**TOTAL, CALCIUM AND MAGNESIUM HARDNESS TEST KIT**

**AUTOMATIC BURET METHOD**

**CODE 7173-01**

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<th>QUANTITY</th>
<th>CONTENTS</th>
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<tr>
<td>100</td>
<td>Hardness #6 Tablets (4484A)</td>
<td>2 x</td>
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<tr>
<td>100</td>
<td>Calcium Hardness Indicator Tablets (5205A)</td>
<td>4484A-5250ABAG</td>
</tr>
<tr>
<td>100 mL</td>
<td>*Sodium Hydroxide Reagent w/Metal Inhibitors</td>
<td>*4259-J</td>
</tr>
<tr>
<td>2 x 250 mL</td>
<td>Hardness Titration Reagent</td>
<td>4257-K</td>
</tr>
<tr>
<td>30 mL</td>
<td>*Hardness Reagent #5</td>
<td>*4483-G</td>
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<tr>
<td>2</td>
<td>Erlenmeyer Flasks, 125 mL, glass</td>
<td>0431</td>
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<tr>
<td>1</td>
<td>Graduated Cylinder, 25 mL, glass</td>
<td>0417</td>
</tr>
<tr>
<td>1</td>
<td>Pipet, 1.0 mL, plastic</td>
<td>0354</td>
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<tr>
<td>1</td>
<td>Automatic Buret, squeeze valve</td>
<td>0427</td>
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*WARNING: Reagents marked with an * are considered to be potential health hazards. To view or print a Safety Data Sheet (SDS) for these reagents go to www.lamotte.com. Search for the four digit reagent code number listed on the reagent label, in the contents list or in the test procedures. Omit any letter that follows or precedes the four digit code number.

For example, if the code is 4450WT-H, search 4450. To obtain a printed copy, contact LaMotte by email, phone or fax.

Emergency information for all LaMotte reagents is available from Chem-Tel: (US, 1-800-255-3924) (International, call collect, 813-248-0585).

Read the LaMotte Automatic Buret Instruction Manual before proceeding.

**PROCEDURE**

**TOTAL HARDNESS**

1. Fill the graduated cylinder (0417) to the 25 mL line with sample water. Transfer to a 125 mL Erlenmeyer flask (0431).
3. Add one Hardness Reagent #6 Tablet (4484A). Mix until tablet disintegrates. Sample should turn red.
4. Fill the Automatic Buret (0427) with the Hardness Titration Reagent (4257). While gently swirling the flask, add Hardness Titration Reagent (4257) until red color changes to blue. Record the buret reading to the nearest 0.05 mL.

5. Multiply buret reading by 10. Record as ppm Total Hardness as CaCO₃.

Total Hardness (ppm CaCO₃) = 10 x Buret Reading

CALCIA HARDNESS

1. Fill the graduated cylinder (0417) to the 25 mL line with sample water. Transfer to a 125 mL Erlenmeyer flask (0431).

2. Use the 1.0 mL pipet (0354) to add 2.0 mL (two measures) of *Sodium Hydroxide Reagent w/Metal Inhibitors (4259). Mix.

3. Add one Calcium Hardness Indicator Tablet (5250A). Mix until tablet disintegrates.

4. Immediately fill the Automatic Buret with the Hardness Titration Reagent (4257). While gently swirling flask, add Hardness Titration Reagent (4257) until red color changes to blue. Record the buret reading to the nearest 0.05 mL.

5. Multiply buret reading by 10. Record as ppm Calcium Hardness as CaCO₃.

Calcium Hardness (ppm CaCO₃) = 10 x Buret Reading

To convert to calcium, multiply results by 0.4. Record as ppm Calcium.

Calcium (ppm Ca) = 0.4 x Calcium Hardness

MAGNESIUM HARDNESS

1. Subtract Calcium Hardness from Total Hardness. Record as ppm Magnesium Hardness as CaCO₃.

Magnesium Hardness (ppm CaCO₃) = Total Hardness – Calcium Hardness

2. To convert to magnesium, multiply result by 0.24. Record result as ppm Magnesium.

Magnesium (ppm Mg) = 0.24 x Magnesium Hardness