

Converting Carbonate Alkalinity from mg/L as CaCO₃ to mg/L as CO₃²⁻

CaCO₃ has a molecular weight of 100 g/mol

The CO₃²⁻ anion has a molecular weight of 60 g/mol

Therefore, each milligram of CaCO₃ contains 60/100 = 0.6 mg of CO₃²⁻

The conversion is as follows:

$$\text{Carbonate Alkalinity as CO}_3^{2-} \text{ (mg/L)} = 0.6 * \text{Carbonate Alkalinity as CaCO}_3 \text{ (mg/L)}$$

Converting Bicarbonate Alkalinity from mg/L as CaCO₃ to mg/L as HCO₃⁻

Consider the following reaction:



CaCO₃ has a molecular weight of 100 g/mol

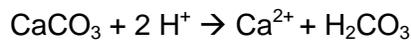
The HCO₃⁻ anion has a molecular weight of 61 g/mol

Therefore, each mol of Ca(HCO₃)₂ corresponds to one mol of CaCO₃ (100 g) and contains 2 x 61 g = 122 g of HCO₃⁻ and the conversion is as follows:

$$\text{Bicarbonate Alkalinity as HCO}_3^- \text{ (mg/L)} = 1.22 * \text{Bicarbonate Alkalinity as CaCO}_3 \text{ (mg/L)}$$

Converting Hydroxide Alkalinity from mg/L as CaCO₃ to mg/L as OH⁻

Consider the following reactions of CaCO₃ and hydroxide ions with protons (acid):



In terms of consumption of protons, 2 moles of hydroxide ions (OH⁻) are equivalent to one mol (100 g) of CaCO₃. Since the molecular weight of OH⁻ is 17 g/mol, the conversion is as follows:

$$\text{Hydroxide Alkalinity as OH}^- \text{ (mg/L)} = 2 * 17 / 100 * \text{Hydroxide Alkalinity as CaCO}_3 \text{ (mg/L)}$$

or:

$$\text{Hydroxide Alkalinity as OH}^- \text{ (mg/L)} = 0.34 * \text{Hydroxide Alkalinity as CaCO}_3 \text{ (mg/L)}$$