Total Hardness Titrets® Kit

K-4502: 2 - 20 ppm
K-4520: 20 - 200 ppm
K-4585: 100 - 1000 ppm

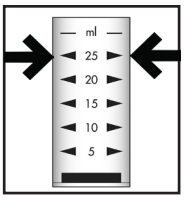


Figure 1

Sample Temperature

Sample temperatures that deviate significantly from 20°C (68°F) may introduce test result bias.

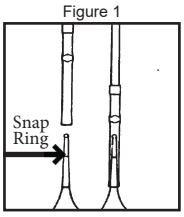
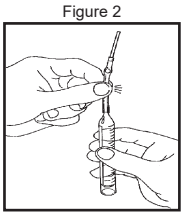


Figure 2

Test Procedure

1. Fill the sample cup to the 25 mL mark with the sample to be tested (fig. 1).
2. Slide the open end of the valve assembly over the tapered tip of the Titret so that it fits snugly to the white reference line (fig. 2).
3. Snap the tip of the ampoule at the black snap ring (fig. 3).
   NOTE: When the tip is snapped, the flexible tubing will remain in place on the neck of the ampoule.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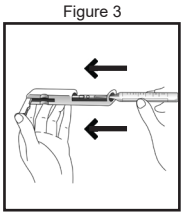
4. Lift the control bar and insert the Titret assembly into the Titrettor (fig. 4).
   NOTE: The rigid sample pipe will extend approximately 1.5 inches beyond the body of the Titrettor.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5. Hold the Titrettor with the sample pipe in the sample. Press the control bar firmly, but briefly, to pull in a small amount of sample. The contents will turn **BLUE** (fig. 5).
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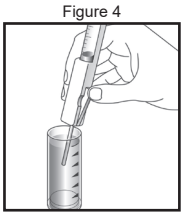
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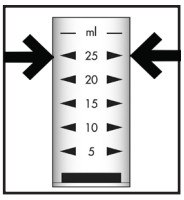

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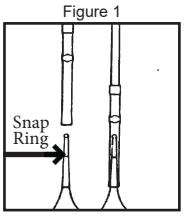

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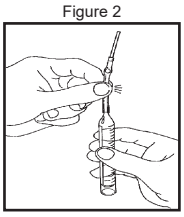
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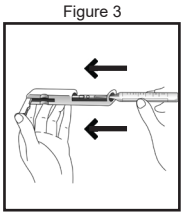
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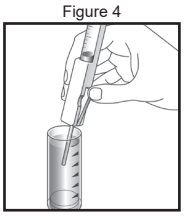
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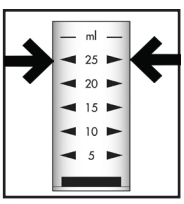

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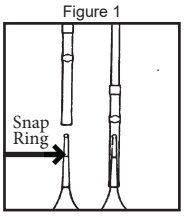

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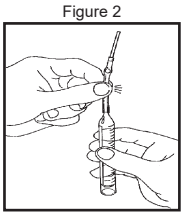
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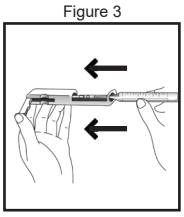
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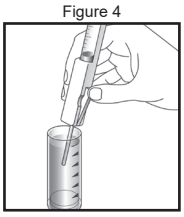
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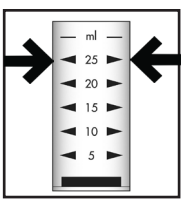

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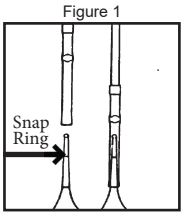

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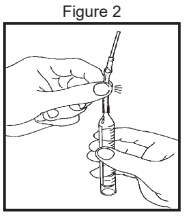
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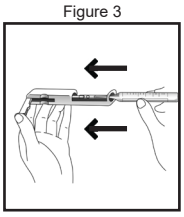
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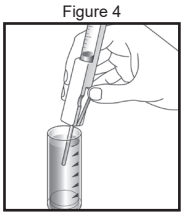
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7. Rock the entire assembly to mix the contents of the ampoule. Watch for a color change from **BLUE to PINK**.
8. Repeat Steps # 6 and 7 until a permanent color change occurs.
9. When the color of the liquid in the ampoule changes to **PINK**, remove the ampoule from the Titrettor. Hold the ampoule, **tip pointed upward**, and read the scale opposite the liquid level (fig. 6). Results are expressed in ppm (mg/Liter calcium carbonate ($CaCO_3$).

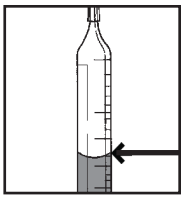
Figure 6

K-4502 only: multiply scale unit by 2.
K-4585 only: multiply scale unit by 100.

NOTE: To convert to grains per gallon, divide test result by 17.16.

Interpretation of Test Results

If the contents of the ampoule do not turn **BLUE** in Step # 5, the hardness concentration in the sample is above the test range. If the ampoule fills completely and the contents do not turn **PINK**, the hardness concentration is below the test range.

Test Method

The Total Hardness Titrets®[1] test method employs the ethylenediaminetetraacetic acid (EDTA) titrimetric chemistry.[2,3] In an alkaline solution, EDTA forms a chelated soluble complex with calcium and magnesium ions. Calmagite is used as the endpoint indicator.

1. Titrets is a registered trademark of AquaPhoenix Scientific, LLC U.S. Patent No. 4,332,769
2. APHA Standard Methods, 22nd ed., Method 2340 C - 1997
3. EPA Methods for Chemical Analysis of Water & Wastes, method 130.2 (1983)

Safety Information

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Feb. 25, Rev. 21

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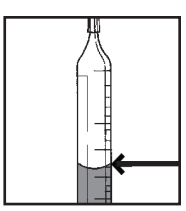

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