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

**AUTOMATIC BURET METHOD**

**MODEL AB-HCM • CODE 7173-01**

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<th>QUANTITY</th>
<th>CONTENTS</th>
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<tbody>
<tr>
<td>100</td>
<td>Hardness Reagent #6 Tablets</td>
<td>4484-J</td>
</tr>
<tr>
<td>100 mL</td>
<td>*Sodium Hydroxide Reagent w/Metal Inhibitors</td>
<td>*4259-J</td>
</tr>
<tr>
<td>100</td>
<td>Calcium Hardness Indicator Tablets</td>
<td>T-5250-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>
</tr>
<tr>
<td>1</td>
<td>Erlenmeyer Flask, 125 mL, glass</td>
<td>0431</td>
</tr>
<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>
</tr>
<tr>
<td>1</td>
<td>Automatic Buret</td>
<td>0427</td>
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</table>

*WARNING:* Reagents marked with an * are considered to be potential health hazards. To view or print a Material Safety Data Sheet (MSDS) for these reagents go to www.lamotte.com. To obtain a printed copy, contact LaMotte by e-mail, phone or fax.

To order individual reagents of test kit components, use the specified code number.

Read the Automatic Buret Instruction Manual before proceeding.

**PROCEDURE**

**TOTAL HARDNESS**

1. Fill graduated cylinder (0417) to the 25 mL line with sample water. Transfer to the clean 125 mL Erlenmeyer flask (0431).
3. Add one Hardness Reagent #6 Tablet (4484). 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 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.

\[
\text{Total Hardness (ppm CaCO}_3\text{) = 10 x Buret Reading}
\]

**CALCIUM HARDNESS**

1. Fill graduated cylinder (0417) to the 25 mL line with sample water. Transfer to the clean 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 (T-5250). Mix until tablet disintegrates.

4. Fill the Automatic Buret with the Hardness Titration Reagent (4257). While gently swirling flask, add Hardness Titration Reagent 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.

\[
\text{Calcium Hardness (ppm CaCO}_3\text{) = 10 x Buret Reading}
\]

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

\[
\text{Calcium (ppm Ca) = 0.4 x Calcium Hardness}
\]

**MAGNESIUM HARDNESS**

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

\[
\text{Magnesium Hardness (ppm CaCO}_3\text{) = Total Hardness – Calcium Hardness}
\]

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

\[
\text{Magnesium (ppm Mg) = 0.24 x Magnesium Hardness}
\]