



TOTAL, CALCIUM AND MAGNESIUM HARDNESS TEST KIT

AUTOMATIC BURET METHOD

CODE 7173-01

QUANTITY	CONTENTS	CODE
100	Hardness #6 Tablets (4484A)	2 x
100	Calcium Hardness Indicator Tablets (5205A)	4484A-5250ABAG
100 mL	*Sodium Hydroxide Reagent w/Metal Inhibitors	*4259-J
2 x 250 mL	Hardness Titration Reagent	4257-K
30 mL	*Hardness Reagent #5	*4483-G
2	Erlenmeyer Flasks, 125 mL, glass	0431
1	Graduated Cylinder, 25 mL, glass	0417
1	Pipet, 1.0 mL, plastic	0354
1	Automatic Buret, squeeze valve	0427

*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).
2. Add 10 drops of *Hardness Reagent #5 (4483). Mix.
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.

$$\text{Total Hardness (ppm CaCO}_3\text{)} = 10 \times \text{Buret Reading}$$

CALCIUM 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.

$$\text{Calcium Hardness (ppm CaCO}_3\text{)} = 10 \times \text{Buret Reading}$$

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

$$\text{Calcium (ppm Ca)} = 0.4 \times \text{Calcium Hardness}$$

MAGNESIUM HARDNESS

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

$$\text{Magnesium Hardness (ppm CaCO}_3\text{)} = \text{Total Hardness} - \text{Calcium Hardness}$$

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

$$\text{Magnesium (ppm Mg)} = 0.24 \times \text{Magnesium Hardness}$$

LaMOTTE COMPANY

Helping People Solve Analytical Challenges

802 Washington Ave · Chestertown · Maryland · 21620 · USA
800-344-3100 · 410-778-3100 [Outside U.S.A.] · Fax 410-778-6394

Visit us on the web at www.lamotte.com

© 2021 LaMotte Company 67173-01 06.21