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Chemical Name	CAS-No.	Concentration: (%)
Quaternary ammonium compound	Proprietary	10 - 30
Quaternary phosphorus compound	Proprietary	10 - 30
Methanol	67-56-1	1 - 5

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

If swallowed : Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention if symptoms occur.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders.Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing : None known.

media

Specific hazards during firefighting	:	Not flammable or combustible.
Hazardous combustion products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulphur oxides Oxides of phosphorus Hydrogen chloride
Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.

Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Flush away traces with water.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Do not ingest. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation.
Conditions for safe storage	:	Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers.
Suitable material	:	Keep in properly labelled containers.
Unsuitable material	:	not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Tetrakis(hydroxymethyl) phosphonium sulfate	55566-30-8	TWA	2 mg/m3	ACGIH

Methanol	67-56-1	TWA	200 ppm	ACGIH
		STEL	250 ppm	ACGIH
		TWA	200 ppm 260 mg/m3	NIOSH REL
		STEL	250 ppm 325 mg/m3	NIOSH REL
		TWA	200 ppm 260 mg/m3	OSHA Z1

Engineering measures : Effective exhaust ventilation system Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Safety goggles
Face-shield

Hand protection : Wear protective gloves.
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing

Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid
Colour : colourless
Odour : no data available
Flash point : Not applicable.
pH : 2.3 - 4.3, Neat
Odour Threshold : no data available
Melting point/freezing point : pour point: <= -15 °C
Initial boiling point and boiling range : no data available
Evaporation rate : no data available
Flammability (solid, gas) : no data available
Upper explosion limit : no data available
Lower explosion limit : no data available
Vapour pressure : no data available
Relative vapour density : no data available
Relative density : 1.0347 - 1.0747 (15.6 °C)

Density	:	no data available
Water solubility	:	completely soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition temperature	:	no data available
Viscosity, dynamic	:	4 - 9 mPa.s (23.9 °C)
Viscosity, kinematic	:	no data available
VOC	:	no data available

Section: 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	None known.
Incompatible materials	:	Oxidizing agents
Hazardous decomposition products	:	Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulphur oxides Oxides of phosphorus Hydrogen chloride

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Causes serious eye damage.
Skin	:	Causes severe skin burns. May cause allergic skin reaction.
Ingestion	:	May cause blindness if swallowed. Harmful if swallowed. Causes digestive tract burns.
Inhalation	:	May cause nose, throat, and lung irritation.
Chronic Exposure	:	Suspected of damaging fertility or the unborn child.

Experience with human exposure

Eye contact	:	Redness, Pain, Corrosion
Skin contact	:	Redness, Pain, Irritation, Corrosion, Allergic reactions
Ingestion	:	Corrosion, Abdominal pain

Inhalation	:	Respiratory irritation, Cough

Toxicity

Product

Acute oral toxicity	:	Acute toxicity estimate : 950.62 mg/kg
Acute inhalation toxicity	:	Acute toxicity estimate : 0.28 mg/l Exposure time: 4 h
Acute dermal toxicity	:	Acute toxicity estimate : > 5,000 mg/kg
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	no data available
Reproductive effects	:	no data available
Germ cell mutagenicity	:	no data available
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	no data available

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects	:	Very toxic to aquatic life. Harmful to aquatic life with long lasting effects.

Components

Toxicity to fish	:	Methanol LC50 : 15,400 mg/l Exposure time: 96 h

Components

Toxicity to daphnia and other aquatic invertebrates	:	Quaternary ammonium compound EC50 : 0.0059 mg/l Exposure time: 48 h Quaternary phosphorus compound LC50 : 0.16 mg/l Exposure time: 48 h

Methanol
EC50 : > 10,000 mg/l
Exposure time: 48 h

Components

Toxicity to algae : Methanol
EC50 : 22,000 mg/l
Exposure time: 72 h

Components

Toxicity to bacteria : Methanol
> 1,000 mg/l

Components

Toxicity to fish (Chronic toxicity) : Methanol
NOEC: 7,900 mg/l
Exposure time: 8.3 d

Persistence and degradability

no data available

Mobility

no data available

Bioaccumulative potential

no data available

Other information

no data available

Section: 13. DISPOSAL CONSIDERATIONS

Disposal methods : The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.

Disposal considerations : Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport (DOT)

Proper shipping name : CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
Technical name(s) : Ionic Surfactant

UN/ID No.	:	UN 3265
Transport hazard class(es)	:	8
Packing group	:	III

Air transport (IATA)

Proper shipping name	:	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
Technical name(s)	:	Ionic Surfactant
UN/ID No.	:	UN 3265
Transport hazard class(es)	:	8
Packing group	:	III

Sea transport (IMDG/IMO)

Proper shipping name	:	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.
Technical name(s)	:	Ionic Surfactant
UN/ID No.	:	UN 3265
Transport hazard class(es)	:	8
Packing group	:	III

Section: 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Acute Health Hazard
Chronic Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Methanol	67-56-1	1 - 5 %

California Prop 65

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

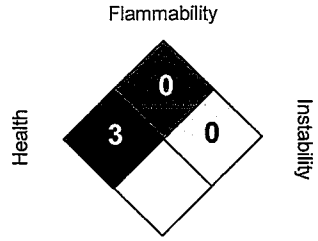
Methanol	67-56-1

INTERNATIONAL CHEMICAL CONTROL LAWS :

TOXIC SUBSTANCES CONTROL ACT (TSCA)
The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

Section: 16. OTHER INFORMATION

NFPA:



HMIS III:

HEALTH	3*
FLAMMABILITY	1
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date	:	03/20/2015
Version Number	:	1.0
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
For additional copies of an MSDS visit www.nalco.com and request access.

NALCO Champion
An Ecolab Company

SAFETY DATA SHEET

EC6746A

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	EC6746A
Other means of identification	:	Not applicable.
Recommended use	:	SCALE DISPERSANT
Restrictions on use	:	Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.
Company	:	Nalco Champion Company 7705 Highway 90-A Sugar Land, Texas 77478 USA TEL: (281) 263-7000
Emergency telephone number	:	(800) 424-9300 (24 Hours) CHEMTREC
Issuing date	:	06/15/2015

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Skin corrosion	:	Category 1A
Serious eye damage/eye irritation	:	Category 1
Specific target organ toxicity - single exposure	:	Category 3 (Respiratory system)

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : May cause respiratory irritation.
Causes severe skin burns and eye damage.

Precautionary Statements : **Prevention:**
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. Wash skin thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/ eye protection/ face protection.
Response:
IF ON SKIN: Wash with plenty of soap and water. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell. IF

IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.

Other hazards : Do not mix with bleach or other chlorinated products – will cause chlorine gas.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Chemical Name	CAS-No.	Concentration: (%)
Hydrochloric Acid	7647-01-0	10 - 30
Methanol	67-56-1	0.1 - 1

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

If swallowed : Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

If inhaled : Remove to fresh air. Treat symptomatically. Get medical attention if symptoms occur.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders.Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : None known.

Specific hazards during firefighting : Not flammable or combustible.

Hazardous combustion products : Decomposition products may include the following materials: Carbon oxides Hydrogen chloride

Special protective equipment for firefighters	:	Use personal protective equipment.
Specific extinguishing methods	:	Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.

Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	:	Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	:	Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Flush away traces with water.

Section: 7. HANDLING AND STORAGE

Advice on safe handling	:	Avoid contact with skin and eyes. Do not ingest. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation. Do not mix with bleach or other chlorinated products – will cause chlorine gas.
Conditions for safe storage	:	Keep away from strong bases. Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers.
Suitable material	:	The following compatibility data is suggested based on similar product data and/or industry experience: Shipping and long term storage compatibility with construction materials can vary; we therefore recommend that compatibility is tested prior to use.
Unsuitable material	:	not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Hydrochloric Acid	7647-01-0	Ceiling	2 ppm	ACGIH
		Ceiling	5 ppm 7 mg/m3	NIOSH REL
		C	5 ppm 7 mg/m3	OSHA Z1
Methanol	67-56-1	TWA	200 ppm	ACGIH

		STEL	250 ppm	ACGIH
		TWA	200 ppm 260 mg/m3	NIOSH REL
		STEL	250 ppm 325 mg/m3	NIOSH REL
		TWA	200 ppm 260 mg/m3	OSHA Z1

Engineering measures : Effective exhaust ventilation system. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection : Safety goggles
Face-shield
Safety glasses with side-shields

Hand protection : Wear protective gloves.
Standard glove type.

Skin protection : Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing

Respiratory protection : When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid

Colour : green

Odour : Acidic

Flash point : > 100.0 °C

pH : -1.6, 100 %

Odour Threshold : no data available

Melting point/freezing point : POUR POINT: -37.2 °C, ASTM D-97

Initial boiling point and boiling range : 100.0 °C

Evaporation rate : no data available

Flammability (solid, gas) : no data available

Upper explosion limit : no data available

Lower explosion limit : no data available

Vapour pressure : 460.7 mm Hg (37.7 °C)ASTM D 5191

Relative vapour density : no data available

Relative density : 1.07 (15.5 °C)

Density	:	8.9 lb/gal
Water solubility	:	completely soluble
Solubility in other solvents	:	no data available
Partition coefficient: n-octanol/water	:	no data available
Auto-ignition temperature	:	no data available
Thermal decomposition temperature	:	no data available
Viscosity, dynamic	:	no data available
Viscosity, kinematic	:	1.2 mm2/s (21.1 °C) 1.7 mm2/s (4.4 °C)
VOC	:	0.8 % Calculation method

Section: 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Do not mix with bleach or other chlorinated products – will cause chlorine gas.
Conditions to avoid	:	Avoid extremes of temperature.
Incompatible materials	:	Bases Contact with strong alkalies (e.g. ammonia and its solutions, carbonates, sodium hydroxide (caustic), potassium hydroxide, calcium hydroxide (lime), cyanide, sulfide, hypochlorites, chlorites) may generate heat, splattering or boiling and toxic vapors. Gives off hydrogen by reaction with metals.
Hazardous decomposition products	:	Decomposition products may include the following materials: Carbon oxides Hydrogen chloride

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	:	Causes serious eye damage. Causes serious eye irritation.
Skin	:	Causes severe skin burns. Causes skin irritation.
Ingestion	:	Causes digestive tract burns.
Inhalation	:	May cause respiratory tract irritation. May cause nose, throat, and lung irritation.
Chronic Exposure	:	Health injuries are not known or expected under normal use.

Experience with human exposure

Eye contact	:	Redness, Pain, Corrosion, Irritation
Skin contact	:	Redness, Pain, Irritation, Corrosion
Ingestion	:	Corrosion, Abdominal pain
Inhalation	:	Respiratory irritation, Cough

Toxicity

Product

Acute oral toxicity	:	Acute toxicity estimate : > 5,000 mg/kg
Acute inhalation toxicity	:	Acute toxicity estimate : 20330 ppm Exposure time: 4 h
Acute dermal toxicity	:	Acute toxicity estimate : > 5,000 mg/kg
Skin corrosion/irritation	:	no data available
Serious eye damage/eye irritation	:	no data available
Respiratory or skin sensitization	:	no data available
Carcinogenicity	:	no data available
Reproductive effects	:	no data available
Germ cell mutagenicity	:	no data available
Teratogenicity	:	no data available
STOT - single exposure	:	no data available
STOT - repeated exposure	:	no data available
Aspiration toxicity	:	no data available

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects	:	This product has no known ecotoxicological effects.

Components

Toxicity to fish	:	Methanol LC50 : 15,400 mg/l Exposure time: 96 h

Components

Toxicity to daphnia and other aquatic invertebrates	:	Methanol EC50 : > 10,000 mg/l

Exposure time: 48 h

Components

Toxicity to algae : Methanol
EC50 : 22,000 mg/l
Exposure time: 72 h

Components

Toxicity to bacteria : Methanol
> 1,000 mg/l

Components

Toxicity to fish (Chronic toxicity) : Methanol
NOEC: 7,900 mg/l
Exposure time: 8.3 d

Persistence and degradability

Greater than 95% of this product consists of inorganic substances for which a biodegradation value is not applicable.

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.
If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air : 5 - 10%
Water : 30 - 50%
Soil : 50 - 70%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

This preparation or material is not expected to bioaccumulate.

Other information

no data available

Section: 13. DISPOSAL CONSIDERATIONS

The information presented only applies to the material as supplied. The classification or waste code may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Disposal methods : Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.

Disposal considerations : Dispose of as unused product. Empty containers should be

taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport (DOT)

Proper shipping name	: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
Technical name(s)	: HYDROCHLORIC ACID
UN/ID No.	: UN 3264
Transport hazard class(es)	: 8
Packing group	: II
Reportable Quantity (per package)	: 33,333 lbs
RQ Component	: HYDROCHLORIC ACID

Air transport (IATA)

Proper shipping name	: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
Technical name(s)	: HYDROCHLORIC ACID
UN/ID No.	: UN 3264
Transport hazard class(es)	: 8
Packing group	: II
Reportable Quantity (per package)	: 33,333 lbs
RQ Component	: HYDROCHLORIC ACID

Sea transport (IMDG/IMO)

Proper shipping name	: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
Technical name(s)	: HYDROCHLORIC ACID
UN/ID No.	: UN 3264
Transport hazard class(es)	: 8
Packing group	: II

Section: 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Hydrochloric Acid	7647-01-0	5000	33333

SARA 304 Extremely Hazardous Substances Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Hydrochloric Acid	7647-01-0	5000	33333

SARA 311/312 Hazards	:	Acute Health Hazard
SARA 302	:	The following components are subject to reporting levels established by SARA Title III, Section 302: Hydrochloric Acid 7647-01-0
SARA 313	:	The following components are subject to reporting levels established by SARA Title III, Section 313: Hydrochloric Acid 7647-01-0 10 - 30 %

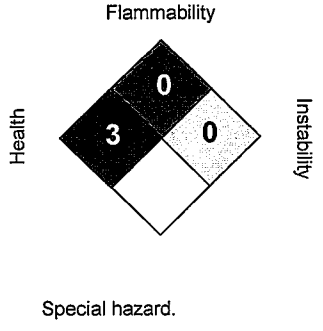
California Prop 65
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

INTERNATIONAL CHEMICAL CONTROL LAWS :

TOXIC SUBSTANCES CONTROL ACT (TSCA)
The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

Section: 16. OTHER INFORMATION

NFPA:



HMIS III:

HEALTH	3
FLAMMABILITY	0
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date	:	06/15/2015
Version Number	:	1.1
Prepared By	:	Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
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MTS-Stimulation Services, Inc.

Safety Data Sheet
Version: I
Revision Date: 08/23/2014

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name	: ENVIRO M-SOLV
General Description	: Not Available
CAS	: Not Available
EC#	: Not Available

1.2 Relevant identified uses of the substance or mixture and uses advised against

1.3 Details of the supplier of the safety data sheet

Company identification	: MTS Simulation Services, Inc. 7131 Charity Avenue Bakersfield California 93308 U.S.A.
Manufacturer / Distributor	: Enviro Tech Chemical Services, Inc. 500 Winmoore Way Modesto, CA 95358 (209) 581-9576 (7 AM to 5 PM, PST, Monday to Friday)
Product Information	: 1-661-589-5805
CHEMTREC	: 1-800-424-9300
Email	: msds@mts-stim.com
Website	: http://www.mts-stim.com

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Flammable Liquid (Category 4)

Classification according to EU Directives 67/548/EEC or 1999/45/EC

None

2.2 Label elements

Labeling according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]
None

Signal word: Warning

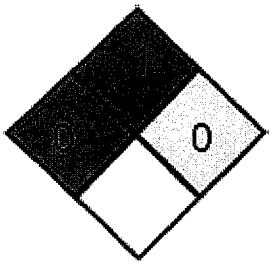
Hazard statement(s)
Combustible liquid

Precautionary statement(s)
P210 Keep away from heat/Sparks/Open flames/hot surfaces- No smoking.

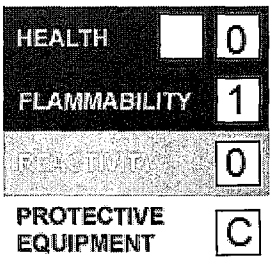
Supplemental Hazard
none.

2.3 Other Hazards
None

NFPA



HMIS



3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical characterization : Mixture

Hazardous ingredients according to Regulation (EC) No 1272/2008

CAS-No. / EC-No.	Amount	Component	Classification: REGULATION (EC) No 1272/2008
CAS-No. Trade Secret **EC-No.** Trade Secret	45 - 55 %	PROPRIETARY	Flammable Liquid (Category 4), Combustible Liquid

For the full text of the H-Statements mentioned in this Section, see Section 16.

Hazardous ingredients according to Directive 1999/45/EC

CAS-No. / EC-No.	Amount	Component	Classification: 67/548/EEC
CAS-No. Trade Secret **EC-No.** Trade Secret	45 - 55 %	PROPRIETARY	None

For the full text of the Risk Phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General information
First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

After inhalation
Get medical advice/attention if you feel unwell or are concerned.

After skin contact
Rinse/wash with lukewarm, gently flowing water and mild soap for 5 minutes or until product is removed. If skin irritation occurs or you feel unwell: Get medical advice/attention.

After eye contact
Remove source of exposure or move person to fresh air. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for 15-20 minutes. Take care not to rinse contaminated water into the unaffected eye or into the face. If eye irritation persists: Get medical advice/attention.

After swallowing
Rinse mouth. If you feel unwell, or if concerned: Get medical advice/attention.

Information for doctor
Attending physician should treat exposed individual symptomatically.

4.2 Most important symptoms and effects, both acute and delayed
Contact with eye can cause irritation. Contact with skin can cause irritation.

4.3 Indication of any immediate medical attention and special treatment needed
Treat symptomatically.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media
Use water spray, powder, foam, carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Emits toxic fumes under fire conditions.

5.3 Advice for firefighters
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus.

5.4 Further information
No further relevant information available.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear appropriate personal protective equipment as specified in Section 8. Keep unnecessary and unprotected personnel from entering. Evacuate area. Keep upwind of spill. Ventilate area of leak or spill. Only trained and properly protected personnel must be involved in clean-up operations.

6.2 Environmental precautions
Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological formation.

6.3 Methods and material for containment and cleaning up

SMALL SPILLS (less than 1 gallon): May be flushed to an approved sewer line (with large amounts of water). Larger spills should be absorbed and collected for disposal. Ensure adequate decontamination of tools and equipment following clean up.

6.4 Reference to other sections

for disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Wear gloves and eye protection when handling, moving or using this product. Do not contaminate water, food, or feed by storage or disposal. Do not get in eyes. Do not swallow. Avoid breathing vapour. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated place away from direct sunlight. Keep container closed when not in use.
Incompatible Materials: Acids, bases and strong oxidizers.

7.3 Specific end uses

A part from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Name	Source	Type	ppm	Mg/m3
ENVIRO M-SOLV	ACGIH	Ceiling	No data available	No data available
	OSHA	PEL	No data available	No data available
	NIOSH	IDLH	No data available	No data available

8.2 Exposure controls

Appropriate engineering controls
Forced air, local exhaust, or open air is adequate.

Personal protective equipment
Eye/face protection: Wear safety glasses, goggles and/or face shield to prevent eye contact.

Skin protection: Wear gloves when handling.

Respiratory protection: No additional respiratory protection needed.

Other Protection: Eye wash facility and emergency shower should be in close proximity.

General Hygiene Conditions: Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Remove and wash contaminated clothing before re-use. Handle in accordance with good industry hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance form	: Colorless clear liquid.
Odor	: Odorless.
Odor threshold	: No data available
pH	: 3.5 – 4.5
Freezing point	: No data available
Initial boiling point and boiling range	: No data available.
Flash point	: No data available
Evaporation rate	: No data available.
Flammability (solid, gas)	: Not applicable to liquids
Upper/lower flammability or explosive limits	: No data available
Vapor pressure (mm Hg)	: No data available
Vapor density (AIR=1)	: No data available
Water solubility	: Complete
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	:
Kinematic	20-30 cSt at 20°C / 68°F
Dynamic	No data available
Pour Point	: No data available
Explosive properties	: Not explosive
Oxidizing properties	: No
Relative density (water = 1)	: 0.98 g/ml

Other data: These physical properties are typical values for this product and not specifications.

10. STABILITY AND REACTIVITY

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under recommended storage conditions. See Storage, Section 7.

10.3 Possibility of hazardous reactions

Polymerization will not occur.

10.4 Conditions to avoid
Incompatible materials and high temperatures

10.5 Incompatible materials
Acids, bases and strong oxidizers.

10.6 Hazardous decomposition products
Hazardous Combustion Products are Carbon oxides. Decomposition products depend upon temperature, air supply materials.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Oral = <5000 mg/kg

Dermal = <5000 mg/kg

Inhalation = <20 mg/l

Skin corrosion/irritation

Skin	May cause skin irritation including redness, edema, swelling, rash, scaling or blistering, drying and/or cracking of skin.

Serious eye damage/eye irritation

Eyes	May cause redness, stinging, tearing, swelling, itching and/or irritation of the eye. Possible eye damage if left untreated.

Respiratory or skin sensitization

: No data available

Germ cell mutagenicity

: Not known to have mutagenic effects in humans or animals.

Repeated Dose Toxicity

: No data available

Carcinogenicity

: Not expected to be a carcinogen or tumorigen

Reproductive toxicity

: No known reproductive effects in humans or animals.

Developmental Toxicity

: No known developmental toxin effects in humans or animals..

Aspiration hazard

: No data available

Additional Information

Potential Health Effects:
Signs and symptoms of short term (acute) exposure:

: Inhalation: May cause irritation to respiratory system in mist/vapor form.

Ingestion: May cause irritation to digestive system

Skin: May cause skin irritation including redness, edema, swelling, rash, scaling or blistering, drying and/or cracking of skin.

Eye: May cause redness, stinging, tearing, swelling, itching and/or irritation of the eye. Possible eye damage if left untreated.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity:

: Not expected to be toxic to the environment.

12.2 Persistence and degradability

Behavior in environmental systems:

: Not expected to persist. Readily biodegradable

12.3 Bio accumulative potential

: Not expected to bioaccumulate

12.4 Mobility in soil

: No data available

12.5 Results of PBT and vPvB assessment

PBT	: No data available
vPvB	: No data available

12.6 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. Advice on disposal - do not dump into any sewers, on the ground, or into any body of water.

14. TRANSPORT INFORMATION

14.1 UN number

ADR/RID, IMDG, IATA : Not regulated

14.2 UN proper shipping name

ADR/RID, IMDG, IATA : Not regulated

14.3 Transport hazard class (es)

ADR/RID, IMDG, IATA : Not regulated

14.4 Packaging group

ADR/RID, IMDG, IATA : Not regulated

14.5 Environmental hazards

Marine pollutant : No

14.6 Special precautions for user

No data available.

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

No data available.

15.2 Chemical safety assessment

No data available

15.3 OSHA Hazard Communication Standard

This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	No
Delayed (Chronic) Health Hazard	No
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

US. Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

US CERCLA Reportable quantity (RQ)
Non regulated material.

16. OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Abbreviations and acronyms:

ADR	Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road).
RID	Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail).
IMDG	International Maritime Code for Dangerous Goods
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
PBT	Persistent Bioaccumalative Toxic chemical
vPvB	Very Persistent and Very Bioaccumulative
OSHA	Occupational Safety and Health Administration
ACGIH	American Conference of Governmental Industrial Hygienists
TLV(s)	Threshold Limit Values
STEL	Short term exposure limit
NIOSH	National Institute for Occupational Safety and Health.
IARC	International Agency For Research On Cancer
NTP	National Toxicology Program
EC	European Commission
EU	European Union
CLP	Classification, labeling and Packaging of substances
PG	Packing Group

MSDS Issuing Department: Safety
MSDS I.D. # ENVIRO M-SOLV-8-2014

DISCLAIMER:
This information was obtained from sources MTS-Simulation Service, Inc. believes to be reliable. However, the information is provided without any warranty, express or implied, regarding its thoroughness and accuracy. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For these reasons sources MTS-Simulation Service, Inc. does not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of, or in any way connected with the handling, storage, use or disposal of the product. This information was prepared for this product only. If the product is used as a component in another product some of the information may not apply.

MTS-Stimulation Services, Inc.

Safety Data Sheet

Version: 1
Revision Date: 07/13/2014

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name	: ENVIRO MUD
Chemical Family	: Low pH organic acid
CAS	: Not Available
EC#	: Not Available

1.2 Relevant identified uses of the substance or mixture and uses advised against

Low pH organic acid

1.3 Details of the supplier of the safety data sheet

Company identification	: MTS Simulation Services, Inc. 7131 Charity Avenue Bakersfield California 93308 U.S.A.
Manufacturer / Distributor	: Enviro Tech Chemical Services, Inc. 500 Winmoore Way Modesto, CA 95358 (209) 581-9576 (7 AM to 5 PM, PST, Monday to Friday)
Product Information	: 1-661-589-5805
CHEMTREC	: 1-800-424-9300
Email	: msds@mts-stim.com
Website	: http://www.mts-stim.com

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008

This substance is not classified as dangerous according to Directive 67/548/EEC

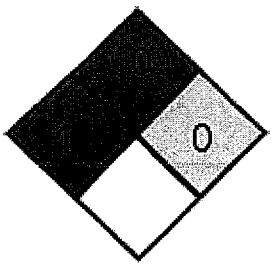
2.2 Label elements

Labeling according to Regulation (EC) No 1272/2008
The product does not need to be labeled in accordance with EC directives or respective national laws.

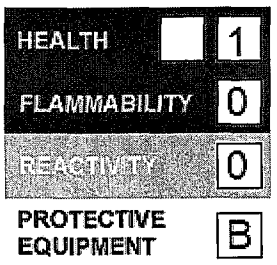
2.3 Other Hazards

None

NFPA



HMIS



3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical characterization : Mixture

No Hazardous component present.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General information
First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

After inhalation
Get medical advice/attention if you feel unwell or are concerned.

After skin contact
Rinse/wash with lukewarm, gently flowing water and mild soap for 5 minutes or until product is removed. If skin irritation occurs or you feel unwell: Get medical advice/attention.

After eye contact
Remove source of exposure or move person to fresh air. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for 15-20 minutes. Take care not to rinse contaminated water into the unaffected eye or into the face. If eye irritation persists: Get medical advice/attention.

After swallowing
Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/doctor. If vomiting occurs naturally, lie on your side, in the recovery position.

Information for doctor
Attending physician should treat exposed individual symptomatically.

4.2 Most important symptoms and effects, both acute and delayed

Contact with skin/eyes may cause irritation with greater exposures.

4.3 Indication of any immediate medical attention and special treatment needed
Treat symptomatically

5. FIREFIGHTING MEASURES

5.1 Extinguishing media
Material is not flammable. Use extinguisher media appropriate for material in surrounding fire.

5.2 Special hazards arising from the substance or mixture
Non combustible. May give off irritating or toxic fumes (or gases) in a fire.

5.3 Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam.
Special Protective Equipment for Firefighters: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus.

5.4 Further information
No further relevant information available.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

6.2 Environmental precautions
Collect spills in plastic containers only. Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological formation.

6.3 Methods and material for containment and cleaning up
SMALL SPILLS (less than 1 gallon): May be flushed to an approved sewer line (with large amounts of water). Larger spills should be absorbed and collected for disposal. Ensure adequate decontamination of tools and equipment following clean up.

Special spill response procedures: Collect spills in plastic containers only. Prevent from entering sewers, waterways, or low areas

6.4 Reference to other sections
for disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Wear gloves and eye protection when handling, moving or using this product. Do not contaminate water, food, or feed by storage or disposal.

7.2 Conditions for safe storage, including any incompatibilities
Store in a cool, dry, well ventilated place away from direct sunlight. Keep container closed when not in use. Oxidizing agents and strong bases. Avoid contact with aluminium and zinc.

7.3 Specific end uses
A part from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Name	Source	Type	ppm	Mg/m3
ENVIRO MUD	ACGIH	Ceiling	No data available	No data available
	OSHA	PEL	No data available	No data available
	NIOSH	IDLH	No data available	No data available

8.2 Exposure controls

Appropriate engineering controls
Forced air, local exhaust, or open air is adequate.

Personal protective equipment
Eye/face protection: Wear chemical goggles; also wear a face shield if splashing hazard exists.

Skin protection: Wear gloves when handling.

Body Protection: Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Remove and wash contaminated clothing before re-use. Handle in accordance with good industry hygiene and safety practice.

Respiratory protection: No additional respiratory protection needed.

Potential Health Hazards:

Skin: May cause skin irritation
Eyes: May cause eye irritation
Ingestion: May be harmful if swallowed

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance form	: Pale yellow clear liquid
Odor	: Odourless
Odor threshold	: No data available
pH	: <1
Freezing point	: No data available
Initial boiling point and boiling range	: No data available
Flash point	: No data available
Evaporation rate	: No data available
Flammability (solid, gas)	: Non flammable.
Upper/lower flammability or explosive limits	: No data available
Vapor pressure (mm Hg)	: No data available

Vapor density (AIR=1)	: No data available
Water solubility	: Complete
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	:
Kinematic	5-15 cSt at 20°C / 68°F
Dynamic	No data available
Pour Point	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Specific Gravity @ Ambient temperature (water = 1)	: 1.13

Other data: These physical properties are typical values for this product and not specifications.

10. STABILITY AND REACTIVITY

10.1 Reactivity
Strong bases/acids/oxidizing agents

10.2 Chemical stability
Stable under normal conditions. See Storage, Section 7.

10.3 Possibility of hazardous reactions
May react with incompatible materials

10.4 Conditions to avoid
Decomposes in presence of fire heat.

10.5 Incompatible materials
Oxidizing agents and strong bases. Avoid contact with aluminum and zinc surfaces.

10.6 Hazardous decomposition products
none known

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

: ATE Oral 1597 mg/kg

ATE dermal No information available.

ATE inhalation No information available.

Skin corrosion/irritation

Skin : May cause skin irritation including redness, edema, swelling, rash, scaling or blistering, drying and/or cracking of skin.

Serious eye damage/eye irritation

Eyes May cause redness, stinging, tearing, swelling, itching and/or irritation of the eye. Possible eye damage if left untreated.

Respiratory or skin sensitization

: Not known as a sensitizer in humans or animals.

Germ cell mutagenicity

: No known effects in humans or animals

Carcinogenicity

: Not considered a tumorigenic or a carcinogen in humans or animals

Reproductive toxicity

: No known effect in humans or animals

Specific target organ toxicity - single exposure

:No data available

Specific target organ toxicity - repeated exposure

:No data available

Aspiration hazard

: No data available

Additional Information

: Prolonged exposure may cause dermatitis & dental erosion.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity:

: May be harmful to aquatic environment.

12.2 Persistence and degradability

: Not expected to persist. Readily biodegradable.

12.3 Bio accumulative potential

: Will not bioaccumulate.

12.4 Mobility in soil

: Water soluble and readily mobile in soil.

12.5 Results of PBT and vPvB assessment

PBT	: No data available
vPvB	: No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. Advice on disposal - do not dump into any sewers, on the ground, or into any body of water.

14. TRANSPORT INFORMATION

14.1 UN number

ADR/RID, IMDG, IATA : Not Regulated

14.2 UN proper shipping name

ADR/RID, IMDG, IATA : Not Regulated

14.3 Transport hazard class (es)

ADR/RID, IMDG, IATA : Not Regulated

14.4 Packaging group

ADR/RID, IMDG, IATA : Not Regulated

14.5 Environmental hazards

Marine pollutant : No

14.6 Special precautions for user

No data available.

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

No data available.

15.2 Chemical safety assessment

No data available

15.3 OSHA Hazard Communication Standard

This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	No
Delayed (Chronic) Health Hazard	No
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

16. OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Abbreviations and acronyms:

ADR	Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road).
RID	Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail).
IMDG	International Maritime Code for Dangerous Goods
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
PBT	Persistent Bioaccumalative Toxic chemical
vPvB	Very Persistent and Very Bioaccumulative
OSHA	Occupational Safety and Health Administration
ACGIH	American Conference of Governmental Industrial Hygienists
TLV(s)	Threshold Limit Values
STEL	Short term exposure limit
NIOSH	National Institute for Occupational Safety and Health.
IARC	International Agency For Research On Cancer
NTP	National Toxicology Program
EC	European Commission
EU	European Union
CLP	Classification, labeling and Packaging of substances
PG	Packing Group

MSDS Issuing Department: Safety
MSDS I.D. # ENVIRO MUD 7-2014

DISCLAIMER:
This information was obtained from sources MTS-Simulation Service, Inc. believes to be reliable. However, the information is provided without any warranty, express or implied, regarding its thoroughness and accuracy. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For these reasons sources MTS-Simulation Service, Inc. does not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of, or in any way connected with the handling, storage, use or disposal of the product. This information was prepared for this product only. If the product is used as a component in another product some of the information may not apply.

MTS-Stimulation Services, Inc.

Safety Data Sheet

Version: 1
Revision Date: 07/13/2014

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name	: ENVIRO OG
Chemical Family	: Low pH organic acid
CAS	: Not Available
EC#	: Not Available

1.2 Relevant identified uses of the substance or mixture and uses advised against

Low pH organic acid

1.3 Details of the supplier of the safety data sheet

Company identification	: MTS Simulation Services, Inc. 7131 Charity Avenue Bakersfield California 93308 U.S.A.
Manufacturer / Distributor	: Enviro Tech Chemical Services, Inc. 500 Winmoore Way Modesto, CA 95358 (209) 581-9576 (7 AM to 5 PM, PST, Monday to Friday)
Product Information	: 1-661-589-5805
CHEMTREC	: 1-800-424-9300
Email	: msds@mts-stim.com
Website	: http://www.mts-stim.com

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008

This substance is not classified as dangerous according to Directive 67/548/EEC

2.2 Label elements

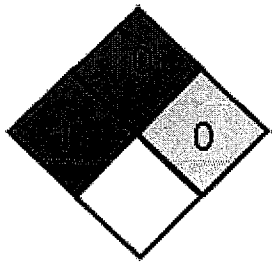
Labeling according to Regulation (EC) No 1272/2008

The product does not need to be labeled in accordance with EC directives or respective national laws.

2.3 Other Hazards

None

NFPA



HMIS

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical characterization : Mixture

No Hazardous component present.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General information
First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

After inhalation
Get medical advice/attention if you feel unwell or are concerned.

After skin contact
Take off contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Wash with plenty of lukewarm, gently flowing water with a flushing duration of 15-20 minutes. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before re-use or discard.

After eye contact
Remove source of exposure or move person to fresh air. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for 15-20 minutes. Take care not to rinse contaminated water into the unaffected eye or into the face. If eye irritation persists: Get medical advice/attention.

After swallowing
Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/doctor. If vomiting occurs naturally, lie on your side, in the recovery position.

Information for doctor
Attending physician should treat exposed individual symptomatically.

4.2 Most important symptoms and effects, both acute and delayed

Contact with skin/eyes may cause irritation with greater exposures.

4.3 Indication of any immediate medical attention and special treatment needed
Treat symptomatically

5. FIREFIGHTING MEASURES

5.1 Extinguishing media
Material is not flammable. Use extinguisher media appropriate for material in surrounding fire.

5.2 Special hazards arising from the substance or mixture
Non combustible. May give off irritating or toxic fumes (or gases) in a fire..

5.3 Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam.
Special Protective Equipment for Firefighters: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus.

5.4 Further information
No further relevant information available.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

6.2 Environmental precautions
Collect spills in plastic containers only. Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological formation.

6.3 Methods and material for containment and cleaning up
SMALL SPILLS (less than 1 gallon): May be flushed to an approved sewer line (with large amounts of water). Larger spills should be absorbed and collected for disposal. Ensure adequate decontamination of tools and equipment following clean up.

Special spill response procedures: Collect spills in plastic containers only. Prevent from entering sewers, waterways, or low areas

6.4 Reference to other sections
for disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Wear gloves and eye protection when handling, moving or using this product. Do not contaminate water, food, or feed by storage or disposal.

7.2 Conditions for safe storage, including any incompatibilities
Store in a cool, dry, well ventilated place away from direct sunlight. Keep container closed when not in use. Oxidizing agents and strong bases. Avoid contact with aluminium and zinc.

7.3 Specific end uses
A part from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Name	Source	Type	ppm	Mg/m3
ENVIRO OG	ACGIH	Ceiling	No data available	No data available
	OSHA	PEL	No data available	No data available
	NIOSH	IDLH	No data available	No data available

8.2 Exposure controls

Appropriate engineering controls
Forced air, local exhaust, or open air is adequate.

Personal protective equipment
Eye/face protection: Wear chemical goggles; also wear a face shield if splashing hazard exists.

Skin protection: Wear gloves when handling.

Body Protection: Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Remove and wash contaminated clothing before re-use. Handle in accordance with good industry hygiene and safety practice.

Respiratory protection: No additional respiratory protection needed.

Potential Health Hazards:

Skin: May cause skin irritation
Eyes: May cause eye irritation
Ingestion: May be harmful if swallowed

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance form	: Pale yellow clear liquid
Odor	: Odourless
Odor threshold	: No data available
pH	: <1
Freezing point	: No data available
Initial boiling point and boiling range	: No data available
Flash point	: No data available
Evaporation rate	: No data available
Flammability (solid, gas)	: Non flammable.
Upper/lower flammability or explosive limits	: No data available
Vapor pressure (mm Hg)	: No data available

Vapor density (AIR=1)	: No data available
Water solubility	: Complete
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	:
Kinematic	5-15 cSt at 20°C / 68°F
Dynamic	No data available
Pour Point	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Specific Gravity @ Ambient temperature (water = 1)	: 1.15

Other data: These physical properties are typical values for this product and not specifications.

10. STABILITY AND REACTIVITY

10.1 Reactivity
Strong bases/acids/oxidizing agents

10.2 Chemical stability
Stable under normal conditions. See Storage, Section 7.

10.3 Possibility of hazardous reactions
May react with incompatible materials

10.4 Conditions to avoid
Decomposes in presence of fire heat.

10.5 Incompatible materials
Oxidizing agents and strong bases. Avoid contact with aluminum and zinc surfaces.

10.6 Hazardous decomposition products
none known

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

: ATE Oral 1597 mg/kg

ATE dermal No information available.

ATE inhalation No information available.

Skin corrosion/irritation

Skin : May cause skin irritation including redness, edema, swelling, rash, scaling or blistering, drying and/or cracking of skin.

Serious eye damage/eye irritation

Eyes May cause redness, stinging, tearing, swelling, itching and/or irritation of the eye. Possible eye damage if left untreated.

Respiratory or skin sensitization

: Not known as a sensitizer in humans or animals.

Germ cell mutagenicity

: No known effects in humans or animals

Carcinogenicity

: Not considered a tumorigenic or a carcinogen in humans or animals

Reproductive toxicity

: No known effect in humans or animals

Specific target organ toxicity - single exposure

:No data available

Specific target organ toxicity - repeated exposure

:No data available

Aspiration hazard

No data available

Additional Information

: Prolonged exposure may cause dermatitis & dental erosion.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity:

: May be harmful to aquatic environment.

12.2 Persistence and degradability

: Not expected to persist. Readily biodegradable.

12.3 Bio accumulative potential

: Will not bio accumulate.

12.4 Mobility in soil

: Water soluble and readily mobile in soil.

12.5 Results of PBT and vPvB assessment

PBT	: No data available
vPvB	: No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. Advice on disposal - do not dump into any sewers, on the ground, or into any body of water.

14. TRANSPORT INFORMATION

14.1 UN number

ADR/RID, IMDG, IATA : Not Regulated

14.2 UN proper shipping name

ADR/RID, IMDG, IATA : Not Regulated

14.3 Transport hazard class (es)

ADR/RID, IMDG, IATA : Not Regulated

14.4 Packaging group

ADR/RID, IMDG, IATA : Not Regulated

14.5 Environmental hazards

Marine pollutant : No

14.6 Special precautions for user

No data available.

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

No data available.

15.2 Chemical safety assessment

No data available

15.3 OSHA Hazard Communication Standard

This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	No
Delayed (Chronic) Health Hazard	No
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

16. OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Abbreviations and acronyms:

ADR	Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road).
RID	Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail).
IMDG	International Maritime Code for Dangerous Goods
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
PBT	Persistent Bioaccumalative Toxic chemical
vPvB	Very Persistent and Very Bioaccumulative
OSHA	Occupational Safety and Health Administration
ACGIH	American Conference of Governmental Industrial Hygienists
TLV(s)	Threshold Limit Values
STEL	Short term exposure limit
NIOSH	National Institute for Occupational Safety and Health.
IARC	International Agency For Research On Cancer
NTP	National Toxicology Program
EC	European Commission
EU	European Union
CLP	Classification, labeling and Packaging of substances
PG	Packing Group

MSDS Issuing Department: Safety
MSDS I.D. #ENVIRO OG 7-2014

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SAFETY DATA SHEET

Section 1. Identification

Product name : PAO3047 ASPHALTENE DISPERSANT
Product code : PAO3047

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Asphaltene dispersant.

Print date : 3/9/2015.
Validation date : 3/9/2015.
Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/SDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
ACUTE TOXICITY: INHALATION - Category 4
SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
CARCINOGENICITY - Category 1
TOXIC TO REPRODUCTION [Unborn child] - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Narcotic effects] - Category 3

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Highly flammable liquid and vapor.
Harmful if inhaled.
Causes severe skin burns and eye damage.
May cause cancer.
Suspected of damaging the unborn child.
May cause drowsiness and dizziness.

Precautionary statements

Section 2. Hazards identification

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves: > 8 hours (breakthrough time): Viton gloves.. Wear eye or face protection. Wear protective clothing. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid breathing vapor. Wash hands thoroughly after handling.

Response : IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Toluene	40 - 50	108-88-3
Xylene	30 - 40	1330-20-7
Alkyl benzenesulfonic acid	5 - 10	68584-22-5
Ethylbenzene	5 - 10	100-41-4
Sulfuric acid	0.1 - 1	7664-93-9

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Harmful if inhaled. Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system.

Skin contact : Causes severe burns.

Ingestion : Can cause central nervous system (CNS) depression. May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : nausea or vomiting,headache,drowsiness/fatigue,dizziness/vertigo,unconsciousness, reduced fetal weight,increase in fetal deaths,skeletal malformations

Skin contact : pain or irritation,redness,blistering may occur,reduced fetal weight,increase in fetal deaths,skeletal malformations

Ingestion : stomach pains,reduced fetal weight,increase in fetal deaths,skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Additional information

If product is ingested and vomiting occurs naturally, have person lean forward to reduce the risk of aspiration into the lungs.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Section 5. Fire-fighting measures

Specific hazards arising from the chemical : Highly flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,sulfur oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Toluene	US ACGIH	20	-	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	375	-	150	560	-	-	-	-	
	OSHA PEL Z2	200	-	-	-	-	-	300	-	-	
Xylene	US ACGIH	100	434	-	150	651	-	-	-	-	
	OSHA PEL	100	435	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	435	-	150	655	-	-	-	-	
Ethylbenzene	US ACGIH	20	-	-	-	-	-	-	-	-	
	OSHA PEL	100	435	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	435	-	125	545	-	-	-	-	
Sulfuric acid	US ACGIH	-	0.2	-	-	-	-	-	-	-	[a]
	OSHA PEL	-	1	-	-	-	-	-	-	-	
	OSHA PEL 1989	-	1	-	-	-	-	-	-	-	

Form: [a]Thoracic fraction

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Section 8. Exposure controls/personal protection

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves: Viton gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Amber to black.

Odor : Aromatic hydrocarbon.

Odor threshold : Not available.

pH : 3.2

: 5% of product in 75% isopropanol / 25% water solution

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 6.7°C (44.1°F) [PMCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Highly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : 2.1 kPa (15.6 mm Hg) @ 21.1°C (Calculated value for all components.)

Vapor density : >1 [Air = 1]

Relative density : 0.882 (15.6°C)

Density : 7.35 (lbs/gal)

Solubility in water : Insoluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Section 9. Physical and chemical properties

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials and acids.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Toluene	LC50 Inhalation Vapor	Female rat	5100 ppm	4 hours
	LC50 Inhalation Vapor	Rat	49000 mg/m³	4 hours
	LD50 Oral	Rat	636 mg/kg	-
Xylene	LC50 Inhalation Gas.	Rat	5000 ppm	4 hours
	LD50 Dermal	Rabbit	>1700 mg/kg	-
	LD50 Oral	Male rat	3523 mg/kg	-
	LD50 Oral	Rat	4300 mg/kg	-
Alkyl benzenesulfonic acid	LD50 Dermal	Rabbit	2000 mg/kg	-
	LD50 Oral	Rat	775 mg/kg	-
Ethylbenzene	LD50 Dermal	Rabbit	15400 mg/kg	-
	LD50 Oral	Rat	3500 mg/kg	-
Sulfuric acid	LD50 Oral	Rat	2140 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Section 11. Toxicological information

Product/ingredient name	OSHA	IARC	NTP
Toluene	-	3	-
Xylene	-	3	-
Ethylbenzene	-	2B	-
Sulfuric acid	-	1	Known to be a human carcinogen.

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Toluene	Category 3	Not applicable.	Narcotic effects
Xylene	Category 3	Not applicable.	Narcotic effects
Sulfuric acid	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Name	Result
Toluene	ASPIRATION HAZARD - Category 1
Xylene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : Suspected of damaging the unborn child.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	4760.7 mg/kg
Dermal	2538.2 mg/kg
Inhalation (gases)	12787.7 ppm
Inhalation (vapors)	159.4 mg/l

Section 11. Toxicological information

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Toluene	Acute EC50 433 ppm Marine water	Algae - Skeletonema costatum	96 hours
	Acute EC50 12500 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 11600 µg/l Fresh water	Crustaceans - Gammarus pseudolimnaeus	48 hours
	Acute EC50 6000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 5500 µg/l Fresh water	Fish - Oncorhynchus kisutch	96 hours
	Chronic NOEC 500000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Chronic NOEC 1000 µg/l Fresh water	Daphnia - Daphnia magna	21 days
Xylene	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Alkyl benzenesulfonic acid	Acute EC50 5.65 mg/l Fresh water	Crustaceans - Ceriodaphnia dubia	48 hours
Ethylbenzene	Acute EC50 4600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 2930 to 4400 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 5200 µg/l Marine water	Crustaceans - Americamysis bahia	48 hours
	Acute LC50 4200 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 1000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
Sulfuric acid	Acute LC50 42500 µg/l Marine water	Crustaceans - Pandalus montagui	48 hours
	Acute LC50 42 ppm Fresh water	Fish - Gambusia affinis	96 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN2924	UN2924	UN2924	UN2924
UN proper shipping name	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Contains: Toluene, Alkyl benzenesulfonic acid)	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Contains: Toluene, Alkyl benzenesulfonic acid)	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Contains: Toluene, Alkyl benzenesulfonic acid)	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Contains: Toluene, Alkyl benzenesulfonic acid)
Transport hazard class(es)	3 (8) 	3 (8) 	3 (8) 	3 (8) 
Packing group	II	II	II	-
Environmental hazards	No.	No.	No.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-E S-C	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Toluene, 296 gal of this product.
Xylene, 35 gal of this product.
Ethylbenzene, 1972 gal of this product.
Benzene, 5915 gal of this product.

Marine pollutant Not available.

North-America NAERG : 132

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Toluene; Benzene; Ethylbenzene
Clean Water Act (CWA) 311: Toluene; Benzene; Ethylbenzene; Xylene; Sulfuric acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304

Section 15. Regulatory information

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
Sulfuric acid	0.1 - 1	Yes.	1000	66.3	1000	66.3

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

SARA 313

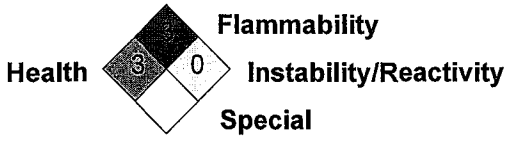
	Product name	CAS number	%
Supplier notification	Toluene	108-88-3	40 - 50
	Xylene	1330-20-7	30 - 40
	Ethylbenzene	100-41-4	5 - 10

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 3/9/2015.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this SDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This SDS was prepared and is to be used for this product. If the product is used as a component in another product, this SDS information may not be applicable.

MTS-Stimulation Services, Inc.

Safety Data Sheet

Version: 3
Revision Date: 05/15/2014

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name	: **HCl / HF IN WATER**
Grade	: Technical
Trade name/Synonyms	: Hydrochloric and Hydrofluoric Acids in Water
CAS	: Mixture
EC#	: Not applicable

1.2 Relevant identified uses of the substance or mixture and uses advised against

Scale removal and well bore maintenance.

1.3 Details of the supplier of the safety data sheet

Company identification	: MTS Simulation Services, Inc. 7131 Charity Avenue Bakersfield California 93308 U.S.A.
Manufacturer / Distributor	: DuPont, Wilmington, DE
Product Information	: 1-661-589-5805
CHEMTREC	: 1-800-424-9300
Email	: msds@mts-stim.com
Website	: http://www.mts-stim.com

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

H314	Skin corrosion (Category 1B)
H335	Specific target organ toxicity - single exposure (Category 3)
H330	Acute toxicity, Inhalation (Category 2)
H310	Acute toxicity, Dermal (Category 1)
H300	Acute toxicity, Oral (Category 2)

For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification according to EU Directives 67/548/EEC or 1999/45/EC

C R34, Xi R37, + R26/27/28
for the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements

Labeling according to Regulation (EC) No 1272/2008
the product is classified and labeled according to the CLP regulation.

Hazard pictograms

Signal word

Danger

Hazard statement (s)

H314	Causes severe skin burns and eye damage.
H335	May cause respiratory irritation.
H330	Fatal if inhaled.
H310	Fatal in contact with skin.
H300	Fatal if swallowed.

Precautionary statement (s)

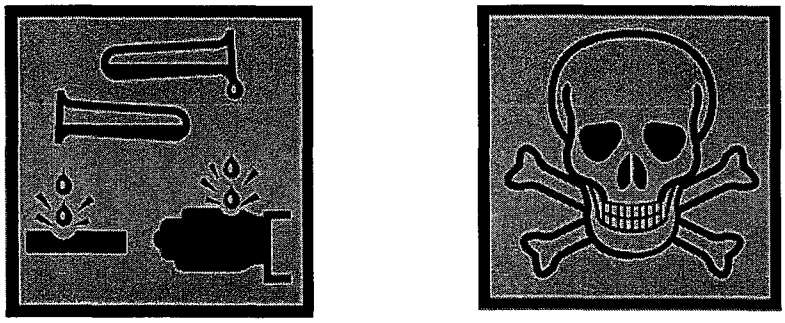
P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P264	Wash hands thoroughly after handling.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician
P302 + P350	IF ON SKIN: Gently wash with plenty of soap and water.
P284	Wear respiratory protection

Hazard-determining components of labeling:

Contains: Hydrochloric Acid, Hydrofluoric acid

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Symbol (s)



Signal word
Corrosive, Toxic

Risk Phrase (s)

R34	Causes burns.
R37	Irritating to respiratory system.
R26/27/28	Very toxic by inhalation, in contact with skin & if swallowed.

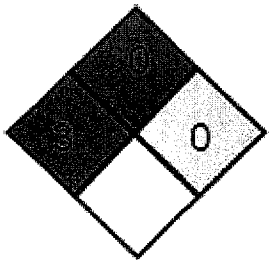
Safety Phrase (s)

S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S7/9	Keep container tightly closed and in a well-ventilated place.
S45	In case of accident or if you feel unwell, seek medical advice immediately

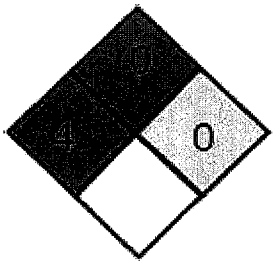
2.3 Other Hazards

None

NFPA Rating

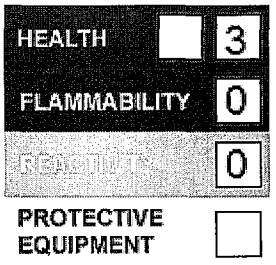


HCl NFPA



HF NFPA

HMIS RATING



3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical characterization : Mixture

Hazardous ingredients according to Regulation (EC) No 1272/2008

CAS-No. / EC-No.	Amount	Component	Classification: REGULATION (EC) No 1272/2008
CAS-No. 7647-01-0	3.0 - 20.0%	Hydrochloric Acid	Skin corrosion (Category 1B) H314 Specific target organ toxicity - single exposure (Category 3) H335
EC-No. 231-595-7			
CAS-No.	2.0 – 10.0 %	Hydrofluoric acid	Acute toxicity, Inhalation (Category 2) H330

7664-39-3	Acute toxicity, Dermal (Category 1) H310 Acute toxicity, Oral (Category 2) H300 Skin corrosion (Category 1A) H314
EC-No. 231-634-8	

For the full text of the H-Statements mentioned in this Section, see Section 16.

Hazardous ingredients according to Directive 1999/45/EC

CAS-No. / EC-No.	Amount	Component	Classification: 67/548/EEC
CAS-No. 7647-01-0	3.0 - 20.0%	Hydrochloric Acid	C R34, Xi R37
EC-No. 231-595-7			
CAS-No. 7664-39-3	2.0 – 10.0 %	Hydrofluoric acid	T+ R26/27/28, C R35
EC-No. 231-634-8			

For the full text of the Risk Phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General information
Consult a physician. Show this safety data sheet to the doctor in attendance.

After inhalation
If breathed in, move person into fresh air. If not breathing give artificial respiration Consult a physician.

After skin contact
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

After eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

After swallowing
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Information for doctor
Attending physician should treat exposed individual symptomatically.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2 Special hazards arising from the substance or mixture

Hydrogen chloride gas

5.3 Advice for firefighters

Wear self-contained breathing apparatus for fire fighting if necessary.

5.4 Further information

The product itself does not burn.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation.
Evacuate personnel to safe areas. For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and material for containment and cleaning up

Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

7.3 Specific end uses

apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Name	Source	Type	ppm	mg/m3
Hydrochloric Acid	OSHA	PEL Ceiling	5 ppm	7 mg/m3
	ACGIH	TLV Ceiling	2 ppm	
	DuPont	AEL* TWA	5 ppm (15 minute)	

Hydrofluoric Acid	OSHA	PEL Ceiling	3 ppm (8 Hr. TWA, as °F)	7 mg/m3
	ACGIH	TLV Ceiling	3 ppm	2.6 mg/m3 (as °F Notice of Intended Changes (2004))
			0.5 ppm (8 Hr. TWA, as °F)	
			2 ppm (Ceiling, as °F)	
			3 ppm (15 minute)	
	DuPont	AEL* TWA		

*AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment
Eye/face protection: Tightly fitting safety goggles. Face shield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection: Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance form	: Clear, Colorless to light yellow liquid.
Odor	: Sharp
Odor threshold	: No data available
pH	: <2
Melting point / freezing point	: Typical: –25°C (-13°F) Range: -6 to –60°C (+21.2 to –76°F)
Initial boiling point and boiling range	: Typical: 105°C (221°F) Range: 102 to 109°C (215.6 to 228.2°F)

Flash point	: No data available
Evaporation rate (Butyl Acetate = 1)	: > 1
Flammability (solid, gas)	: No data available
Upper/lower flammability or explosive limits	: No data available
Vapor pressure (@ 25°C (77°F))	: HCl Typical: <0.1 HF Typical: <0.1 H20 Typical: 18
Vapor density (AIR=1)	: No data available
Water solubility	: Soluble
Partition coefficient: n-octanol / water	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	:
Kinematic	No data available
Dynamic	No data available
Pour Point	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Specific Gravity (water = 1)	: Typical: 1.07 Range: 1.02 to 1.11

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

does not polymerize.

10.4 Conditions to avoid

No data available.

10.5 Incompatible materials

bases, amines, alkali metals, metals, permanganates, e.g. potassium permanganate, fluorine, metal acetylides, hexalithium disilicide

10.6 Hazardous decomposition products

No data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Hydrochloric Acid

LC50 Inhalation	Mouse	1108 ppm/1H
LC50 Inhalation	Mouse	20487 mg/m3/5M
LC50 Inhalation	Mouse	3940 mg/m3/30M
LC50 Inhalation	Mouse	8300 mg/m3/30M
LC50 Inhalation	Rat	3124 ppm/1H
LC50 Inhalation	Rat	60938 mg/m3/5M
	Rat	7004 mg/m3/30M
LC50 Inhalation	Rat	45000 mg/m3/5M
LC50 Inhalation	Rat	8300 mg/m3/30M
LC50 Inhalation	Rabbit	900 mg/kg
LD50 Oral		

Hydrofluoric Acid

LCLO Inhalation - Human - 30 h -
LC50 Inhalation - rat - 1 h -
Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye: Lacrimation.
Behavioural: Change in motor activity (specific assay). Gastrointestinal changes in structure or function of salivary glands.

LC50 Inhalation - mouse - 1 h -
Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste): Eye: Corneal damage. Sense organs and Special Senses (Nose, Eye, Ear, and Taste) Eye: Other. Lungs, Thorax, or Respiration: Dyspnoea.

Skin corrosion/irritation

Hydrochloric Acid

Skin	rabbit	: Causes burns.

Hydrofluoric Acid

Skin	No data available

Serious eye damage/eye irritation

Hydrochloric Acid

Eyes	rabbit	: Corrosive to eyes

Hydrofluoric Acid

Eyes	Human	: Risk of serious damage to eyes.

Respiratory or skin sensitization

Hydrochloric Acid

: No data available

Hydrofluoric Acid

: No data available

Germ cell mutagenicity

Hydrochloric Acid

: No data available

Hydrofluoric Acid

: No data available

Carcinogenicity

Hydrochloric Acid

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC,
ACGIH, NTP, or EPA classification. (Hydrochloric acid)
(Hydrochloric acid)
IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans.

Hydrofluoric Acid

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC,
ACGIH, NTP, or EPA classification. (Hydrochloric acid)
(Hydrochloric acid)
IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans.

Reproductive toxicity

Hydrochloric Acid

No data available

Hydrofluoric Acid

Reproductive toxicity - rat – Inhalation
Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Developmental Toxicity - rat – Inhalation
Effects on Embryo or Fetus: Fetal death.

Specific target organ toxicity - single exposure

Hydrochloric Acid

The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

Hydrofluoric Acid

No data available

Specific target organ toxicity - repeated exposure

Hydrochloric Acid

No data available.

Hydrofluoric Acid

No data available

Aspiration hazard

Hydrochloric Acid

No data available.

Hydrofluoric Acid

No data available

Additional Information

Hydrochloric Acid

RTECS: MW4025000
burning sensation, Cough, wheezing, laryngitis, Shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

Hydrofluoric Acid

Fluoride ion can reduce serum calcium levels possibly causing fatal hypocalcemia. Material can cause severe burns and blistering which may not be immediately painful or visible. The full extent of tissue damage may not exhibit itself for 12-24 hours after exposure., Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., necrosis of the skin

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity:

Hydrochloric Acid

Toxicity to fish	LC50 - Gambusia affinis (Mosquito fish) - 282 mg/l - 96 h L50 – Bluegill - 3.6 mg/l – 48 h
Toxicity to daphnia and other aquatic invertebrates	No data available

Hydrofluoric Acid

Toxicity to fish	No data available

Toxicity to daphnia and other aquatic invertebrates	No data available

12.2 Persistence and degradability

Behavior in environmental systems:

No data available

12.3 Bio accumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT	: No data available
vPvB	: No data available

12.6 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. Advice on disposal - do not dump into any sewers, on the ground, or into any body of water.

14. TRANSPORT IFORMATION

14.1 UN number

ADR/RID, IMDG, IATA	: UN 3264

14.2 UN proper shipping name

ADR/RID, IMDG, IATA	: CORROSIVE LIQUID, ACIDIC, INORGANIC SOLUTION, N.O.S. (CONTAINS: HYDROCHLORIC AND HYDROFLUORIC ACID)

14.3 Transport hazard class (es)

ADR/RID, IMDG, IATA : Class 8

14.4 Packaging group

ADR/RID, IMDG, IATA : PG II

14.5 Environmental hazards

Marine pollutant : no

14.6 Special precautions for user

No data available.

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

No data available.

15.2 Chemical safety assessment

No data available

15.3 OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This product contains the below components listed which require reporting under this statute.

Hydrogen Chloride	3.0 - 20.0%
Hydrofluoric acid	2.0 – 10.0 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:

This product contains the below components listed which require reporting under this statute.

Hydrogen Chloride	3.0 - 20.0%
Hydrofluoric acid	2.0 – 10.0 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

US Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Canadian WHMIS
D1A: Very Toxic Material Causing Immediate and Serious Toxic Effects 1
E: Corrosive liquid
D1B: Toxic Material Causing Immediate and Serious Toxic Effects 1
D2A: Very Toxic Material Causing Other Toxic Effects 2
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

16. OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases

Hazard statement (s)

H314	Causes severe skin burns and eye damage.
H335	May cause respiratory irritation.
H330	Fatal if inhaled.
H310	Fatal in contact with skin.
H300	Fatal if swallowed.

Precautionary statement (s)

P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P264	Wash hands thoroughly after handling.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician
P302 + P350	IF ON SKIN: Gently wash with plenty of soap and water.
P284	Wear respiratory protection

Risk Phrase (s)

R34	Causes burns.
R37	Irritating to respiratory system.
R26/27/28	Very toxic by inhalation, in contact with skin & if swallowed.

Safety Phrase (s)

S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S7/9	Keep container tightly closed and in a well-ventilated place.
S45	In case of accident or if you feel unwell, seek medical advice immediately

Abbreviations and acronyms:

ADR	Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road).
RID	Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail).
IMDG	International Maritime Code for Dangerous Goods
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
PBT	Persistent Bioaccumalative Toxic chemical
vPvB	Very Persistent and Very Bioaccumulative
OSHA	Occupational Safety and Health Administration
ACGIH	American Conference of Governmental Industrial Hygienists
TLV(s)	Threshold Limit Values
STEL	Short term exposure limit
NIOSH	National Institute for Occupational Safety and Health.
LDLo	lethal dose low
TCLo	Lowest published toxic concentration
IARC	International Agency For Research On Cancer
NTP	National Toxicology Program
EPA	Environment Protection Agency
EC	European Commission
EU	European Union
CLP	Classification, labeling and Packaging of substances
PG	Packing Group

MSDS Issuing Department: Safety
MSDS I.D. #120100.09

DISCLAIMER:
This information was obtained from sources MTS-Simulation Service, Inc. believes to be reliable. However, the information is provided without any warranty, express or implied, regarding its thoroughness and accuracy. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For these reasons sources MTS-Simulation Service, Inc. does not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of, or in any way connected with the handling, storage, use or disposal of the product. This information was prepared for this product only. If the product is used as a component in another product some of the information may not apply.

HCl-HF Acid Blend

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 05/27/2016 Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form : Mixture

Product name : HCl-HF Acid Blend

1.2. Relevant identified uses of the substance or mixture and uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Cal Coast Acidizing
PO Box 2050
Orcutt, CA 93457
T 661-746-4713

1.4. Emergency telephone number

Emergency number : Chemtrec : +1 800-424-9300 (Within USA)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Met. Corr. 1	H290 -	May be corrosive to metals
Acute Tox. 2 (Dermal)	H310 -	Fatal in contact with skin
Acute Tox. 3 (Inhalation:dust,mist)	H331 -	Toxic if inhaled
Skin Corr. 1A	H314 -	Causes severe skin burns and eye damage
Eye Dam. 1	H318 -	Causes serious eye damage
STOT SE 3	H335 -	May cause respiratory irritation

Full text of H statements : see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :

GHS05 GHS06 GHS07

Signal word (GHS-US) : Danger

Contains : Hydrochloric acid; Hydrofluoric acid

Hazard statements (GHS-US) : H290 - May be corrosive to metals
H310 - Fatal in contact with skin
H314 - Causes severe skin burns and eye damage
H331 - Toxic if inhaled
H335 - May cause respiratory irritation

Precautionary statements (GHS-US) : P234 - Keep only in original container
P260 - Do not breathe mist, spray, vapors
P262 - Do not get in eyes, on skin, or on clothing
P264 - Wash clothing, face, hands thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear eye protection, face protection, protective clothing, protective gloves
P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER
P321 - Specific treatment (see Labeling on this label)
P361 - Take off immediately all contaminated clothing
P363 - Wash contaminated clothing before reuse
P390 - Absorb spillage to prevent material damage
P403+P233 - Store in a well-ventilated place. Keep container tightly closed

P405 - Store locked up
P406 - Store in corrosive resistant container with a resistant inner liner
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards

Other hazards not contributing to the classification : None.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	Product identifier	%	GHS-US classification
Hydrochloric acid	(CAS No) 7647-01-0	5 - 15	Acute Tox. 3 (Inhalation:gas), H331 Skin Corr. 1A, H314
Hydrofluoric acid	(CAS No) 7664-39-3	0.5 - 5	Acute Tox. 2 (Oral), H300 Acute Tox. 1 (Dermal), H310 Acute Tox. 2 (Inhalation:dust,mist), H330 Skin Corr. 1A, H314

Full text of H-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Call a physician immediately. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. Call a doctor.

First-aid measures after skin contact : Remove/Take off immediately all contaminated clothing. Call a physician immediately. Immediately remove contaminated clothing or footwear. Seek medical attention if burns develop. Wash skin with plenty of water.

First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately. Consult an ophtalmologist if irritation persists.

First-aid measures after ingestion : Rinse mouth. Do not induce vomiting. Call a physician immediately.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries : Not expected to present a significant hazard under anticipated conditions of normal use.

Symptoms/injuries after inhalation : May cause respiratory irritation.

Symptoms/injuries after skin contact : Burns.

Symptoms/injuries after eye contact : Serious damage to eyes.

Symptoms/injuries after ingestion : Burns.

4.3. Indication of any immediate medical attention and special treatment needed

Not applicable.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam. Carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Reactivity : The product is non-reactive under normal conditions of use, storage and transport.

5.3. Advice for firefighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Only qualified personnel equipped with suitable protective equipment may intervene. Do not breathe dust/fume/gas/mist/vapors/spray. Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : In case of large spillages: Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Shovel or sweep up and put in a closed container for disposal. Small quantities of liquid spill: take up in non-combustible absorbent material and shovel into container for disposal. Notify authorities if product enters sewers or public waters.

Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Use only outdoors or in a well-ventilated area. Avoid breathing dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Wear personal protective equipment.

Hygiene measures : Wash contaminated clothing before reuse. Separate work clothes from street clothes. Launder separately. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in corrosive resistant container with a resistant inner liner. Keep only in original container. Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Incompatible materials : Metals.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Hydrofluoric acid (7664-39-3)		
ACGIH	ACGIH TWA (ppm)	0.5 ppm
ACGIH	ACGIH Ceiling (ppm)	2 ppm
OSHA	OSHA PEL (TWA) (ppm)	3 ppm

Hydrochloric acid (7647-01-0)		
ACGIH	ACGIH Ceiling (ppm)	2 ppm
OSHA	OSHA PEL (Ceiling) (mg/m³)	7 mg/m³
OSHA	OSHA PEL (Ceiling) (ppm)	5 ppm

Water (7732-18-5)
Not applicable

8.2. Exposure controls

Appropriate engineering controls : Ensure good ventilation of the work station.

Hand protection : Chemically resistant protective gloves.

Eye protection : Chemical goggles or safety glasses. Eye protection, including both chemical splash goggles and face shield, must be worn when possibility exists for eye contact due to spraying liquid or airborne particles. Safety glasses.

Skin and body protection : Wear suitable protective clothing.

Respiratory protection : Wear respiratory protection.

Environmental exposure controls : Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Color	: Mixture contains one or more component(s) which have the following colour(s): Colorless
Odor	: There may be no odour warning properties, odour is subjective and inadequate to warn of overexposure. Mixture contains one or more component(s) which have the following odour(s): choking sharp
Odor threshold	: No data available
pH	: No data available
Melting point	: Not applicable
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: No data available
Explosion limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Vapor pressure	: No data available
Relative density	: No data available
Relative vapor density at 20 °C	: No data available
Solubility	: Water: Solubility in water of component(s) of the mixture : • Hydrochloric acid: 823 g/l (at 0 °C) • Hydrofluoric acid: 719.8 g/l (at 20 °C)
Log Pow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

metals.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. On combustion, forms: carbon oxides (CO and CO2).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Oral: Not classified. Dermal: Fatal in contact with skin. Inhalation:dust,mist: Toxic if inhaled.

HCl-HF Acid Blend	
ATE US (dermal)	100.000 mg/kg body weight
ATE US (dust, mist)	0.918 mg/l/4h

Hydrofluoric acid (7664-39-3)	
LC50 inhalation rat (mg/l)	0.79 mg/l (Exposure time: 1 h)
ATE US (oral)	5.000 mg/kg body weight
ATE US (dermal)	5.000 mg/kg body weight
ATE US (vapors)	0.790 mg/l/4h
ATE US (dust, mist)	0.050 mg/l/4h

Hydrochloric acid (7647-01-0)	
LD50 oral rat	238 - 277 mg/kg
LD50 dermal rabbit	> 5010 mg/kg
LC50 inhalation rat (mg/l)	1.68 mg/l (Exposure time: 1 h)
ATE US (oral)	238.000 mg/kg body weight
ATE US (gases)	700.000 ppmV/4h
ATE US (vapors)	1.680 mg/l/4h
ATE US (dust, mist)	1.680 mg/l/4h

Skin corrosion/irritation : Causes severe skin burns and eye damage.

Serious eye damage/irritation : Causes serious eye damage.

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Hydrochloric acid (7647-01-0)	
IARC group	3 - Not classifiable

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : May cause respiratory irritation.

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

Symptoms/injuries after inhalation : May cause respiratory irritation.

Symptoms/injuries after skin contact : Burns.

Symptoms/injuries after eye contact : Serious damage to eyes.

Symptoms/injuries after ingestion : Burns.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Before neutralisation, the product may represent a danger to aquatic organisms.

Hydrofluoric acid (7664-39-3)	
EC50 Daphnia 1	270 mg/l (Exposure time: 48 h - Species: Daphnia species)

12.2. Persistence and degradability

HCl-HF Acid Blend	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

HCl-HF Acid Blend	
Bioaccumulative potential	Not established.

Hydrofluoric acid (7664-39-3)	
BCF fish 1	(no bioaccumulation)
Log Pow	-1.4

12.4. Mobility in soil

HCl-HF Acid Blend	
Ecology - soil	Not established.

12.5. Other adverse effects

Effect on global warming : No known ecological damage caused by this product.
Not established

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN2922 Corrosive liquids, toxic, n.o.s. (Hydrofluoric acid, Hydrochloric acid solution), 8 (6.1), II

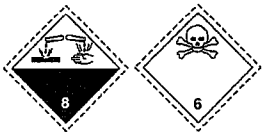
UN-No.(DOT) : UN2922

Proper Shipping Name (DOT) : Corrosive liquids, toxic, n.o.s.
Hydrofluoric acid, Hydrochloric acid solution

Class (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136

Subsidiary risk (DOT) : 6.1 - Class 6.1 - Poisonous materials 49 CFR 173.132

Hazard labels (DOT) : 8 - Corrosive
6.1 - Poison



Packing group (DOT) : II - Medium Danger

DOT Packaging Non Bulk (49 CFR 173.xxx) : 202

DOT Packaging Bulk (49 CFR 173.xxx) : 243

DOT Symbols : G - Identifies PSN requiring a technical name

DOT Special Provisions (49 CFR 172.102) : B3 - MC 300, MC 301, MC 302, MC 303, MC 305, and MC 306 and DOT 406 cargo tanks and DOT 57 portable tanks are not authorized
IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized
T7 - 4 178.274(d)(2) Normal..... 178.275(d)(3)
TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and a is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively

DOT Packaging Exceptions (49 CFR 173.xxx) : 154

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 1 L

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 30 L

DOT Vessel Stowage Location : B - (i) The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) "On deck only" on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded

DOT Vessel Stowage Other : 40 - Stow "clear of living quarters"

Emergency Response Guide (ERG) Number : 154

Other information : Product RQ: 33,333 lbs. Hydrochloric acid. 2,000 lbs. Hydrofluoric Acid.

TDG

No additional information available

Transport by sea

UN-No. (IMDG) : 2922

Proper Shipping Name (IMDG) : CORROSIVE LIQUID, TOXIC, N.O.S.

Class (IMDG) : 8 - Corrosive substances

Packing group (IMDG) : II - substances presenting medium danger

Air transport

UN-No. (IATA) : 2922

Proper Shipping Name (IATA) : Corrosive liquid, toxic, n.o.s.

Class (IATA) : 8 - Corrosives

Packing group (IATA) : II - Medium Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

Hydrofluoric acid	CAS No 7664-39-3	0.5 - 5%
Hydrochloric acid	CAS No 7647-01-0	5 - 15%

Hydrofluoric acid (7664-39-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on the United States SARA Section 302	
SARA Section 302 Threshold Planning Quantity (TPQ)	100
SARA Section 313 - Emission Reporting	1.0 %

Hydrochloric acid (7647-01-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on the United States SARA Section 302	
SARA Section 302 Threshold Planning Quantity (TPQ)	500 (gas only)
SARA Section 313 - Emission Reporting	1.0 % (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)

Water (7732-18-5)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

National regulations

HCl-HF Acid Blend
All chemical substances in this product are listed in the EPA (Environment Protection Agency) TSCA (Toxic Substances Control Act) Inventory

Hydrofluoric acid (7664-39-3)
Listed on the AICS (Australian Inventory of Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory Listed on the Korean ECL (Existing Chemicals List) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Japanese Poisonous and Deleterious Substances Control Law Japanese Pollutant Release and Transfer Register Law (PRTR Law) Listed on the Canadian IDL (Ingredient Disclosure List) Listed on INSQ (Mexican National Inventory of Chemical Substances) Listed on CICR (Turkish Inventory and Control of Chemicals)

Hydrochloric acid (7647-01-0)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Japanese Poisonous and Deleterious Substances Control Law
Listed on the Canadian IDL (Ingredient Disclosure List)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on CICR (Turkish Inventory and Control of Chemicals)

Water (7732-18-5)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

Hydrofluoric acid (7664-39-3)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Hydrochloric acid (7647-01-0)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

Full text of H-phrases:

H290	May be corrosive to metals
H300	Fatal if swallowed
H310	Fatal in contact with skin
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H330	Fatal if inhaled
H331	Toxic if inhaled
H335	May cause respiratory irritation

SDS GHS US CUSTOM BLUE

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY

Product name: TERGITOL™ NP-9 SURFACTANT

Issue Date: 02/26/2015
Print Date: 03/19/2015

THE DOW CHEMICAL COMPANY encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: TERGITOL™ NP-9 SURFACTANT

Recommended use of the chemical and restrictions on use
Identified uses: Multi-purpose surfactant. NOTICE! NOT TO BE USED AS A BIOCIDE IN INTRAVAGINAL END-USE APPLICATIONS (INCLUDING SPERMICIDES). FOR INDUSTRY USE ONLY. We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

COMPANY IDENTIFICATION
THE DOW CHEMICAL COMPANY
2030 WILLARD H DOW CENTER
MIDLAND MI 48674-0000
UNITED STATES

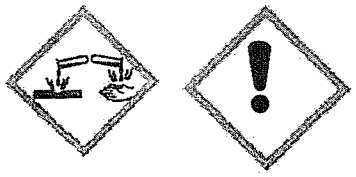
Customer Information Number: 800-258-2436
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 800-424-9300
Local Emergency Contact: 989-636-4400

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Acute toxicity - Category 4 - Oral
Acute toxicity - Category 4 - Inhalation
Serious eye damage - Category 1

Label elements
Hazard pictograms



Signal word: **DANGER!**

Hazards
Harmful if swallowed or if inhaled
Causes serious eye damage.

Precautionary statements

Prevention
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear eye protection/ face protection.

Response
IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
Slipping hazard.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: 4-Nonylphenol branched, ethoxylated (>1 - 9% in a non hazardous diluent)
This product is a substance.

Component	CASRN	Concentration
Nonylphenol polyethylene glycol ether	127087-87-0	>= 97.0 %
Poly(ethylene oxide)	25322-68-3	<= 3.0 %
Dinonylphenyl polyoxyethylene	9014-93-1	<= 2.0 %

4. FIRST AID MEASURES

Description of first aid measures
General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

Skin contact: Wash off with plenty of water.

Eye contact: Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: Maintain adequate ventilation and oxygenation of the patient. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep upwind of spill. Ventilate area of leak or spill. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. Refer to section 7, Handling, for additional precautionary measures.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Absorb with materials such as: Sand. Dirt. Collect in suitable and properly labeled containers. Do not use water for cleanup. See Section 13, Disposal Considerations, for additional information.

Removal of ignition sources: Keep away from sources of ignition - No smoking.

Dust Control: Not applicable

7. HANDLING AND STORAGE

Precautions for safe handling: Avoid contact with eyes, skin, and clothing. Avoid breathing vapor. Do not swallow. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: No specific requirements. Additional storage and handling information on this product may be obtained by calling your sales or customer service contact. The shelf life given is for unopened containers stored under moderate temperature conditions.

Storage stability

Shelf life: Use within
24 Month

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Poly(ethylene oxide)	US WEEL	TWA aerosol	10 mg/m3

Exposure controls
Engineering controls: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles.

Skin protection

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Butyl rubber. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Wear clean, body-covering clothing.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.

The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Yellow
Odor	Mild
Odor Threshold	No test data available
pH	No test data available
Melting point/range	Not applicable to liquids
Freezing point	3.8 °C (38.8 °F) *Calculated.*
Boiling point (760 mmHg)	> 250 °C (> 482 °F) *Calculated.* Decomposes before boiling
Flash point	**closed cup** 247 °C (477 °F) *ASTM D 93*
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not applicable to liquids
Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapor Pressure	< 0.01 mmHg at 20 °C (68 °F) *Calculated.*
Relative Vapor Density (air = 1)	>1 *Calculated.*
Relative Density (water = 1)	1.057 at 20 °C (68 °F) / 20 °C *Calculated.*
Water solubility	Completely soluble but some compositions may form gels

Partition coefficient: n-octanol/water	log Pow: 2.1 - 3.4 *Calculated.*
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available
Kinematic Viscosity	237 cSt at 25 °C (77 °F) *Calculated.*
Explosive properties	no data available
Oxidizing properties	no data available
Molecular weight	616 g/mol *Calculated.*

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: no data available

Chemical stability: Thermally stable at typical use temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Exposure to elevated temperatures can cause product to decompose.

Incompatible materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Acute toxicity

Acute oral toxicity
Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

Typical for this family of materials.
LD50, Rat, 960 - 3,980 mg/kg

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Typical for this family of materials.
LD50, Rabbit, 2,000 - 2,991 mg/kg

Acute inhalation toxicity
Prolonged excessive exposure to mist may cause serious adverse effects, even death. Vapor may cause irritation of the upper respiratory tract (nose and throat).

Typical for this family of materials.
LC50, Rat, 4 Hour, dust/mist, 1.15 mg/l

Skin corrosion/irritation
Prolonged contact may cause slight skin irritation with local redness.

Serious eye damage/eye irritation
May cause severe eye irritation.
May cause severe corneal injury.

Sensitization
For this family of materials:
Did not cause allergic skin reactions when tested in humans.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For this family of materials:
In animals, effects have been reported on the following organs:
Kidney.
Liver.

Carcinogenicity
For this family of materials: Did not cause cancer in laboratory animals.

Teratogenicity
For this family of materials: Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

Reproductive toxicity
No relevant data found.

Mutagenicity
For this family of materials: In vitro genetic toxicity studies were negative.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicological information on this product or its components appear in this section when such data is available.

Toxicity

Acute toxicity to fish
For this family of materials:
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

For this family of materials:
LC50, Pimephales promelas (fathead minnow), 96 Hour, 3.8 - 6.2 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
For this family of materials:
LC50, Daphnia magna (Water flea), 48 Hour, 9.3 - 21.4 mg/l, OECD Test Guideline 202 or Equivalent

Toxicity to bacteria
For this family of materials:
IC50, Bacteria, 16 Hour, > 1,000 mg/l

Persistence and degradability

Biodegradability: For this family of materials: Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.
10-day Window: Not applicable
Biodegradation: < 60 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent

Theoretical Oxygen Demand: 2.15 - 2.25 mg/mg

Chemical Oxygen Demand: 2.09 - 2.25 mg/mg

Bioaccumulative potential

Partition coefficient: n-octanol/water(log Pow): 2.1 - 3.4 Calculated.
Bioconcentration factor (BCF): 5.9 - 48 Fish. Estimated.

Mobility in soil

No relevant data found.

13. DISPOSAL CONSIDERATIONS

Disposal methods: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device. Waste water treatment system.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Environmentally hazardous substance, liquid, n.o.s.(Nonylphenol polyethylene glycol ether)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	Nonylphenol polyethylene glycol ether

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Nonylphenol polyethylene glycol ether)
UN number	UN 3082
Class	9
Packing group	III
Marine pollutant	Nonylphenol polyethylene glycol ether
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Environmentally hazardous substance, liquid, n.o.s.(Nonylphenol polyethylene glycol ether)
UN number	UN 3082
Class	9
Packing group	III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Acute Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Pennsylvania Worker and Community Right-To-Know Act:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances knownto the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

United States TSCA Inventory (TSCA)
All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

:

16. OTHER INFORMATION

Product Literature
Additional information on this and other products may be obtained by visiting our web page. Additional information on this product may be obtained by calling your sales or customer service contact. Ask for a product brochure.

Hazard Rating System
NFPA

Health	Fire	Reactivity
2	1	0

Revision
Identification Number: 101234270 / A001 / Issue Date: 02/26/2015 / Version: 7.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

TWA	8-hr TWA
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

THE DOW CHEMICAL COMPANY urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to

change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

CORNELL

Material Safety Data Sheets

Division of Facilities Services

DOD Hazardous Material Information (ANSI Format) For Cornell University Convenience Only

XENON XE 133 GAS

Section 1 - Product and Company Identification
XENON XE 133 GAS

Product Identification: XENON XE 133 GAS
Date of MSDS: 01/01/1992 **Technical Review Date:** 05/31/1992
FSC: 6830 **NIIN:** 00-539-8512
Submitter: N EN
Status Code: C
MFN: 01
Article: N
Kit Part: N

Manufacturer's Information

Manufacturer's Name: MALLINCKRODT MEDICAL INC
Manufacturer's Address1: 2703 WAGNER PLACE
Manufacturer's Address2: MARYLAND HEIGHTS, MO 63043
Manufacturer's Country: US
General Information Telephone: 314-344-3800
Emergency Telephone: 314-344-3800
Emergency Telephone: 314-344-3800
MSDS Preparer's Name: N/P
Proprietary: N
Reviewed: N
Published: Y
CAGE: FO650
Special Project Code: N

Item Description

Item Name: XENON,TECHNICAL
Item Manager: FPH
Specification Number: NK
Type/Grade/Class: NK
Unit of Issue: CY **Quantitative Expression:** 00000000100LI
Unit of Issue Quantity: 1
Type of Container: CYLINDER

Contractor Information

Contractor's Name: MALLINCKRODT DIAGNOSTICS
Contractor's Address1: 2703 WAGNER PLACE
Contractor's Address2: MARYLAND HEIGHTS, MO 63043-3421
Contractor's Telephone: 314-344-3800
Contractor's CAGE: 2A916

Contractor Information

Contractor's Name: MALLINCKRODT MEDICAL INC
Post Office Box: N/K
Contractor's Address1: 2703 WAGNER PLACE
Contractor's Address2: MARYLAND HEIGHTS, MO 63043-3421
Contractor's Telephone: 314-770-7800/314-895-2000
Contractor's CAGE: FO650

Section 2 - Compositon/Information on Ingredients
XENON XE 133 GAS

Ingredient Name: ING 2:W/REGS APPROP TO GOVT AGENCY AUTHORIZED TO LICENSE USE OF THIS RADIONUCLIDE. READ PACKAGE INSERT PRIOR TO (ING 4)
Ingredient CAS Number: Ingredient CAS Code: X
RTECS Number: 9999999ZZ **RTECS Code:** M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: N/K
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE **OSHA PEL Code:** M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE **ACGIH TLV Code:** M
ACGIH STEL: N/P **ACGIH STEL Code:**
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: ING 3:USE. ROOMS WHERE XENON-133 GAS IS USED SHOULD BE KEPT UNDER NEGATIVE PRESS W/RESPECT TO ADJACENT AREAS.
Ingredient CAS Number: Ingredient CAS Code: X
RTECS Number: 9999999ZZ **RTECS Code:** M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:

<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: N/K
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE **OSHA PEL Code:** M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE **ACGIH TLV Code:** M
ACGIH STEL: N/P **ACGIH STEL Code:**
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: PROT GLOVES: IMPERVIOUS GLOVES (FP N).
Ingredient CAS Number: Ingredient CAS Code: X
RTECS Number: 9999999ZZ **RTECS Code:** M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: N/K
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE **OSHA PEL Code:** M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE **ACGIH TLV Code:** M
ACGIH STEL: N/P **ACGIH STEL Code:**
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: RADIOACTIVE XENON (XE-133); (XENON XE 133 GAS)
Ingredient CAS Number: 14932-42-4 **Ingredient CAS Code:** M
RTECS Number: RTECS Code: X
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:

>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: N/K
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE **OSHA PEL Code:** M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE **ACGIH TLV Code:** M
ACGIH STEL: N/P **ACGIH STEL Code:**
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical: N

Ingredient Name: SUPP DATA:WOULD CAUSE UNNEC EXPOS TO RADIATION.RADIOACTIVE DRUGS MUST BE HANDLED BY QUALIFIED PERS IN CONFORMITY (ING 3)
Ingredient CAS Number: Ingredient CAS Code: X
RTECS Number: 9999999ZZ **RTECS Code:** M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: N/K
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE **OSHA PEL Code:** M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE **ACGIH TLV Code:** M
ACGIH STEL: N/P **ACGIH STEL Code:**
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: VENT: THE FACILITY AND OUTSIDE THE FACILITY.
Ingredient CAS Number: Ingredient CAS Code: X

RTECS Number: 9999999ZZ **RTECS Code:** M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: N/K
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE **OSHA PEL Code:** M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE **ACGIH TLV Code:** M
ACGIH STEL: N/P **ACGIH STEL Code:**
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Section 3 - Hazards Identification, Including Emergency Overview
XENON XE 133 GAS

Health Hazards Acute & Chronic: INHAL: NOT EXPECTED TO BE A HEALTH HAZARD. INGEST: NOT APPLICABLE. SKIN CONT: NOT EXPECTED TO PRODUCE ANY ACUTE ADVERSE HEALTH EFFECTS. EYE: NO ADVERSE EFFECT EXPECTED. CHRONIC: THE HEALTH RISKS ASSOC D W/CHRONIC RADIATION EXPOS (CANCER, LEUKEMIA, GENETIC AND TERATOGENIC EFFECTS) ARE BELIEVED TO (EFTS OF OVEREXPOS)

Signs & Symptoms of Overexposure:
HLTH HAZ: INVOLVE LEVELS OF RADIATION EXPOSURE WHICH ARE MUCH HIGHER THAN THOSE PERMITTED OCCUPATIONALLY. IT IS WIDELY ACCEPTED BY SCIENTIFIC COMMUNITY THAT EXPOS TO SUFFICIENT QTYS OF IONIZING RADIAT ION CAN POTENTIALLY CAUSE HARMFUL BIOLOGICAL EFTS WHICH INCLUDE CANCER, LEUKEMIA, AND GENETIC & TERATOGENIC EFFECTS.

Medical Conditions Aggravated by Exposure:
NO INFORMATION FOUND.

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route of Entry Indicators:
Inhalation: YES

Skin: NO
Ingestion: NO
Carcenogenicity Indicators
NTP: NO
IARC: NO
OSHA: NO
Carcinogenicity Explanation: NOT RELEVANT

Section 4 - First Aid Measures
XENON XE 133 GAS

First Aid:
INHAL/SKIN/EYE: NOT EXPECTED TO REQUIRE FIRST AID MEASURES. INGEST: NOT APPLICABLE. CALL MD IMMEDIATELY (PF N). INHAL: REMOVE TO FRESH AIR. SUPPORT BREATHING (GIVE O*2/ARTIFICIAL RESPIRATION) CALL MD (FP N). EYES: IMMEDIATELY FLUSH W/POTABLE WATER FOR A MINIMUM OF 15 MINUTES, SEEK ASSISTANCE FROM MD (FP N). SKIN: FLUSH W/COPIOUS AMOUNTS OF WATER. CALL MD. (FP N).

Section 5 - Fire Fighting Measures
XENON XE 133 GAS

Fire Fighting Procedures:
WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N).
Unusual Fire or Explosion Hazard:
NOT CONSIDERED TO BE A FIRE OR EXPLOSION HAZARD.
Extinguishing Media:
USE ANY MEANS SUITABLE FOR EXTINGUISHING SURROUNDING FIRE.
Flash Point: Flash Point Text: N/K
Autoignition Temperature:
Autoignition Temperature Text: N/A
Lower Limit(s): N/K
Upper Limit(s): N/K

Section 6 - Accidental Release Measures
XENON XE 133 GAS

Spill Release Procedures:
IF PROD IS RECEIVED IN LEAKING CONDITION OR ANY LOSS OR RELEASE OF THE RADIOACTIVE CONTENTS OCCURS, NOTIFY YOUR RADIATION SAFETY DEPARTMENT & MALLINCKRODT AT (314)344-3800. ALL CLEANUP OPS SHLD BE PER FORMED ACCORDING TO STANDARD OPERATING (SUPP DATA)

Section 7 - Handling and Storage
XENON XE 133 GAS

Handling and Storage Precautions:

Other Precautions:

Section 8 - Exposure Controls & Personal Protection
XENON XE 133 GAS

Repiratory Protection:
NOT EXPECTED TO REQUIRE PERSONAL RESPIRATOR USE. NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FP N).
Ventilation:
VENT SYS SHLD VENT DIRECTLY TO ATM & SHLD MOVE SUFFICIENT AIR TO DILUTE XENON-133 TO PERMISSIBLE CONC W/IN (ING 5)
Protective Gloves:
NOT EXPECTED TO BE REQUIRED.(ING 6)
Eye Protection: CHEMICAL WORKERS GOGGLES (FP N).
Other Protective Equipment: SPECIAL HANDLING DEVICES - XENOTRON I GAS DISPENSER.
Work Hygenic Practices: REMOVE PROMPTLY ANY CONTAMINATION FROM SKIN, EYES OR CLOTHING.
Supplemental Health & Safety Information: SPEC GRAV:>1MGI/UG OF XENON GAS ON CALIBRATION DATE.SPILL PROC:PROC (SOPS) ESTABLISHED FOR YOUR FACILITY.RADIOACTIVE WASTE SHLD BE DISPOS OF ACCORDING TO SOPS ESTABLISHED BY YOUR RADIATION SAFETY OFFI CER. HNDLG/STOR PREC:CNTNR/W/IN HVR SHIELDING.AVOID CONT W/RADIOACTIVE CONTENTS WHICH (ING 2)

Section 9 - Physical & Chemical Properties
XENON XE 133 GAS

HCC:
NRC/State License Number:
Net Property Weight for Ammo:
Boiling Point: Boiling Point Text: -162F,-108C
Melting/Freezing Point: Melting/Freezing Text: N/K
Decomposition Point: Decomposition Text: N/K
Vapor Pressure: N/K **Vapor Density:** N/K
Percent Volatile Organic Content:
Specific Gravity: N/K
Volatile Organic Content Pounds per Gallon:
pH: N/K
Volatile Organic Content Grams per Liter:

Viscosity: N/P
Evaporation Weight and Reference: N/K
Solubility in Water: NOT APPLICABLE
Appearance and Odor: COLORLESS GAS SEALED IN A 2 ML UNIT-DOSE GLASS VIAL; ODORLESS.
Percent Volatiles by Volume: N/K
Corrosion Rate: N/K

Section 10 - Stability & Reactivity Data
XENON XE 133 GAS

Stability Indicator: YES
Materials to Avoid:
NO INFORMATION FOUND.
Stability Condition to Avoid:
NONE SPECIFIED BY MANUFACTURER.
Hazardous Decomposition Products:
INERT GAS; DOES NOT DECOMPOSE.
Hazardous Polymerization Indicator: NO
Conditions to Avoid Polymerization:
NOT RELEVANT

Section 11 - Toxicological Information
XENON XE 133 GAS

Toxicological Information:
N/P

Section 12 - Ecological Information
XENON XE 133 GAS

Ecological Information:
N/P

Section 13 - Disposal Considerations
XENON XE 133 GAS

Waste Disposal Methods:
ENSURE COMPLIANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

Section 14 - MSDS Transport Information
XENON XE 133 GAS

Transport Information:
N/P

Section 15 - Regulatory Information
XENON XE 133 GAS

SARA Title III Information:
N/P
Federal Regulatory Information:
N/P
State Regulatory Information:
N/P

Section 16 - Other Information
XENON XE 133 GAS

Other Information:
N/P

HMIS Transportation Information

Product Identification: XENON XE 133 GAS
Transporation ID Number: 75778
Responsible Party CAGE: FO650
Date MSDS Prepared: 01/01/1992
Date MSDS Reviewed: 08/12/1992
MFN: 08/12/1992
Submitter: N TN
Status Code: C
Container Information
- **Unit of Issue:** CY
- **Container Quantity:** 1
- **Type of Container:** CYLINDER
- **Net Unit Weight:**

Article without MSDS: N
Technical Entry NOS Shipping Number:
Radioactivity:
Form:
Net Explosive Weight:
Coast Guard Ammunition Code:
Magnetism: N/P
AF MMAC Code:
DOD Exemption Number:
Limited Quantity Indicator:
Multiple Kit Number: 0
Kit Indicator: N
Kit Part Indicator: N
Review Indicator: Y
Additional Data:

Department of Transportation Information

DOT Proper Shipping Name: RADIOACTIVE MATERIAL, N.O.S.
DOT PSN Code: MOA
Symbols:
DOT PSN Modifier:
Hazard Class: 7
UN ID Number: UN2982
DOT Packaging Group:
Label: RADIOACTIVE
Special Provision(s):
Packaging Exception: 421,428
Non Bulk Packaging: 415,416
Bulk Packaging: 415,416
Maximimum Quanity in Passenger Area:
Maximimum Quanity in Cargo Area:
Stow in Vessel Requirements: A
Requirements Water/Sp/Other: 40,95

IMO Detail Information

IMO Proper Shipping Name: RADIOACTIVE MATERIAL, N.O.S.
IMO PSN Code: MYH
IMO PSN Modifier: - IN TYPE A PACKAGES
IMDG Page Number: 7109
UN Number: 2982
UN Hazard Class: 7
IMO Packaging Group: -
Subsidiary Risk Label: *
EMS Number: 7-01
Medical First Aid Guide Number: T

IATA Detail Information

IATA Proper Shipping Name: RADIOACTIVE MATERIAL, N.O.S.
IATA PSN Code: VOO
IATA PSN Modifier:
IATA UN Id Number: 2982
IATA UN Class: 7
Subsidiary Risk Class:
UN Packaging Group:
IATA Label: RADIOACTIVE
Packaging Note for Passengers: SEE 10.5
Maximum Quantity for Passengers: SEE 10.5
Packaging Note for Cargo:
Maximum Quantity for Cargo:
Exceptions: A78

AFI Detail Information

AFI Proper Shipping Name: RADIOACTIVE MATERIAL, N.O.S.
AFI Symbols:
AFI PSN Code: VOO
AFI PSN Modifier: PACKAGING PARA ALSO A11.16

AFI UN Id Number: UN2982
AFI Hazard Class: 7
AFI Packing Group: N/A
AFI Label:
Special Provisions: P3, P4, P5
Back Pack Reference: A11.6,A11.7,

HAZCOM Label Information

Product Identification: XENON XE 133 GAS
CAGE: FO650
Assigned Individual: Y
Company Name: MALLINCKRODT MEDICAL INC
Company PO Box: N/K
Company Street Address1: 2703 WAGNER PLACE
Company Street Address2: MARYLAND HEIGHTS, MO 63043-3421 US
Health Emergency Telephone: 314-344-3800
Label Required Indicator: Y
Date Label Reviewed: 05/31/1992
Status Code: C
Manufacturer's Label Number:
Date of Label: 05/31/1992
Year Procured: N/K
Organization Code: G
Chronic Hazard Indicator: Y
Eye Protection Indicator: YES
Skin Protection Indicator: YES
Respiratory Protection Indicator: YES
Signal Word: NONE
Health Hazard: None
Contact Hazard: None
Fire Hazard: None
Reactivity Hazard: None

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CORNELL

Material Safety Data Sheets

Division of Facilities Services

DOD Hazardous Material Information (ANSI Format) For Cornell University Convenience Only

KRYPTON 85

Section 1 - Product and Company Identification
KRYPTON 85

Product Identification: KRYPTON 85
Date of MSDS: 09/01/1992 **Technical Review Date:** 08/09/1995
FSC: 6830 **NIIN: LIIN:** 00N062414
Submitter: N EN
Status Code: C
MFN: 01
Article: N
Kit Part: N

Manufacturer's Information

Manufacturer's Name: DUPONT MERCK PHARMACEUTICAL CO
Manufacturer's Address1: 331 TREBLE COVE RD
Manufacturer's Address2: N BILLERICA, MA 01862
Manufacturer's Country: US
General Information Telephone: 800-362-2668
Emergency Telephone: 508-667-9531;800-424-9300(CHEMTREC)
Emergency Telephone: 508-667-9531;800-424-9300(CHEMTREC)
MSDS Preparer's Name: N/P
Proprietary: N
Reviewed: N
Published: Y
CAGE: GO350
Special Project Code: N

Contractor Information

Contractor's Name: DUPONT MERCK PHARMACEUTICAL CO
Contractor's Address1: 331 TREBLE COVE ROAD
Contractor's Address2: BILLERICA, MA 01862-5000
Contractor's Telephone: 617-482-9595/800-225-1572
Contractor's CAGE: 0PMS6

Contractor Information

Contractor's Name: DUPONT MERCK PHARMACEUTICAL CO
Post Office Box: 80026
Contractor's Address1: N/K
Contractor's Address2: WILMINGTON, DE 19880-0026
Contractor's Telephone: 302-992-4240
Contractor's CAGE: GO350

Section 2 - Compositon/Information on Ingredients
KRYPTON 85

Ingredient Name: KRYPTON
Ingredient CAS Number: 7439-90-9 **Ingredient CAS Code:** M
RTECS Number: OC6772500 **RTECS Code:** M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: 95-97
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: N/K (FP N) **OSHA PEL Code:** M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: N/K (FP N) **ACGIH TLV Code:** M
ACGIH STEL: N/P **ACGIH STEL Code:**
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: KRYPTON 85
Ingredient CAS Number: Ingredient CAS Code: X
RTECS Number: RTECS Code: X
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: 3-5
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: N/K (FP N) **OSHA PEL Code:** M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: N/K (FP N) **ACGIH TLV Code:** M
ACGIH STEL: N/P **ACGIH STEL Code:**
EPA Reporting Quantity:

DOT Reporting Quantity:
Ozone Depleting Chemical:

Section 3 - Hazards Identification, Including Emergency Overview
KRYPTON 85

Health Hazards Acute & Chronic: ACUTE: INHALATION: INERT GAS. SIMPLE ASPHYXIANT. CHRONIC: NONE SPECIFIED BY MANUFACTURER.

Signs & Symptoms of Overexposure:
SEE HEALTH HAZARDS.

Medical Conditions Aggravated by Exposure:
NONE SPECIFIED BY MANUFACTURER.

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route of Entry Indicators:
- **Inhalation:** YES
- **Skin:** NO
- **Ingestion:** NO

Carcenogenicity Indicators
- **NTP:** NO
- **IARC:** NO
- **OSHA:** NO

Carcinogenicity Explanation: NOT RELEVANT.

Section 4 - First Aid Measures
KRYPTON 85

First Aid:
INHALATION: REMOVE TO FRESH AIR IMMEDIATELY. IF BRATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND QUIET. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIAT ELY. EYES: FLUSH WITH POTABLE WATER FORAT LEAST 15 MINUTES. SEE MD (FP N). SKIN: FLUSH WITH COPIOUS AMOUNTS OF WATER. SEE MD (FP N). INGESTION: CALL MD IMMEDIATELY (FPN).

Section 5 - Fire Fighting Measures
KRYPTON 85

Fire Fighting Procedures:
WEAR NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N).
Unusual Fire or Explosion Hazard:
KRYPTON IS A NON-FLAMMABLE GAS.
Extinguishing Media:

NONE REQUIRED. USE MEDIA APPROPRIATE FOR ADJACENT MATERIALS.
Flash Point: Flash Point Text: NONE.
Autoignition Temperature:
Autoignition Temperature Text: N/A
Lower Limit(s): NONE.
Upper Limit(s): NONE.

Section 6 - Accidental Release Measures
KRYPTON 85

Spill Release Procedures:
NONE SPECIFIED BY MANUFACTURER.

Section 7 - Handling and Storage
KRYPTON 85

Handling and Storage Precautions:

Other Precautions:

Section 8 - Exposure Controls & Personal Protection
KRYPTON 85

Repiratory Protection:
USE NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FP N).
Ventilation:
PROVIDE GENERAL DILUTION VENTILATION.
Protective Gloves:
NONE REQUIRED.
Eye Protection: ANSI APPRVD CHEM WORKERS GOGGS (FP N).
Other Protective Equipment: NONE REQUIRED.
Work Hygenic Practices: NONE REQUIRED.
Supplemental Health & Safety Information: NONE SPECIFIED BY MANUFACTURER.

Section 9 - Physical & Chemical Properties
KRYPTON 85

HCC:
NRC/State License Number:
Net Property Weight for Ammo:
Boiling Point: Boiling Point Text: -260F,-162C
Melting/Freezing Point: Melting/Freezing Text: -249F,-156C
Decomposition Point: Decomposition Text: N/K
Vapor Pressure: N/A **Vapor Density:** N/K

Percent Volatile Organic Content:
Specific Gravity: N/K
Volatile Organic Content Pounds per Gallon:
pH: N/K
Volatile Organic Content Grams per Liter:
Viscosity: N/P
Evaporation Weight and Reference: N/K
Solubility in Water: N/K
Appearance and Odor: CLEAR, ODORLESS, COLORLESS, INERT GAS
Percent Volatiles by Volume: N/K
Corrosion Rate: N/K

Section 10 - Stability & Reactivity Data
KRYPTON 85

Stability Indicator: YES
Materials to Avoid:
NONE EXPECTED.
Stability Condition to Avoid:
NONE EXPECTED.
Hazardous Decomposition Products:
NOT APPLICABLE.
Hazardous Polymerization Indicator: NO
Conditions to Avoid Polymerization:
NOT RELEVANT.

Section 11 - Toxicological Information
KRYPTON 85

Toxicological Information:
N/P

Section 12 - Ecological Information
KRYPTON 85

Ecological Information:
N/P

Section 13 - Disposal Considerations
KRYPTON 85

Waste Disposal Methods:
OBSERVE ALL LOCAL, STATE & FEDERAL REGULATIONS WHEN DISPOSING OF THIS SUBSTANCE.

Section 14 - MSDS Transport Information
KRYPTON 85

Transport Information:
N/P

Section 15 - Regulatory Information
KRYPTON 85

SARA Title III Information:
N/P
Federal Regulatory Information:
N/P
State Regulatory Information:
N/P

Section 16 - Other Information
KRYPTON 85

Other Information:
N/P

HAZCOM Label Information

Product Identification: KRYPTON 85
CAGE: GO350
Assigned Individual: Y
Company Name: DUPONT MERCK PHARMACEUTICAL CO
Company PO Box: 80026
Company Street Address1: N/K
Company Street Address2: WILMINGTON, DE 19880-0026 US
Health Emergency Telephone: 508-667-9531;800-424-9300(CHEMTREC)
Label Required Indicator: Y
Date Label Reviewed: 08/09/1995
Status Code: C
Manufacturer's Label Number:
Date of Label: 08/09/1995
Year Procured: N/K
Organization Code: G
Chronic Hazard Indicator: N
Eye Protection Indicator: YES
Skin Protection Indicator: YES
Respiratory Protection Indicator: YES
Signal Word: CAUTION
Health Hazard: Slight
Contact Hazard: None
Fire Hazard: None
Reactivity Hazard: None

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MDS Nordion

MATERIAL SAFETY DATA SHEET

DATE: 2001 May

SECTION 1 MATERIAL IDENTIFICATION		For Internal Use Only
		HAZARD RATING LABEL
CHEMICAL NAME	Sodium Iodide Iodine 131 (I-131) Solution	
CHEMICAL SYNONYMS	$Na^{131}I$ in NaOH containing 0.02M Na_2SO_4 pH-9-13	
CHEMICAL FAMILY	Base: Sodium Iodide in dilute sodium hydroxide solution	
MANUFACTURER /SUPPLIER NAME	MDS Nordion Inc. 447 March Road Kanata, Ontario K2K 1X5 Telephone: (613) 592-2790 - Radiation Safety	

SECTION 2 HAZARDOUS INGREDIENTS				
INGREDIENT	Activity or %	Radiation Category	%	TLV
High Radioactivity	200-10000 mCi/ml	High energy gamma and high energy beta Half-Life: 8.02 days		
Sodium Hydroxide	< 2.8 mg/ml (< 0.3% w/v)			
AECB Permitted Exposures: 50 mSv/y for Radiation Workers; 5 mSv/y for Public				

SECTION 3 PHYSICAL DATA			
BOILING POINT: 760 mm Hg (°C)	100-105°C	SOLUBILITY IN WATER, % by weight @ 25°C	100
VAPOUR PRESSURE: 20°C (mm Hg)	N/A	SPECIFIC GRAVITY (H_2O = 1)	1.003
VAPOUR DENSITY (air = 1)	> 1.0	EVAPORATION RATE (butylacetate = 1)	N/A
pH		MELTING POINT	
APPEARANCE AND ODOUR:	Product appears like water and is contained in a shielded and securely sealed package. No odour.		

SECTION 4 FIRE AND EXPLOSION HAZARD DATA				
FLASH POINT (°C); TEST METHOD:	None	FLAMMABLE LIMITS	LEL N/A	UEL N/A
AUTOIGNITION TEMPERATURE (°C)	None			
EXTINGUISHING MEDIA:	N/A			
SPECIAL FIREFIGHTING PROCEDURES: N/A				
UNUSUAL FIRE AND EXPLOSION HAZARDS: None				

SECTION 5 REACTIVITY DATA		
STABILITY:	STABLE X	CONDITIONS TO AVOID: None
	UNSTABLE ☐	
INCOMPATIBILITY:	N/A	
HAZARDOUS DECOMPOSITION PRODUCTS:		
HAZARDOUS POLYMERIZATION:	WILL NOT OCCUR X	CONDITIONS TO AVOID: Not identified.
	MAY OCCUR ☐	

N/A - Not Applicable

MATERIAL SAFETY DATA SHEET - Sodium Iodide Iodine 131 Solution (cont'd)

SECTION 6	HEALTH HAZARD DATA
EFFECTS OF OVEREXPOSURE:	INHALATION: Will result in heavy thyroid radiation dose. No respiratory symptoms.
	INGESTION: Will result in heavy thyroid radiation dose. Sodium hydroxide concentration low, may cause throat irritation and burning sensation.
	EYES: Sodium hydroxide will have irritation effect; wash immediately.
	SKIN: Corrosive effect and high radiation on contact; wash immediately
EMERGENCY FIRST AID PROCEDURES:	INHALATION: Remove to fresh air and stand upwind if outside. Ascertain if individual has allergies to iodine. If not, administer stable iodine (eg. Lugol's solution). Seek medical attention for radiation intake.
	INGESTION: Ascertain if individual has allergies to iodine. If not, administer stable iodine (eg. Lugol's solution). Do not induce vomiting, due to corrosive effect of solution. Remove from source. Seek medical aid for radiation intake.
	EYES: Flush open eye(s) continuously for 15 minutes with clean water. Remove from source. See Physician for external radiation or if irritation persists.
	SKIN: Wash well with soap and water to remove contamination. Remove contaminated clothing. Remove from source. See Physician for external radiation or if irritation persists.
	NOTE: IN ALL CASES, OBTAIN MEDICAL AID PROMPTLY.
SECTION 7	SPECIAL PROTECTION INFORMATION
VENTILATION:	With I-131 local ventilation is very important, if I-131 gasses off. Wear respiratory protection, and stand upwind (if outside)
RESPIRATORY PROTECTION:	Air purifying respirator with combination radio-nuclide cartridge or SCBA where spill has occurred.
PROTECTIVE CLOTHING:	If package is damaged, wear lead-lined gloves before handling.
EYE PROTECTION:	☐ NOT NORMALLY NECESSARY ☐ SAFETY GLASSES WITH SIDE SHIELDS ☐ SAFETY GLASSES ☐ GASTIGHT GOGGLES OR EQUIVALENT X CHEMICAL WORKERS GOGGLES ☐ OTHER
SECTION 8	SPECIAL PRECAUTIONS
PRECAUTIONS IN HANDLING AND STORAGE:	All shippers and consignees must possess radioisotope license and conform with all conditions of license.
OTHER PRECAUTIONS:	
SECTION 9	SPILL OR LEAK PROCEDURES
STEPS TO BE TAKEN IF MATERIAL SPILLED OR LEAKED: Note also Section 7. If wet spill occurs, isolate contaminated area using vermiculite or charcoal. When acidified this material will release I-131. If in transport mode, call CANUTEC at (613) 996-6666 in Canada or National Response Centre at 1-800-424-8802 in USA.	
WASTE DISPOSAL METHOD: If on site, follow instructions on site license or as directed by local Radiation Control Officer.	

BRENNTAG

SAFETY DATA SHEET

1. Identification

Product identifier	**GLYCOL ETHER EB**
Other means of identification	None.
Recommended use	ALL PROPER AND LEGAL PURPOSES
Recommended restrictions	None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name	Brenntag Pacific Inc.	
Address	10747 Patterson Place Santa Fe Springs, CA 90670	
Telephone	562-903-9626	
E-mail	Not available.	
Emergency phone number	800-424-9300	CHEMTREC

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 4
Health hazards	Acute toxicity, oral	Category 4
	Acute toxicity, dermal	Category 3
	Acute toxicity, inhalation	Category 2
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
Environmental hazards	Not classified.	
OSHA defined hazards	Not classified.	

Label elements

Signal word	Danger
Hazard statement	Combustible liquid. Harmful if swallowed. Toxic in contact with skin. Causes skin irritation. Causes serious eye irritation. Fatal if inhaled.

Precautionary statement

Prevention	Keep away from flames and hot surfaces-No smoking. Do not breathe vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear eye protection/face protection. Wear protective gloves/protective clothing. Wear protective gloves/eye protection/face protection. Wear respiratory protection.
Response	If swallowed: Call a poison center/doctor if you feel unwell. If on skin: Wash with plenty of water. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Specific treatment is urgent (see this label). Rinse mouth. If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off immediately all contaminated clothing and wash it before reuse. In case of fire: Use appropriate media to extinguish.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
2-BUTOXYETHANOL		111-76-2	100

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician or poison control center immediately.

Skin contact
Take off immediately all contaminated clothing. Wash with plenty of soap and water. Get medical advice/attention if you feel unwell. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Eye contact
Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion
Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical advice/attention if you feel unwell.

Most important symptoms/effects, acute and delayed
Headache. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.

Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information
Take off immediately all contaminated clothing. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media
Alcohol resistant foam. Water fog. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media
Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical
The product is combustible, and heating may generate vapors which may form explosive vapor/air mixtures. During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions
In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.

Specific methods
Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards
Combustible liquid.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Do not breathe vapors or spray mist. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. This product is miscible in water.

Large Spills: Stop the flow of material, if this is without risk. Use water spray to reduce vapors or divert vapor cloud drift. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Keep away from open flames, hot surfaces and sources of ignition. Do not breathe vapors or spray mist. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. When using, do not eat, drink or smoke. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Wash contaminated clothing before reuse. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat, sparks and open flame. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Material	Type	Value
2-BUTOXYETHANOL (CAS 111-76-2)	PEL	240 mg/m3
		50 ppm

US. ACGIH Threshold Limit Values

Material	Type	Value
2-BUTOXYETHANOL (CAS 111-76-2)	TWA	20 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Material	Type	Value
2-BUTOXYETHANOL (CAS 111-76-2)	TWA	24 mg/m3
		5 ppm

Biological limit values

ACGIH Biological Exposure Indices

Material	Value	Determinant	Specimen	Sampling Time
2-BUTOXYETHANOL (CAS 111-76-2)	200 mg/g	Butoxyacetic acid (BAA), with hydrolysis	Creatinine in urine	*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

2-BUTOXYETHANOL (CAS 111-76-2) — Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

2-BUTOXYETHANOL (CAS 111-76-2) — Skin designation applies.

US - Tennessee OELs: Skin designation

2-BUTOXYETHANOL (CAS 111-76-2) — Can be absorbed through the skin.

US NIOSH Pocket Guide to Chemical Hazards: Skin designation

2-BUTOXYETHANOL (CAS 111-76-2) — Can be absorbed through the skin.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

2-BUTOXYETHANOL (CAS 111-76-2)	Can be absorbed through the skin.

Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection	Chemical respirator with organic vapor cartridge and full facepiece.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.
Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
Respiratory protection	Chemical respirator with organic vapor cartridge and full facepiece.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using do not smoke. Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Colorless
Odor	MILD
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	-102.64 °F (-74.8 °C) -103 °F (-75 °C)
Initial boiling point and boiling range	335.12 °F (168.4 °C)
Flash point	143.0 °F (61.7 °C) Closed Cup 156.9 °F (69.4 °C) Open Cup 153.0 °F (67.2 °C)
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	0.12 kPa at 25 °C 0.12 kPa at 25 °C
Vapor density	4.1
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Miscible
Partition coefficient (n-octanol/water)	0.83
Auto-ignition temperature	460.4 °F (238 °C)
Decomposition temperature	Not available.
Viscosity	Not available.

Other information

Density	7.52 lbs/gal estimated
Explosive properties	Not explosive.
Flammability class	Combustible IIIA estimated
Heat of combustion (NFPA 30B)	29.6 kJ/g
Molecular formula	C6-H14-O2
Molecular weight	118.2 g/mol
Oxidizing properties	Not oxidizing.
Percent volatile	100 %
Specific gravity	0.9 at 20 °C
VOC (Weight %)	100 % 100 % EPA estimated

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Fatal if inhaled.
Skin contact	Toxic in contact with skin. Causes skin irritation. 2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged. These effects have not been observed in humans.
Eye contact	Causes serious eye irritation.
Ingestion	Harmful if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics	Headache. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity Fatal if inhaled. Toxic in contact with skin. Harmful if swallowed.

Product	Species	Test Results
2-BUTOXYETHANOL (CAS 111-76-2)		
Acute		
Dermal		
LD50	Rabbit	400 mg/kg
Inhalation		
LC50	Mouse	700 ppm, 7 Hours
	Rat	450 ppm, 4 Hours
Oral		
LD50	Guinea pig	1.2 g/kg
	Mouse	1.2 g/kg
	Rabbit	0.32 g/kg

Product	Species	Test Results
	Rat	560 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation Causes serious eye irritation.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

2-BUTOXYETHANOL (CAS 111-76-2) 3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not an aspiration hazard.

Chronic effects May be harmful if absorbed through skin.

2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged. These effects have not been observed in humans.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Product		Species	Test Results
2-BUTOXYETHANOL (CAS 111-76-2)			
Aquatic			
Fish	LC50	Inland silverside (Menidia beryllina)	1250 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

0.83

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number NA1993
UN proper shipping name COMBUSTIBLE LIQUID, N.O.S. (ETHYLENE GLYCOL MONOBUTYL ETHER)
Transport hazard class(es)
Class 3.3
Subsidiary risk -
Packing group III
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
ERG number 128
DOT information on packaging may be different from that listed.

DOT

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.
CERCLA Hazardous Substance List (40 CFR 302.4)
Not listed.
SARA 304 Emergency release notification
Not regulated.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance
Not listed.
SARA 311/312 Hazardous chemical Yes
SARA 313 (TRI reporting)
Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.
Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

2-BUTOXYETHANOL (CAS 111-76-2)

US. Massachusetts RTK - Substance List

2-BUTOXYETHANOL (CAS 111-76-2)

US. New Jersey Worker and Community Right-to-Know Act

2-BUTOXYETHANOL (CAS 111-76-2)

US. Pennsylvania Worker and Community Right-to-Know Law

2-BUTOXYETHANOL (CAS 111-76-2)

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	04-03-2015
Revision date	05-19-2015
Version #	03
HMIS® ratings	Health: 4 Flammability: 2 Physical hazard: 0
NFPA ratings	Health: 4 Flammability: 2 Instability: 0
Disclaimer	BNA cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

Material Safety Data Sheet

1. Product and company identification

Product name : CRONOX™ 242 ES Corrosion Inhibitor
™ a trademark of Baker Hughes, Inc.

Supplier : Aquaness Chemical
A Division of Baker Petrolite Corp.
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/MSDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Material Uses : Special: Acid Corrosion Inhibitor.

Code : CRO242ES

Validation date : 3/28/2014.

Print date : 3/28/2014.

Version : 6.01

Responsible name : Global Regulatory Affairs - Telephone 281-276-5400 or 800-231-3606

In case of emergency : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606 (North America 24 hour)
CANUTEC: 613-996-6666 (Canada 24 hours)

2. Hazards identification

Physical state : Liquid. [Clear to hazy.]

Odor : Alcohol.

Color : Amber to dark brown.

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview : DANGER!

FLAMMABLE LIQUID AND VAPOR. CAUSES RESPIRATORY TRACT, EYE AND SKIN BURNS. HARMFUL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED. INHALATION CAUSES HEADACHES, DIZZINESS, DROWSINESS AND NAUSEA AND MAY LEAD TO UNCONSCIOUSNESS. MAY CAUSE BLINDNESS IF SWALLOWED. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

Keep away from heat, sparks and flame. Do not breathe vapor or mist. Do not ingest. Do not get in eyes or on skin or clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flashback. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material.

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Inhalation : Toxic by inhalation. Can cause central nervous system (CNS) depression. Corrosive to the respiratory system.

Ingestion : Toxic if swallowed. Can cause central nervous system (CNS) depression. May cause burns to mouth, throat and stomach. May cause blindness if swallowed.

Skin : Corrosive to the skin. Causes burns. Toxic in contact with skin.

Eyes : Corrosive to eyes. Causes burns.

Potential chronic health effects

2 . Hazards identification

Chronic effects : Contains material that may cause target organ damage, based on animal data. Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Target organs : Contains material which may cause damage to the following organs: kidneys, the nervous system, liver, mucous membranes, gastrointestinal tract, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

Over-exposure signs/symptoms

Inhalation : respiratory tract irritation, nausea or vomiting, coughing, headache, drowsiness/fatigue, dizziness/vertigo, unconsciousness

Ingestion : stomach pains

Skin : pain or irritation, redness, dryness, cracking, blistering may occur

Eyes : pain, watering, redness

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (Section 11)

3 . Composition/information on ingredients

Name	CAS number	%
Methanol	67-56-1	30 - 60
Fatty acids	Trade secret.	10 - 30
Polyoxyalkylenes	Trade secret.	10 - 30
Propargyl alcohol	107-19-7	5 - 10
Olefin	Trade secret.	1 - 5

4 . First aid measures

Eye contact : Get medical attention immediately. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open.

Skin contact : Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wear suitable protective clothing and gloves. Remove contaminated clothing and shoes.

5 . Fire-fighting measures

Flammability of the product : Flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

Extinguishing media

Suitable : Use dry chemical, CO_2, water spray (fog) or foam.

Not suitable : Do not use water jet.

Special exposure hazards : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,sulfur oxides

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Absorb with an inert material. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

7 . Handling and storage

Handling : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

7 . Handling and storage

Storage : Store in accordance with local regulations. Store in a segregated and approved area. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Methanol	US ACGIH	200	262	-	250	328	-	-	-	-	[1]
	OSHA PEL	200	260	-	-	-	-	-	-	-	
	OSHA PEL 1989	200	260	-	250	325	-	-	-	-	[1]
Propargyl alcohol	US ACGIH	1	2.3	-	-	-	-	-	-	-	[1]
	OSHA PEL 1989	1	2	-	-	-	-	-	-	-	[1]

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Engineering measures : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. Use explosion-proof ventilation equipment.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location. Take off contaminated clothing and wash before reuse.

Personal protection

Respiratory : If a risk assessment indicates it is necessary, use a properly fitted supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Chemical-resistant gloves.

Eyes : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Skin : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

9 . Physical and chemical properties

Physical state : Liquid. [Clear to hazy.]

Flash point : Closed cup: 14°C (57.2°F) [SFCC]

Auto-ignition temperature : Not available.

Flammable limits : Not available.

Color : Amber to dark brown.

Odor : Alcohol.

pH : 3.5 to 5.5

: 5% of product in 75% water / 25% isopropanol solution

Boiling/condensation point : Not available.

9 . Physical and chemical properties

Initial Boiling Point	:	Not available.
Melting/freezing point	:	Not available.
Relative density	:	0.915 (15.6°C)
Density	:	7.62 (lbs/gal)
Vapor density	:	>1 [Air = 1]
Odor threshold	:	Not available.
Evaporation rate	:	Not available.
VOC	:	Not available.
Viscosity	:	Dynamic (15.6°C): 2 to 12 cP
Solubility (Water)	:	Dispersible
Vapor pressure	:	11.3 kPa (85 mm Hg) at 21.1°C (Calculated Value for all Components.)
Pour Point	:	-1.11°C (30°F)
Partition coefficient (LogKow)	:	Not available.

10 . Stability and Reactivity

Chemical stability	:	The product is stable.
Possibility of hazardous reactions	:	Under normal conditions of storage and use, hazardous reactions will not occur.
Hazardous polymerization	:	Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to avoid	:	Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
Materials to avoid	:	Reactive or incompatible with the following materials: oxidizing materials and reducing materials. Methanol is incompatible and may react with acetyl bromide, alkyl aluminum solutions, beryllium hydride, boron trichloride, nitric acid, cyanuric chloride, dichloromethane, diethylzinc, metals (granulated forms of aluminum and magnesium – including aluminum and zinc salts), phosphorus III oxide, and potassium tert-butoxide.
Hazardous decomposition products	:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Conditions of reactivity	:	Highly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

11 . Toxicological information

Irritation/Corrosion

Conclusion/Summary

Skin : This product was corrosive to skin when tested on rabbits.

Chronic toxicity Remarks

1) Methanol

Methanol is a component of this product. Because methanol is eliminated from the body more slowly than ethanol, it can have cumulative toxicity with repeated exposures (ACGIH, 1992).

Acute dermal, oral, and inhalation exposure to methanol can cause Central Nervous System effects, optic nerve effects, diminished vision, and brain effects (necrosis and hemorrhaging). (Bennett, I.L. et al, 1953)

Ingestion of methanol can cause Central Nervous System depression, metabolic acidosis, blurred vision and blindness, gastrointestinal effects, and coma and death. (Clayton, G.D. and Clayton, F.E., 1982, Patty's Industrial Hygiene and Toxicology, Vol2C) Dermal exposure to methanol can cause Central Nervous System depression, blurred vision, and gastrointestinal effects. (Downie, A et al, 1992, Occupational Medicine, 42, pp 47-9) Chronic inhalation of methanol can

11 . Toxicological information

cause Central Nervous System depression, blurred vision, and gastrointestinal effects. (Frederick, L.J. et al, 1984, AIHA Journal, 45, pp 51-5) Chronic inhalation of methanol has caused liver effects in laboratory animals. (Poon, R et al, 1994, Toxocology and Industrial Health 10: 231-245) Chronic oral exposure has caused Central Nervous System effects and eye effects in laboratory animals. [Youssef, A. F. et al (1993) Neurotoxicology and Teratology 15: 223-227; Baumbach, G.L. et al (1977) Archives of Ophthalmology 95: 1859-1865; Hayreh, M.S. et al (1977) Archives of Ophthalmology 95: 1851-1858; Hayreh, M.S. et al (1980) Ocular toxicity of methanol: An experimental study – Raven Press, New York, pages 35-53; and Martin-Amat, G. et al (1977) Archives of Ophthalmology 95: 1847-1850]

Methanol has produced in vivo mutagenicity in animal studies. (Pereira, M.A. et al, 1982) and (Ward, J. B. et al, 1983)

Methanol was mutagenic in yeast (RTECS). Methanol has caused chromosome aberrations in yeast (RTECS) and grasshoppers (Saha & Khudabaksh, 1974).

Methanol has caused birth defects in rats exposed by the oral (Infurna et al, 1981) and inhalation (Nelson et al, 1984; Nelson et al, 1985) routes. Exencephaly (a defect in the skull bone structure that leaves the brain exposed) and cleft palate (a fissure or unformed bone structure in the roof of the mouth (palate), lip, or facial area, occurring during the embryonic stage of development) were increased in fetal mice exposed to methanol at an airborne concentration of 5,000 ppm or higher for 7 hours/day on days 6 to 15 of gestation.

Embryotoxicity and fetotoxicity were seen with maternal exposure to airborne concentrations of 7,500 ppm and above, and reduced fetal weights with concentrations of 10,000 ppm or greater. The NOAEL was 1,000 ppm. Effects similar to those seen in the 10,000 ppm dosage group were also seen in offspring of mice given a dose of 4 g/kg orally (Rogers et al, 1993).

2) Fatty acids

Fatty acids are a component of this product. Eye contact may produce some irritation. Repeated or prolonged skin contact may cause irritation. Inhalation of vapors or mists may cause dizziness, nausea, or respiratory tract irritation. Aspiration into the lungs during ingestion or vomiting of swallowed material may produce chemical pneumonitis, pulmonary edema, and hemorrhaging. Repeated exposures to Fatty acids via the oral route did not produce any signs of toxicity up to 2,500 mg/kg-bw/day and slight decreases in food consumption at higher doses. Histopathological evaluation of all tissues and organs including reproductive organs was unremarkable. No reproductive or developmental toxicity was observed in rats exposed to fatty acids in the diet for two-generations. The Fatty acids did not show mutagenic potential in in vitro tests. The Fatty acid was clastogenic only at cytotoxic levels leading to the conclusion that this chemical was not clastogenic (EPA, 2007).

3) Polyoxyalkylenes

Not available.

4) Propargyl alcohol

Propargyl alcohol is a component of this product. Exposure may damage the liver and kidneys. This component has been shown to cause internal bleeding from acute oral and dermal exposure to animals.

It has produced in vitro mutagenicity in animal studies. (Blakey, D.H. et al, 1994) and (Basu, A.K. and L.J. Marnett, 1984) Chronic inhalation of propargyl alcohol has caused nasal tumors and mononuclear cell leukemia in laboratory animals. National Toxicology Program Technical Report (2008).

5) Olefin

Not available.

12 . Ecological information

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
Methanol	Acute LC50 2500000 ug/L Marine water	Crustaceans - Common shrimp, sand shrimp - Crangon crangon - Adult	48 hours
	Acute LC50 3289 to 4395 mg/L Fresh water	Daphnia - Water flea - Daphnia magna - Neonate - <24 hours	48 hours
	Acute LC50 >100000 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling) - 0.2 to 0.5 g	96 hours
Polyoxyalkylenes	Acute EC50 0.22 mg/L Fresh water	Daphnia - Water flea - Daphnia magna - <24 hours	48 hours
	Acute LC50 1400 to 1700 ug/L Fresh water	Crustaceans - Scud, Amphipod - Gammarus sp. - 4.3 mm	48 hours
	Acute LC50 650 to 680 ug/L Fresh water	Fish - Bluegill - Lepomis macrochirus - Juvenile (Fledgling, Hatchling, Weanling) - 1.19 g	4 days
Propargyl alcohol	Acute LC50 1530 to 1560 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling) - 29 to 33 days - 19.7 mm - 119 mg	96 hours
CRONOX™ 242 ES Corrosion Inhibitor	Acute LC50 2.7 mg/L	Daphnia - Acartia tonsa	48 hours

Conclusion/Summary : Not available.

Biodegradability

Conclusion/Summary : Not available.

Additional information

An EcoTox™ Report, and/or the material's environmental fate is available upon request at the following number: 1-800-235-4249, then press 4.

13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	UN2924	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Contains: Methanol, Propargyl alcohol)	3 (8)	II		-

14 . Transport information

TDG Classification	UN2924	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Contains: Methanol, Propargyl alcohol)	3 (8)	II		-
IMDG Class	UN2924	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Contains: Methanol, Propargyl alcohol)	3 (8)	II		**Emergency schedules (EmS)** F-E S-C
IATA-DGR Class	UN2924	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Contains: Methanol, Propargyl alcohol)	3 (8)	II		-

PG* : Packing group

DOT Reportable Quantity Methanol, 1330 gal of this product.
Propargyl alcohol, 2491 gal of this product.

Marine pollutant Not applicable.

North-America NAERG : 132

15 . Regulatory information

HCS Classification : Flammable liquid
Toxic material
Corrosive material
Target organ effects

U.S. Federal regulations : **United States inventory (TSCA 8b)**: All components are listed or exempted.

CERCLA: Hazardous substances.: Formaldehyde: 100 lbs. (45.4 kg); Methanol: 5000 lbs. (2270 kg); Propargyl alcohol: 1000 lbs. (454 kg);

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: Formaldehyde

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) :
Listed

SARA 302/304

			SARA 302 TPQ		SARA 304 RQ	
Name	**%**	**EHS**	**(lbs)**	**(gallons)**	**(lbs)**	**(gallons)**
Formaldehyde	0 - 0.03	Yes.	-	-	-	-

SARA 311/312

15 . Regulatory information

Classification : No products were found.

SARA 313

	Product name	CAS number	Concentration
Supplier notification :	Methanol	67-56-1	30 - 60
	Propargyl alcohol	107-19-7	5 - 10

United States inventory (TSCA 8b) : All components are listed or exempted.

Canada

WHMIS (Canada) : Class B-2: Flammable liquid
Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
Class D-2A: Material causing other toxic effects (Very toxic).
Class E: Corrosive material

Canada (CEPA DSL): : All components are listed or exempted.

16 . Other information

Label requirements : FLAMMABLE LIQUID AND VAPOR. CAUSES RESPIRATORY TRACT, EYE AND SKIN BURNS. HARMFUL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED. INHALATION CAUSES HEADACHES, DIZZINESS, DROWSINESS AND NAUSEA AND MAY LEAD TO UNCONSCIOUSNESS. MAY CAUSE BLINDNESS IF SWALLOWED. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

National Fire Protection Association (U.S.A.) :

Date of printing : **3/28/2014.**

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

BRENNTAG

SAFETY DATA SHEET

1. Identification

Product identifier CITRIC ACID ANHYD GRAN USP GSO 10-40 MESH KOSH SUNSHINE

Other means of identification None.

Recommended use ALL PROPER AND LEGAL PURPOSES

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name Brenntag Pacific Inc.

Address 10747 Patterson Place
Santa Fe Springs, CA 90670

Telephone 562-903-9626

E-mail Not available.

Emergency phone number 800-424-9300 CHEMTREC

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Serious eye damage/eye irritation Category 2

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Signal word Warning

Hazard statement Causes serious eye irritation.

Precautionary statement

Prevention Wash thoroughly after handling. Wear eye protection/face protection.

Response If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Storage Store away from incompatible materials.

Disposal Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information None.

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
CITRIC ACID		77-92-9	100

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Dusts may irritate the respiratory tract, skin and eyes.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Use water spray to cool unopened containers.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Stop the flow of material, if this is without risk. Absorb in vermiculite, dry sand or earth and place into containers. Collect dust using a vacuum cleaner equipped with HEPA filter. Large Spills: Wet down with water and dike for later disposal. Shovel the material into waste container. Avoid the generation of dusts during clean-up. Following product recovery, flush area with water. Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Minimize dust generation and accumulation. Provide appropriate exhaust ventilation at places where dust is formed. Avoid contact with eyes. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits. Provide eyewash station.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.
Other	Wear suitable protective clothing.
Respiratory protection	Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Solid.
Form	Powder.
Color	White
Odor	NO ODOR
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	307.4 °F (153 °C) / 300 °F (148.89 °C)
Initial boiling point and boiling range	Not available.
Flash point	999.0 °F (537.2 °C)
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	< 0.0000001 kPa at 25 °C
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	1850 °F (1010 °C)
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	13.89 lbs/gal estimated
Dynamic viscosity	6.5 mPa.s
Dynamic viscosity temperature	77 °F (25 °C)
Explosive properties	Not explosive.
Flammability class	Combustible IIIB estimated
Molecular formula	C6-H8-O7

Molecular weight	192.12 g/mol
Oxidizing properties	Not oxidizing.
Specific gravity	1.67 at 20 °C

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Dust may irritate respiratory system.
Skin contact	Dust or powder may irritate the skin.
Eye contact	Causes serious eye irritation.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Severe eye irritation. Dusts may irritate the respiratory tract, skin and eyes. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Information on toxicological effects

Acute toxicity

Product	Species	Test Results
CITRIC ACID (CAS 77-92-9)		
Acute		
Oral		
LD50	Mouse	5040 mg/kg
	Rat	6730 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Causes serious eye irritation.
Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.

12. Ecological information

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

Not regulated as dangerous goods.

DOT information on packaging may be different from that listed.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

Food and Drug Administration (FDA)

Total food additive
Direct food additive
GRAS food additive

US state regulations

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. Massachusetts RTK - Substance List

Not regulated.

US. New Jersey Worker and Community Right-to-Know Act

Not listed.

US. Pennsylvania Worker and Community Right-to-Know Law

Not listed.

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	05-28-2015
Revision date	05-29-2015
Version #	04
HMIS® ratings	Health: 2 Flammability: 0 Physical hazard: 0
NFPA ratings	Health: 2 Flammability: 0 Instability: 0
Disclaimer	BNA cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: **AROMATIC 100/ANTI-STATIC**
Product Description: Aromatic Hydrocarbon

Intended Use: Solvent

COMPANY IDENTIFICATION

Supplier: **EXXONMOBIL CHEMICAL COMPANY**
P.O. BOX 3272
HOUSTON, TX. 77253-3272 USA

24 Hour Health Emergency	(800) 726-2015
Transportation Emergency Phone	(800) 424-9300 or (703) 527-3887 CHEMTREC
Product Technical Information	(832) 624-8500
Supplier General Contact	(832) 624-8500

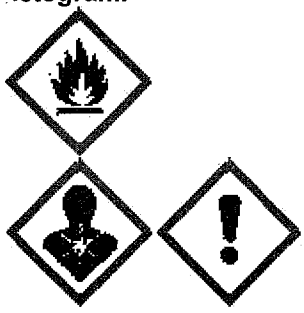
SECTION 2 HAZARDS IDENTIFICATION

This material is hazardous according to regulatory guidelines (see (M)SDS Section 15).

CLASSIFICATION:

Flammable liquid: Category 3.
Carcinogen: Category 2. Specific target organ toxicant (central nervous system): Category 3. Specific target organ toxicant (respiratory irritant): Category 3. Aspiration toxicant: Category 1.

LABEL:
Pictogram:



Signal Word: Danger

Hazard Statements:
H226: Flammable liquid and vapor. H304: May be fatal if swallowed and enters airways. H335: May cause respiratory irritation. H336: May cause drowsiness or dizziness. H351: Suspected of causing cancer.

Precautionary Statements:
P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P210: Keep away from heat/sparks/open flames/hot surfaces. -- No smoking. P233: Keep container tightly closed. P240: Ground / bond container and receiving equipment. P241: Use explosion-proof electrical, ventilating, and lighting equipment. P242: Use only non-sparking tools. P243: Take precautionary measures against static discharge. P261: Avoid breathing mist / vapours. P271: Use only outdoors or in a well-ventilated area. P273: Avoid release to the environment. P280: Wear protective gloves/protective clothing/eye protection/face protection.P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P308 + P313: IF exposed or concerned: Get medical advice/ attention. P312: Call a POISON CENTER or doctor/physician if you feel unwell. P331: Do NOT induce vomiting. P332 + P313: If skin irritation occurs: Get medical advice/ attention. P370 + P378: In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish.P403 + P235: Store in a well-ventilated place. Keep cool. P405: Store locked up.P501: Dispose of contents and container in accordance with local regulations.

Contains: SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC

Other hazard information:

HAZARD NOT OTHERWISE CLASSIFIED (HNOC): None as defined under 29 CFR 1900.1200.

PHYSICAL / CHEMICAL HAZARDS

Material can accumulate static charges which may cause an ignition. Material can release vapors that readily form flammable mixtures. Vapor accumulation could flash and/or explode if ignited.

HEALTH HAZARDS

May be irritating to the respiratory tract - effects are reversible. Repeated exposure may cause skin dryness or cracking. Mildly irritating to skin. May be irritating to the eyes, nose, throat, and lungs. May cause central nervous system depression.

ENVIRONMENTAL HAZARDS

Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

NFPA Hazard ID:	Health:	1	Flammability:	2	Reactivity:	0
HMIS Hazard ID:	Health:	1*	Flammability:	2	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a complex substance.

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	CAS#	Concentration*	GHS Hazard Codes
SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC	64742-95-6	>99%	H226, H304, H335, H336, H351, H316, H401

Hazardous Constituent(s) Contained in Complex Substance(s) required for disclosure

Name	CAS#	Concentration*	GHS Hazard Codes
CUMENE	98-82-8	< 1.1%	H226, H304, H335, H351, H401, H411
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)	95-63-6	< 32%	H226, H332, H335, H315, H319(2A), H401, H411
XYLENES	1330-20-7	< 2.2%	H226, H304, H312, H332, H335, H315, H320(2B), H373, H401

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume. Concentration values may vary.

NOTE: This product contains STADIS 450 Conductivity Improver. The typical concentration is < 15 ppm.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

Seek immediate medical attention. Do not induce vomiting.

NOTE TO PHYSICIAN

If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Vapors are flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger. Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

Hazardous Combustion Products: Smoke, Fume, Oxides of carbon, Incomplete combustion products

FLAMMABILITY PROPERTIES

Flash Point [Method]: 46°C (115°F) [ASTM D-56]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 6.2
Autoignition Temperature: 485°C (905°F)

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

PROTECTIVE MEASURES

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: half-face or full-face respirator with filter(s) for organic vapor and, when applicable, H2S, or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to aromatic hydrocarbons are recommended. Note: gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do it without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapor; but may not prevent ignition in closed spaces. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Eliminate sources of ignition. Warn other shipping. If the Flash Point exceeds the Ambient Temperature by 10 degrees C or more, use containment booms and remove from the surface by skimming or with suitable absorbents when conditions permit. If the Flash Point does not exceed the Ambient Air Temperature by at least 10C, use booms as a barrier to protect shorelines and allow material to evaporate. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid breathing mists or vapors. Avoid all personal contact. Potentially toxic/irritating fumes/vapors may be evolved from heated or agitated material. Use only with adequate ventilation. Do not enter storage areas or confined spaces unless adequately ventilated. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Loading/Unloading Temperature: [Ambient]

Transport Temperature: [Ambient]
Transport Pressure: [Ambient]

Static Accumulator: This material is a static accumulator. A liquid is typically considered a nonconductive, static accumulator if its conductivity is below 100 pS/m (100x10E-12 Siemens per meter) and is considered a semiconductive, static accumulator if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, anti-static additives and filtration can greatly influence the conductivity of a liquid.

STORAGE

The container choice, for example storage vessel, may effect static accumulation and dissipation. Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Storage containers should be grounded and bonded. Fixed storage containers, transfer containers and associated equipment should be grounded and bonded to prevent accumulation of static charge.
Storage Temperature: [Ambient]
Storage Pressure: [Ambient]

Suitable Containers/Packing: Railcars; Tank Trucks; Barges; Drums; Tankers
Suitable Materials and Coatings (Chemical Compatibility): Carbon Steel; Stainless Steel; Copper Bronze; Inorganic; Inorganic Zinc Coatings; Epoxy Phenolic; Polyamide Epoxy; Amine Epoxy; Viton

Unsuitable Materials and Coatings: Vinyl Coatings; Butyl Rubber; Natural Rubber; Ethylene-proplyene-diene monomer (EPDM); Polyethylene; Polystyrene; PVC; Polyacrylonitrile; Polypropylene

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Substance Name	Form	Limit / Standard			NOTE	Source
CUMENE		TWA	245 mg/m3	50 ppm	Skin	OSHA Z1
CUMENE		TWA	50 ppm		N/A	ACGIH
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)		TWA	25 ppm		N/A	ACGIH
SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC	Vapor.	RCP - TWA	19 ppm	100 mg/m3	Total Hydrocarbons	ExxonMobil
XYLENES		TWA	435 mg/m3	100 ppm	N/A	OSHA Z1
XYLENES		STEL	150 ppm		N/A	ACGIH
XYLENES		TWA	100 ppm		N/A	ACGIH

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

Biological limits

Substance	Specimen	Sampling Time	Limit	Determinant	Source
XYLENES	Creatinine in urine	End of shift	1.5 g/g	Methylhippuric acids	ACGIH BELs (BEIs)

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

Adequate ventilation should be provided so that exposure limits are not exceeded. Use explosion-proof ventilation equipment.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

Half-face filter respirator

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

Chemical resistant gloves are recommended.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

Chemical/oil resistant clothing is recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid
Form: Clear
Color: Colorless
Odor: Aromatic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.874
Density (at 15 °C): 873 kg/m³ (7.29 lbs/gal, 0.87 kg/dm³)
Flammability (Solid, Gas): N/A
Flash Point [Method]: 46°C (115°F) [ASTM D-56]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 6.2
Autoignition Temperature: 485°C (905°F)
Boiling Point / Range: 161°C (322°F) - 171°C (340°F)
Decomposition Temperature: N/D
Vapor Density (Air = 1): 4.2 at 101 kPa
Vapor Pressure: 0.269 kPa (2.02 mm Hg) at 20 °C | 0.811 kPa (6.1 mm Hg) at 38°C
Evaporation Rate (n-butyl acetate = 1): 0.27
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): N/D
Solubility in Water: Negligible

Viscosity: 0.75 cSt (0.75 mm2/sec) at 40 °C | 0.9 cSt (0.9 mm2/sec) at 25°C
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION
Freezing Point: -14°C (7°F)
Melting Point: N/D
Molecular Weight: 121
Hygroscopic: No
Coefficient of Thermal Expansion: 0.00085 V/VDEGC

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: See sub-sections below.

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Avoid heat, sparks, open flames and other ignition sources.

MATERIALS TO AVOID: Nitric acid, Sulfuric acid, Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: (Rat) 4 hour(s) LC50 > 6193 mg/m3 (Max attainable vapor conc.)	Minimally Toxic. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 403
Irritation: No end point data for material.	May be irritating to the respiratory tract. The effects are reversible. Based on assessment of the components.
Ingestion	
Acute Toxicity (Rat): LD50 3492 mg/kg	Minimally Toxic. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 401
Skin	
Acute Toxicity (Rabbit): LD50 > 3160 mg/kg	Minimally Toxic. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 402
Skin Corrosion/Irritation: Data available.	Mildly irritating to skin with prolonged exposure. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 404
Eye	
Serious Eye Damage/Irritation: Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 405
Sensitization	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: Data available.	Not expected to be a skin sensitizer. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 406

Aspiration: Data available.	May be fatal if swallowed and enters airways. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: Data available.	Not expected to be a germ cell mutagen. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 471 473 475 476 479
Carcinogenicity: No end point data for material.	Caused cancer in laboratory animals, but the relevance to humans is uncertain. Based on assessment of the components.
Reproductive Toxicity: Data available.	Not expected to be a reproductive toxicant. Based on test data for the material. Test(s) equivalent or similar to OECD Guideline 414 416
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	May cause drowsiness or dizziness. May be irritating to the respiratory tract. Based on assessment of the components.
Repeated Exposure: Data available.	Not expected to cause organ damage from prolonged or repeated exposure. Based on test data for structurally similar materials. Test(s) equivalent or similar to OECD Guideline 408 452

OTHER INFORMATION

For the product itself:

Vapor/aerosol concentrations above recommended exposure levels are irritating to the eyes and respiratory tract, may cause headaches, dizziness, anesthesia, drowsiness, unconsciousness and other central nervous system effects including death.
Prolonged and/or repeated skin contact with low viscosity materials may defat the skin resulting in possible irritation and dermatitis.
Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

Contains:

CUMENE: Repeated inhalation exposure of cumene vapor produced damage in the kidney of male rats only. These effects are believed to be species specific and are not relevant to humans.

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
CUMENE	98-82-8	2, 5

--REGULATORY LISTS SEARCHED--

1 = NTP CARC
2 = NTP SUS
3 = IARC 1
4 = IARC 2A
5 = IARC 2B
6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

MOBILITY

Material -- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Material -- Expected to be readily biodegradable.

Hydrolysis:

Material -- Transformation due to hydrolysis not expected to be significant.

Photolysis:

Material -- Transformation due to photolysis not expected to be significant.

Atmospheric Oxidation:

Material -- Expected to degrade rapidly in air

OTHER ECOLOGICAL INFORMATION

VOC (EPA Method 24): 7.294 lbs/gal

ECOLOGICAL DATA

Ecotoxicity

Test	Duration	Organism Type	Test Results
Aquatic - Acute Toxicity	72 hour(s)	Pseudokirchneriella subcapitata	ErL50 2.9 mg/l: data for similar materials
Aquatic - Acute Toxicity	72 hour(s)	Pseudokirchneriella subcapitata	NOELR 1 mg/l: data for similar materials
Aquatic - Acute Toxicity	96 hour(s)	Oncorhynchus mykiss	LL50 9.2 mg/l: data for similar materials
Aquatic - Acute Toxicity	48 hour(s)	Daphnia magna	EL50 3.2 mg/l: data for similar materials

Persistence, Degradability and Bioaccumulation Potential

Media	Test Type	Duration	Test Results
Water	Ready Biodegradability	28 day(s)	Percent Degraded 78 : material

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

RCRA Information: Disposal of unused product may be subject to RCRA regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corrosivity, reactivity or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP). Potential RCRA characteristics: IGNITABILITY.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT)

Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S.
Hazard Class & Division: 3
ID Number: 1268
Packing Group: III
Product RQ: 4545.45 LBS - XYLENES
ERG Number: 128
Label(s): 3
Transport Document Name: UN1268, PETROLEUM DISTILLATES, N.O.S., 3, PG III, RQ (xylenes)

Footnote: The flash point of this material is greater than 100 F. Regulatory classification of this material varies. DOT: Flammable liquid or combustible liquid. OSHA: Combustible liquid. IATA/IMO: Flammable liquid.

LAND (TDG)

Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S.
Hazard Class & Division: 3
UN Number: 1268
Packing Group: III

SEA (IMDG)

Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S.
Hazard Class & Division: 3
EMS Number: F-E, S-E
UN Number: 1268
Packing Group: III
Marine Pollutant: No
Label(s): 3
Transport Document Name: UN1268, PETROLEUM DISTILLATES, N.O.S., 3, PG III, (46°C c.c.)

Footnote: This material is not classified as a marine pollutant according to the criteria presented in Chapter 2.9 of the IMDG code (H401 Only).

AIR (IATA)

Proper Shipping Name: PETROLEUM DISTILLATES, N.O.S.
Hazard Class & Division: 3

UN Number: 1268
Packing Group: III
Label(s) / Mark(s): 3
Transport Document Name: UN1268, PETROLEUM DISTILLATES, N.O.S., 3, PG III

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: This material is considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

Listed or exempt from listing/notification on the following chemical inventories: AICS, DSL, ENCS, IECSC, KECI, PICCS, TSCA

EPCRA SECTION 302: This material contains no extremely hazardous substances.

CERCLA:

Chemical Name	CAS Number	Typical Value	Component RQ	Product RQ
CUMENE	98-82-8	< 1.1%	5000 LBS	454545.45 LBS
XYLENES	1330-20-7	< 2.2%	100 LBS	4545.45 LBS

CWA / OPA: This product is classified as an oil under Section 311 of the Clean Water Act (40 CFR 110) and the Oil Pollution Act of 1990. Discharge or spills which produce a visible sheen on either surface water, or in waterways/sewers which lead to surface water, must be reported to the National Response Center at 800-424-8802.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: Fire. Immediate Health. Delayed Health.

SARA (313) TOXIC RELEASE INVENTORY:

Chemical Name	CAS Number	Typical Value
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)	95-63-6	< 32%
XYLENES	1330-20-7	< 2.2%
CUMENE	98-82-8	< 1.1%

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
CUMENE	98-82-8	1, 4, 10, 13, 16, 17, 18, 19
NAPHTHALENE	91-20-3	10
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)	95-63-6	1, 13, 16, 17, 18, 19
XYLENES	1330-20-7	1, 4, 13, 15, 16, 17, 18, 19

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK

4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

This warning is given to comply with California Health and Safety Code 25249.6 and does not constitute an admission or a waiver of rights. This product contains a chemical known to the State of California to cause cancer.

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
H226: Flammable liquid and vapor; Flammable Liquid, Cat 3
H304: May be fatal if swallowed and enters airways; Aspiration, Cat 1
H312: Harmful in contact with skin; Acute Tox Dermal, Cat 4
H315: Causes skin irritation; Skin Corr/Irritation, Cat 2
H316: Causes mild skin irritation; Skin Corr/Irritation, Cat 3
H319(2A): Causes serious eye irritation; Serious Eye Damage/Irr, Cat 2A
H320(2B): Causes eye irritation; Serious Eye Damage/Irr, Cat 2B
H332: Harmful if inhaled; Acute Tox Inh, Cat 4
H335: May cause respiratory irritation; Target Organ Single, Resp Irr
H336: May cause drowsiness or dizziness; Target Organ Single, Narcotic
H351: Suspected of causing cancer; GHS Carcinogenicity, Cat 2
H373: May cause damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 2
H401: Toxic to aquatic life; Acute Env Tox, Cat 2
H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Updates made in accordance with implementation of GHS requirements.

Internal Use Only
MHC: 1A, 0, 0, 0, 2, 2

DGN: 4400294HUS (1007447)

SAFETY DATA SHEET

Section 1. Identification

Product name : TRETOLITE™ DMW8900X STEAM ADDITIVE
™ a trademark of Baker Hughes, Inc.

Product code : DMW8900X

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Steam additive

Print date : 11/4/2014.

Validation date : 11/4/2014.

Version : 1

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/SDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Narcotic effects] - Category 3
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Highly flammable liquid and vapor.
Causes serious eye irritation.
Causes skin irritation.
Suspected of causing cancer.
May cause drowsiness and dizziness.
Harmful to aquatic life with long lasting effects.

Precautionary statements

Section 2. Hazards identification

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves: > 8 hours (breakthrough time): Nitrile or Neoprene gloves.. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing vapor. Wash hands thoroughly after handling.

Response : IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Avoid contact with skin and clothing. Wash thoroughly after handling.

Hazards not otherwise classified : Prolonged or repeated contact may dry skin and cause irritation.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Isopropanol	20 - 30	67-63-0
2-Butoxyethanol	5 - 10	111-76-2
Light aromatic naphtha	5 - 10	64742-95-6
Ammonium alkylaryl sulfonates	1 - 5	Trade secret.
1,2,4-Trimethylbenzene	1 - 5	95-63-6
Oxyalkylated alkylphenol	1 - 5	Trade secret.
Xylene	1 - 5	1330-20-7
1,3,5-Trimethylbenzene	1 - 5	108-67-8
Ethylbenzene	0.1 - 1	100-41-4
Cumene	0.1 - 1	98-82-8

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed

Section 4. First aid measures

person may need to be kept under medical surveillance for 48 hours.

Skin contact : Wash skin thoroughly with soap and water or use recognized skin cleanser. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes skin irritation. Defatting to the skin.

Ingestion : Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain or irritation,watering,redness

Inhalation : nausea or vomiting,headache,drowsiness/fatigue,dizziness/vertigo,unconsciousness

Skin contact : irritation,redness,dryness,cracking

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Section 5. Fire-fighting measures

Specific hazards arising from the chemical : Highly flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,nitrogen oxides,sulfur oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Isopropanol	US ACGIH	200	-	-	400	-	-	-	-	-	
	OSHA PEL	400	980	-	-	-	-	-	-	-	
	OSHA PEL 1989	400	980	-	500	1225	-	-	-	-	
2-Butoxyethanol	US ACGIH	20	-	-	-	-	-	-	-	-	
	OSHA PEL	50	240	-	-	-	-	-	-	-	[1]
	OSHA PEL 1989	25	120	-	-	-	-	-	-	-	[1]
1,2,4-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
Xylene	US ACGIH	100	434	-	150	651	-	-	-	-	
	OSHA PEL	100	435	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	435	-	150	655	-	-	-	-	
1,3,5-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	
Ethylbenzene	US ACGIH	20	-	-	-	-	-	-	-	-	
	OSHA PEL	100	435	-	-	-	-	-	-	-	
	OSHA PEL 1989	100	435	-	125	545	-	-	-	-	
Cumene	US ACGIH	50	-	-	-	-	-	-	-	-	
	OSHA PEL	50	245	-	-	-	-	-	-	-	[1]
	OSHA PEL 1989	50	245	-	-	-	-	-	-	-	[1]

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Section 8. Exposure controls/personal protection

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves: Nitrile or Neoprene gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Amber.

Odor : Alcohol-like.

Odor threshold : Not available.

pH : 8.5 [Conc. (% w/w): 5%]

: 5% in water

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 19°C (66.2°F) [TCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Highly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : Not available.

Relative density : 0.93 (15.6°C)

Density : 7.75 (lbs/gal)

Solubility in water : Soluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Section 9. Physical and chemical properties

Viscosity : Not available.
VOC : Not available.
Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, acids and alkalis.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Isopropanol	LC50 Inhalation Vapor	Rat	>10000 ppm	6 hours
	LD50 Dermal	Rabbit	6.29 g/kg	-
	LD50 Oral	Rat	5000 mg/kg	-
2-Butoxyethanol	LC50 Inhalation Gas.	Rat	450 ppm	4 hours
	LD50 Dermal	Guinea pig	>2000 mg/kg	-
	LD50 Dermal	Rabbit	200 mg/kg	-
	LD50 Dermal	Rabbit	99 mg/kg	-
	LD50 Oral	Guinea pig	500 to 2000 mg/kg	-
	LD50 Oral	Rabbit	320 mg/kg	-
Light aromatic naphtha	LD50 Oral	Rat	2900 mg/kg	-
1,2,4-Trimethylbenzene	LC50 Inhalation Vapor	Rat	18000 mg/m³	4 hours
	LD50 Oral	Rat	5 g/kg	-
Xylene	LC50 Inhalation Gas.	Rat	5000 ppm	4 hours
	LD50 Dermal	Rabbit	>1700 mg/kg	-
	LD50 Oral	Male rat	3523 mg/kg	-
	LD50 Oral	Rat	4300 mg/kg	-
1,3,5-Trimethylbenzene	LC50 Inhalation Vapor	Rat	24000 mg/m³	4 hours
	LD50 Oral	Rat	5000 mg/kg	-
Ethylbenzene	LD50 Dermal	Rabbit	15400 mg/kg	-
	LD50 Oral	Rat	3500 mg/kg	-
Cumene	LC50 Inhalation Vapor	Mouse	10000 mg/m³	7 hours
	LC50 Inhalation Vapor	Rat	39000 mg/m³	4 hours
	LD50 Dermal	Rabbit	10600 mg/kg	-
	LD50 Oral	Rat	2.9 g/kg	-

Irritation/Corrosion

No applicable toxicity data

Section 11. Toxicological information

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
Isopropanol	-	3	-
2-Butoxyethanol	-	3	-
Xylene	-	3	-
Ethylbenzene	-	2B	-
Cumene	-	2B	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Isopropanol	Category 3	Not applicable.	Narcotic effects
Light aromatic naphtha	Category 3	Not applicable.	Narcotic effects
1,2,4-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Xylene	Category 3	Not applicable.	Narcotic effects
1,3,5-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Cumene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Name	Result
Light aromatic naphtha	ASPIRATION HAZARD - Category 1
Xylene	ASPIRATION HAZARD - Category 1
Cumene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Section 11. Toxicological information

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	2216.8 mg/kg
Dermal	9735.3 mg/kg
Inhalation (gases)	384887.1 ppm
Inhalation (vapors)	88.36 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Isopropanol	Acute LC50 1400000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 1400000 µg/l	Fish - Gambusia affinis	96 hours
2-Butoxyethanol	Acute EC50 >1000 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 1000 mg/l Marine water	Crustaceans - Chaetogammarus marinus - Young	48 hours
	Acute LC50 1250000 µg/l Marine water	Fish - Menidia beryllina	96 hours
1,2,4-Trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - Elasmopus pectenicrus	48 hours
	Acute LC50 22.4 mg/l Fresh water	Fish - Tilapia zillii	96 hours
Xylene	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
1,3,5-Trimethylbenzene	Acute LC50 12520 to 15050 µg/l Fresh water	Fish - Carassius auratus	96 hours
	Chronic NOEC 400 µg/l Fresh water	Daphnia - Daphnia magna	21 days
Ethylbenzene	Acute EC50 4600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 2930 to 4400 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 5200 µg/l Marine water	Crustaceans - Americamysis bahia	48 hours
	Acute LC50 4200 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 1000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
Cumene	Acute EC50 2600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute LC50 7400 to 11290 µg/l Fresh water	Crustaceans - Artemia sp.	48 hours
	Acute LC50 30500 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2700 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours

Persistence and degradability

Not available.

Section 12. Ecological information

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1993	UN1993	UN1993	UN1993
UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Contains: Isopropanol, Light aromatic naphtha)	FLAMMABLE LIQUID, N.O.S. (Contains: Isopropanol, Light aromatic naphtha)	FLAMMABLE LIQUID, N.O.S. (Contains: Isopropanol, Light aromatic naphtha)	FLAMMABLE LIQUID, N.O.S. (Contains: Isopropanol, Light aromatic naphtha)
Transport hazard class(es)	3 	3 	3 	3 
Packing group	II	II	II	II
Environmental hazards	No.	No.	No.	No.
Additional information	-	-	**Emergency schedules (EmS)** F-E S-D	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Xylene, 993 gal of this product.

Section 14. Transport information

Marine pollutant Not available.

North-America NAERG : 128

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Naphthalene; Ethylbenzene
Clean Water Act (CWA) 311: Xylene; Naphthalene; Potassium hydroxide; Ethylbenzene

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304 : No products were found.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

SARA 313

	Product name	CAS number	%
Supplier notification	2-Butoxyethanol	111-76-2	5 - 10
	1,2,4-Trimethylbenzene	95-63-6	1 - 5
	Xylene	1330-20-7	1 - 5
	Ethylbenzene	100-41-4	0.1 - 1

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)

History

Date of printing : 11/4/2014.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this SDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This SDS was prepared and is to be used for this product. If the product is used as a component in another

Section 16. Other information

product, this SDS information may not be applicable.

SAFETY DATA SHEET

Section 1. Identification

Product name : PEP2HF PARAFFIN SOLVENT
Product code : PEP2HF

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Paraffin solvent.

Print date : 3/20/2015.
Validation date : 3/20/2015.
Version : 1.02

Supplier's details : Baker Petrolite
A Baker Hughes Company
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/SDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 4
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Narcotic effects] - Category 3

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Combustible liquid.
Causes serious eye damage.
Causes skin irritation.
Suspected of causing cancer.
May cause drowsiness and dizziness.

Precautionary statements

Section 2. Hazards identification

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Keep away from flames and hot surfaces. - No smoking. Use only outdoors or in a well-ventilated area. Avoid breathing vapor. Wash hands thoroughly after handling.

Response : IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Avoid contact with skin and clothing. Wash thoroughly after handling.

Hazards not otherwise classified : Prolonged or repeated contact may dry skin and cause irritation.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Heavy aromatic naphtha	80 - 90	64742-94-5
Naphthalene	5 - 10	91-20-3
Alkyl benzenesulfonic acid	1 - 5	68584-22-5
1,2,4-Trimethylbenzene	1 - 5	95-63-6
Light aromatic naphtha	1 - 5	64742-95-6

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Wash skin thoroughly with soap and water or use recognized skin cleanser. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system.

Skin contact : Causes skin irritation. Defatting to the skin.

Ingestion : Can cause central nervous system (CNS) depression. May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : pain,watering,redness

Inhalation : nausea or vomiting,headache,drowsiness/fatigue,dizziness/vertigo,unconsciousness

Skin contact : pain or irritation,redness,dryness,cracking,blistering may occur

Ingestion : stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Additional information

If product is ingested and vomiting occurs naturally, have person lean forward to reduce the risk of aspiration into the lungs.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Combustible liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

Section 5. Fire-fighting measures

Hazardous thermal decomposition products : carbon dioxide,carbon monoxide,sulfur oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use

Section 7. Handling and storage

explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Naphthalene	US ACGIH	10	52	-	-	-	-	-	-	-	[1]
	OSHA PEL	10	50	-	-	-	-	-	-	-	
	OSHA PEL 1989	10	50	-	15	75	-	-	-	-	
1,2,4-Trimethylbenzene	US ACGIH	25	123	-	-	-	-	-	-	-	
	OSHA PEL 1989	25	125	-	-	-	-	-	-	-	

[1]Absorbed through skin.

Consult local authorities for acceptable exposure limits.

Only components of this product with established exposure limits appear in the box above.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.

Section 8. Exposure controls/personal protection

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Amber. [Dark]

Odor : Aromatic hydrocarbon.

Odor threshold : Not available.

pH : 2.9

: 5% of product in 75% isopropanol / 25% water solution

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 65°C (149°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : Not available.

Relative density : 0.9083 (15.6°C)

Density : 7.57 (lbs/gal)

Solubility in water : Insoluble

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

VOC : Not available.

Pour Point : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials and acids.

Section 10. Stability and reactivity

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Heavy aromatic naphtha	LC50 Inhalation Vapor	Rat	>11.4 mg/l	6 hours
	LD50 Oral	Rat	3200 mg/kg	-
	LD50 Oral	Rat	>2000 mg/kg	-
Naphthalene	LD50 Dermal	Rabbit	>20 g/kg	-
Alkyl benzenesulfonic acid	LD50 Dermal	Rabbit	2000 mg/kg	-
	LD50 Oral	Rat	775 mg/kg	-
1,2,4-Trimethylbenzene	LC50 Inhalation Vapor	Rat	18000 mg/m³	4 hours
	LD50 Oral	Rat	5 g/kg	-
Light aromatic naphtha	LD50 Oral	Rat	2900 mg/kg	-

Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
Naphthalene	-	2B	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Heavy aromatic naphtha	Category 3	Not applicable.	Narcotic effects
1,2,4-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Light aromatic naphtha	Category 3	Not applicable.	Narcotic effects

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Name	Result
Heavy aromatic naphtha	ASPIRATION HAZARD - Category 1
Light aromatic naphtha	ASPIRATION HAZARD - Category 1

Section 11. Toxicological information

Information on the likely routes of exposure : Not available.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	2030.4 mg/kg
Dermal	59338.4 mg/kg
Inhalation (vapors)	805.2 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Naphthalene	Acute EC50 1.6 ppm Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2350 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 213 µg/l Fresh water	Fish - Melanotaenia fluviatilis - Larvae	96 hours
	Chronic NOEC 0.67 ppm Fresh water	Fish - Oncorhynchus kisutch	40 days
Alkyl benzenesulfonic acid	Acute EC50 5.65 mg/l Fresh water	Crustaceans - Ceriodaphnia dubia	48 hours
1,2,4-Trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - Elasmopus pectenicrus	48 hours
	Acute LC50 22.4 mg/l Fresh water	Fish - Tilapia zillii	96 hours

Persistence and degradability

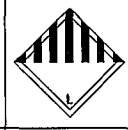
Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	NA1993	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	COMBUSTIBLE LIQUID, N.O.S. (Contains: Heavy aromatic naphtha)	-	-	-
Transport hazard class(es)	Combustible liquid. (9) 	-	-	-
Packing group	III	-	-	-
Environmental hazards	No.	No.	No.	No.
Additional information	**Remarks** This material is not regulated by DOT if transported in a packaging </= 119 gallons.	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Naphthalene, 143 gal of this product.

Marine pollutant Not available.

North-America NAERG : 128

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Naphthalene
Clean Water Act (CWA) 311: Naphthalene; xylene; Sulfuric acid

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
Sulfuric acid	< 0.1	Yes.	1000	66.3	1000	66.3

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

SARA 313

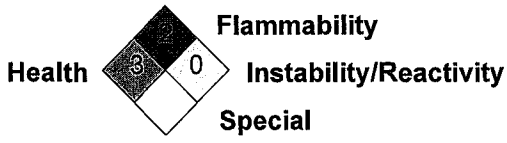
	Product name	CAS number	%
Supplier notification	Naphthalene 1,2,4-Trimethylbenzene	91-20-3 95-63-6	5 - 10 1 - 5

Canada

Canada (CEPA DSL): : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 3/20/2015.

Indicates information that has changed from previously issued version.

Notice to reader

NOTE: The information on this SDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This SDS was prepared and is to be used for this product. If the product is used as a component in another product, this SDS information may not be applicable.

Tuesday, April 09, 2013

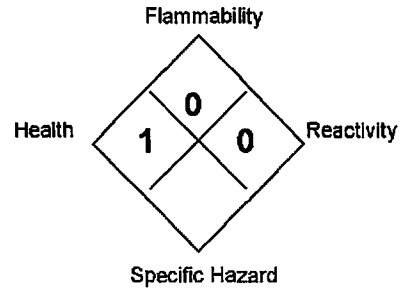
MATERIAL SAFETY DATA SHEET – POTASH

Revision Issued: November 3, 2004

Section 1 – Product and Company Identification

***INTREPID* POTASH – MOAB, LLC**
P.O. Box 1208
Moab, Utah 84532
Office 435-259-7171
Fax 435-259-7100

EMERGENCIES: CALL (800)424-9300(CHEMTREC)
HEALTH EMERGENCIES: CONTACT YOUR LOCAL POISON CENTER



Common name: Potash **Formula:** KCl **Synonym:** Muriate of Potash **Use:** Fertilizer

Section II – Composition/Information On Ingredients

Chemical Name(s)	CAS No.	Exposure Limits								% by Weight
		OSHA PEL		TLV - TWA		STEL		CEIL		
		mg/m^3	ppm	mg/m^3	ppm	mg/m^3	ppm	mg/m^3	ppm	
Potassium Chloride	7447-40-7	15 / 5*		10**						95-99.8
Sodium Chloride	7647-14-5	15 / 5*		10**						0.1-4

May contain up to 0.25% base lubrication oil and/or 0.03% neutralized primary aliphatic amines.

**Total Dust / Respirable dust

*Based on ACGIH nuisance dust limits.

Section III – Hazard Identification

Potential Acute Health Effects: May cause irritation.

Eyes and Skin:	Mild irritation, especially in open wounds.
Inhalation:	Exposure to high dust concentrations may cause irritation of mucous membranes.
Ingestion	A large body load may cause vomiting, diarrhea, cramps, tingling in hands and feet, weak pulse, and circulatory disturbances.
Potential Chronic Health Effects:	None Established
Carcinogenicity Lists:	**IARC Monograph** No **NTP:** No **OSHA:** No

Section IV – First Aid Measures

Eyes:	Flush with water, including under upper & lower lids, for at least 15 minutes. Get medical attention if pain and Irritation persists.
Skin:	Wash thoroughly with water. Obtain advise if rash develops.
Ingestion:	Administer water if patient is conscious. Ingesting potash will usually cause purging of the stomach by vomiting. Get Medical attention.
Inhalation:	Remove to fresh air. If discomfort persists, get medical attention.

Section V – Fire Fighting Measures

Flash Point:	None	**Auto-ignition Temperature:**	Not Applicable
Lower Explosive Limit:	Not Applicable	**Upper Explosive Limit:**	Not Applicable

Unusual Fire and Explosion Hazards:	When subjected to extremely high temperatures, it may release small quantities of chlorine gas.
Extinguishing Media:	As required for surrounding fire. Potash is non-flammable and does not support combustion.
Special Firefighting Procedures and Equipment:	Wear full protective clothing and self-contained breathing apparatus. As this material is virtually non-flammable wear PPE sufficient to fight surrounding fire.

Section VI – Accidental Release Measures

Small Spill:	Sweep up and use as fertilizer if non-contaminated.
Large Spill:	Collect with appropriate equipment. If on a hard surface, sweep up residue with brooms. If on soil, remove and collect the top 5 cm of soil.
Release Notes:	Potash is highly soluble and can be quickly diluted below the toxic level by relatively large amounts of water. Potash Which has entered a small non-permanent pond should be removed by pumping the pond dry. If spill could potentially enter any waterway, including intermittent dry creeks, contact the local authorities. If in the U.S., contact the US COAST GUARD NATIONAL RESPONSE CENTER toll free number, 800-424-8802. In case of accident or road spill notify: CHEMTREC IN USA AT 800-424-9300; CANUTEC in Canada at 613-996-6666 CHEMTREC in other countries at (International code)+1-703-527-3887.
Comments:	See Section XIII for disposal information and Section XV for regulatory requirements. Large and small spills may have a broad Definition depending on the user's handling system. Therefore, the spill category must be defined at the point of release by technically qualified personnel.

Section VII – Handling and Storage

Ventilation:	Local exhaust to reduce dust concentrations below recommended levels.
Handling:	Avoid generating dust by excessive or unnecessary movement.
Storage:	Store in a dry location. Avoid contact with aluminum or carbon steel to minimize corrosion

Section VIII – Exposure Controls/Personal Protection

Engineering Controls:	May be necessary to minimize dust levels.
Personal Protection:	
Eye Protection:	Use tight-fitting safety goggles in areas of high dust concentration.
Protective Clothing:	Gloves, long sleeve shirts and long pants. Launder work clothing regularly
Respiratory Protection:	NIOSH approved dust respirators until engineering controls are implemented.
Other Protective Clothing or Equipment:	Optional

Section IX – Physical and Chemical Properties

Appearance/Color/Odor:	White to red solid, fine to 4mm size, granules which may have a slight oily odor.		
Melting Point/Range:	1423°F	**Boiling Point:**	1500°C(sublimates)
Solubility in Water:	357 g/L at 25°C	**Boiling Point/Range:**	1420 - 1500°C
Specific Gravity:	2.0 (H_2O = 1)	**Vapor Pressure (mmHg):**	Not Applicable
Vapor Density:	Not Applicable	**Molecular Weight:**	74
Bulk Density:	1.98 g/ml	**% Volatiles:**	< 0.5
pH:	8 – 9 (solution)	**Evaporation Rate:**	Not Applicable
Viscosity:	Not applicable		

Section X – Stability and Reactivity

Stability:	Stable
Hazardous Polymerization:	Will not occur
Conditions to Avoid:	None
Materials to Avoid (Incompatibilities):	Contact with strong acid may produce hydrogen chlorine gas; contact with hot nitric acid may produce toxic nitrosyl chloride.
Hazardous Decomposition Products:	None

Section XI Toxicological Information

Significant Routes: of Exposure	Eyes, skin, inhalation, ingestion
Toxicity to Animals:	Oral LD_{50} (mouse, rat): 1500 – 2600 mg/kg
Special Remarks On Toxicity to animals:	Based on toxicity data for another salt compound (i.e. potassium nitrate). Not expected to be toxic by dermal exposure as defined by OSHA
Other Effects on Humans:	None known.
Special Remarks: On Chronic Effects On Humans:	Not reported to be carcinogenic mutagenic, teralogenic or allergenic.
Special Remarks On other Effects on Humans:	None

Section XII – Ecological Information

Ecotoxicity:	96 hour LC50 (rainbow trout) 2010mg/L 12 hour TLm (aquatic plants) 1337 mg/L NEOL (aquatic plants) 0.6 g/L 48 hour TLm (daphnia) 337 mg/L 72 hour EC50 (aquatic plants) 2500 mg/L
Environmental Fate:	Dissolves in water and disassociates into K and Cl ions. Will remain in solution until solubility product (350 g/L)reached. Ions may be absorbed by plants or by animals ingesting water containing potash.
Toxicity:	Non-toxic to aquatic organisms as defined by USEPA
Degradation	Chloride and potassium ions.

Section XIII – Disposal Considerations

Product Disposal:	Uncontaminated product may be used as fertilizer. Otherwise, dispose according to Federal State or Provincial regulations In a landfill approved to receive potash.
General Comments:	Because of its solubility, potash should not be disposed of in a location where run-off will escape.

Product Name: Potash

Section XIV – Transportation Information

	USDOT	TDG - Canada
Proper Shipping Name:	Not Regulated	Not Regulated
Hazard Class:		
Identification Number:		
Packing Group (Technical Name)		
Labeling/Placarding:		

Authorized Packaging:

Notes:

European Transportation:

Section XV – Regulatory Information

UNITED STATES:

SARA Hazard Category: This product has been reviewed according to the EPA Hazard Categories promulgated under Section 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire: No **Pressure Generating:** No **Reactivity:** No **Acute:** No **Chronic:** No.

40 CFR Part 355 – Extremely Hazardous Substances:
40 CFR Part 370 – Hazardous Chemical Reporting:
All intentional ingredients listed on the TSCA inventory.

SARA Title III Information: This product contains the following substances subject to the reporting requirements of Title III(EPCRA) of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

Chemical	CAS No.	Percent by Weight	CERCLA RQ (lbs.)	SARA (1986) Reporting		
				311	312	313
Potassium Chloride	7447-40-7	95-99.8	NA	No	No	No
Sodium Chloride	7647-14-5	0.1-4	NA	No	No	No

CERCLA/Superfund, 40 CFR Parts 117,302: If this product contains components subject to substances designated a **CERCLA Reportable Quantity (RQ) Substances,** it will be designated in the above table with the **RQ** value in pounds. If there is a release of **RQ Substance** to the environment, notification to the National Response Center, Washington D.C. (1-800-424-8802) is required.

CANADA:

WHMIS Hazard Symbol and Classification: Not controlled
Ingredient Disclosure List: This product does not contain ingredient(s) on this list.
Environmental Protection: All intentional ingredients are listed on the DSL (Domestic Substance List).

Section XVI – Other Information

NFPA Hazard Rating: **Health** 1 **Fire** 0 **Reactivity** 0 **Special Hazards** _____

0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme

Comments: None

Section(s) changed since last revision: All, New Format and new ecotoxicity information.

(Revision Date 11/04)