

## Methods

### Alkalinity (total)

References: ASTM D 1067-02, Acidity or Alkalinity of Water, Test Method B. APHA Standard Methods, 21<sup>st</sup> ed., Method 2320 B (2005). USEPA Methods for Chemical Analysis of Water and Wastes, Method 310.1 (1983).

The alkalinity of water is a measurement of its buffering capacity. Alkalinity of natural waters is typically a combination of bicarbonate, carbonate, and hydroxide ions. Sewage and wastewaters usually exhibit higher alkalinities due to the presence of silicates and phosphates.

Alkalinity inhibits corrosion in boiler and cooling waters. It is also measured as a means of controlling water and wastewater treatment processes or the quality of various process waters.

CHEMetrics' total alkalinity tests determine total or *M* alkalinity using a hydrochloric acid titrant and a bromocresol green/methyl red indicator. The end point of the titration occurs at pH 4.5. Results are expressed as ppm (mg/L) CaCO<sub>3</sub>.

### Alkalinity (hydrate)

Reference: Developed with Calgon Corporation.

Hydrate alkalinity is a component of total alkalinity. Boiler operators must maintain relatively high hydrate alkalinity levels when phosphate cycle treatments are used to ensure the formation of softer, more easily removable deposits. This specific test for hydrate alkalinity provides a more accurate value than the calculation method.

The hydrate alkalinity reagent has been specially formulated to inhibit interference from carbonate and bicarbonate alkalinity, as well as up to one-third of the phosphate and silicate alkalinity.

For hydrate alkalinity, CHEMetrics developed a titrimetric method that uses a hydrochloric acid titrant with a phenolphthalein indicator and an inhibiting agent. The end point of the titration occurs at pH 8.3. Results are expressed as ppm (mg/L) NaOH.

## Visual Kits

**Range: 10-100 ppm as CaCO<sub>3</sub>**  
MDL: 10 ppm / Method: Acid Titrant with pH Indicator

	Cat#
<b>Alkalinity (total) Titrets Kit</b>	<b>K-9810</b>

Increments:  
10, 11, 12, 13, 14, 15, 16, 18, 20, 25, 30, 35, 40, 50, 70, 100 ppm

Kit comes in a cardboard box and contains everything needed to perform 30 tests: thirty ampoules with valve assemblies, Activator Solution, titrettor, 25 mL sample cup, instructions, and MSDS.

**Range: 50-500 ppm as CaCO<sub>3</sub>**  
MDL: 50 ppm / Method: Acid Titrant with pH Indicator

	Cat#
<b>Alkalinity (total) Titrets Kit</b>	<b>K-9815</b>

Increments:  
50, 55, 60, 65, 70, 75, 80, 90, 100, 125, 150, 175, 200, 250, 350, 500 ppm

Kit comes in a cardboard box and contains everything needed to perform 30 tests: thirty ampoules with valve assemblies, Activator Solution, titrettor, 25 mL sample cup, instructions, and MSDS.

**Range: 100-1000 ppm as CaCO<sub>3</sub>**  
MDL: 100 ppm / Method: Acid Titrant with pH Indicator

	Cat#
<b>Alkalinity (total) Titrets Kit</b>	<b>K-9820</b>

Increments:  
100, 110, 120, 130, 140, 150, 160, 180, 200, 250, 300, 350, 400, 500, 700, 1000 ppm

Kit comes in a cardboard box and contains everything needed to perform 30 tests: thirty ampoules with valve assemblies, Activator Solution, titrettor, 25 mL sample cup, instructions, and MSDS.

**Range: 100-1000 ppm as NaOH**  
MDL: 100 ppm / Method: Acid Titrant with pH Indicator

	Cat#
<b>Alkalinity (hydrate) Titrets Kit</b>	<b>K-4710</b>

Increments:  
100, 110, 120, 130, 140, 150, 160, 180, 200, 250, 300, 350, 400, 500, 700, 1000 ppm

Kit comes in a cardboard box and contains everything needed to perform 30 tests: thirty ampoules with valve assemblies, Indicator Solution, Neutralizer Solution, titrettor, 25 mL sample cup, instructions, and MSDS.

### Kit Components common to Alkalinity

Description	Cat#
Sample Cup Pack, 25 mL (6 ea)	A-0013
Titrettor Pack (1 ea)	A-0053

Instructions are posted on our website.

If no shelf-life is listed for a product, then the shelf-life is at least 2 years.