

Methods

Hardness is a measure of the mineral content of water. Calcium and magnesium are the most common minerals that contribute to hardness. Hard water causes scaling in boilers and other industrial equipment, and diminishes the effectiveness of soaps and detergents.

The EGTA Method (calcium)

Reference: West, T. S., DSC, Ph.D., *Complexometry with EDTA and Related Reagents*, 3rd ed., pp. 46, 164 (1969).

The EGTA method is specific for calcium hardness. The EGTA titrant in alkaline solution is employed with a zincon indicator. Results are expressed as ppm (mg/L) CaCO₃.

Shelf-life: eight months. Although the reagent itself is stable, the end point indicator has a limited shelf-life. We recommend stocking quantities that will be used within seven months.

The EDTA Method (total)

References: APHA Standard Methods, 22nd ed., Method 2340 C-1997. USEPA Methods for Chemical Analysis of Water and Wastes, Method 130.2 (1983).

The total hardness method is applicable to drinking, surface, boiler, and brine waters.

The EDTA titrant is employed in alkaline solution with a calmagite indicator. This method determines the combined calcium and magnesium concentration of a sample. If no magnesium is present, the end point of the titration normally appears sluggish. Results are expressed as ppm (mg/L) CaCO₃.

Visual Kits

Range: 50-500 ppm as CaCO₃
MDL: 50 ppm / Method: EGTA

Hardness (calcium) Titrets Kit , Shelf-life 8 months	Cat# K-1705
-------------------------------------------------------------	------------------------------

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, Indicator Solution, titrettor, 25 mL sample cup and instructions.

Range: 100-1000 ppm as CaCO₃
MDL: 100 ppm / Method: EGTA

Hardness (calcium) Titrets Kit , Shelf-life 8 months	Cat# K-1710
-------------------------------------------------------------	------------------------------

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, titrettor, 25 mL sample cup and instructions.

Range: 2-20 ppm as CaCO₃
MDL: 2.0 ppm / Method: EDTA

Hardness (total) Titrets Kit	Cat# K-4502
-------------------------------------	------------------------------

Increments:
2.0, 2.2, 2.4, 2.6, 2.8, 3.0, 3.2, 3.6, 4.0, 5.0, 6.0, 7.0, 8.0, 10, 14, 20 ppm

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

Range: 20-200 ppm as CaCO₃
MDL: 20 ppm / Method: EDTA

Hardness (total) Titrets Kit	Cat# K-4520
-------------------------------------	------------------------------

Increments:
20, 22, 24, 26, 28, 30, 32, 36, 40, 50, 60, 70, 80, 100, 140, 200 ppm

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

Range: 100-1000 ppm as CaCO₃
MDL: 100 ppm / Method: EDTA

Hardness (total) Titrets Kit	Cat# K-4585
-------------------------------------	------------------------------

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, titrettor, 25 mL sample cup and instructions.

Range: 250-2500 ppm as CaCO₃
MDL: 250 ppm / Method: EDTA

Hardness (total) Titrets Kit	Cat# K-4530
-------------------------------------	------------------------------

Increments:
250, 275, 300, 325, 350, 375, 400, 450, 500, 625, 750, 875, 1000, 1250, 1750, 2500 ppm

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

Kit Components common to Hardness

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

*Instructions and MSDS(s) are posted on our website.
If no shelf-life is listed for a product, then the shelf-life is at least 2 years.*

