



TOTAL HARDNESS KIT
DIRECT READING TITRATOR, 0-200 PPM
CODE 4482-DR-LI-01

QUANTITY	CONTENTS	CODE
15 mL	*Hardness Reagent # 5	*4483-E
15 mL	*Hardness Reagent # 6 Solution	*4485-E
60 mL	Hardness Reagent # 7	4487DR-H
1	Test Tube, 5-10-12.9-15-20-25 mL, glass, w/cap	0608
1	Direct Reading Titrator, 0-200 Range	0382
1	Pipet. 0.5 mL	0353

*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 or test kit components, use the specified code number.

NOTE: Carefully read the instruction manual for the LaMotte Direct Reading Titrator before performing the titration described below. The titrator is calibrated in terms of Total Hardness expressed as parts per million (ppm) Calcium Carbonate CaCO_3 . Each minor division on the titrator scale equals 4 ppm CaCO_3 .

PROCEDURE

1. Fill the test tube (0608) to the 12.9 mL line with the water sample.
2. Add five drops of *Hardness Reagent #5 (4483) and mix.
3. Add five drops of *Hardness Reagent #6 Solution (4485) and mix. Solution will turn red if hardness is present. If solution is blue, there is no measurable amount of hardness.
4. Fill the Direct Reading Titrator (0382) with Hardness Reagent #7 (4487DR) in the manner described in the instruction manual. Insert the titrator in the center hole of the test tube cap.
5. While gently swirling the tube, slowly press the plunger to titrate the sample until the red color changes to blue. Read the test result directly from the scale where the large ring on the Titrator meets the Titrator barrel. The result is expressed as Total Hardness in ppm CaCO_3 .
EXAMPLE: Plunger tip is 3 minor divisions below line 80. Test result is 80 plus (3 divisions x 4) equals 92 ppm.
6. If the plunger tip reaches the bottom line on the titrator scale (200 ppm) before the endpoint color change occurs, refill the titrator and continue the titration. When recording the test result, be sure to include the value of the original amount of reagent dispensed (200 ppm).
7. Parts per million CaCO_3 test results may be converted to grains per gallon (gpg) CaCO_3 by means of the following formula: $\text{gpg } \text{CaCO}_3 = \text{ppm } \text{CaCO}_3 \times 0.058$

ANALYSIS OF HARDNESS IN SALT WATER

When sea and estuarine waters containing very high levels of mineral salts are to be tested, the sample must be diluted to fall within the range of the test kit. This test set is supplied with a calibrated pipet for performing the simple, convenient dilution described below.

1. Use the 0.5 mL pipet (0353) to transfer 0.5 mL of the salt water to be tested to the test tube (0608).
2. Fill the test tube to the 12.9 mL line with distilled water (1:25.8 dilution).
3. Follow Steps 2 through 6. Multiply the resulting titrator reading by 25.8 to obtain the test result expressed as Total Hardness in ppm CaCO_3 .