

# Carbonate hardness

## Test kit for performing titrimetric tests on carbonate hardness in surface water and sewage

### Method:

The term carbonate hardness refers to the part of calcium or magnesium ions which is present in the form of carbonate or hydrogen carbonate. The test is carried out by titration with hydrochloric acid, using a mixed indicator which changes color at a pH of 4.5.

### Contents:

sufficient for 100 tests at an average hardness of 10 °d

- 7 mL CH-1
- 2 x 30 mL CH-2
- 1 specimen jar with ringed markings
- 1 plastic syringe 5 mL
- 1 instructions for use

### Hazard warning:

Reagent CH-1 contains hazards which are not labeled with <F> (certificate of exemption for small quantities), see safety data sheet.

### Instructions for use:

1. Pour a **5 mL water sample** into the specimen jar using the plastic syringe.
2. Add **2 drops of CH-1** and shake the jar to mix the contents. The water sample turns **blue**. If the water sample turns red, this means that there is no carbonate hardness.
3. Hold the dropping bottle **CH-2** absolutely vertical and add the reagent drop by drop. Shake the specimen at the same time to mix until it turns **red**. Count the number of drops. One drop corresponds to one degree of carbonate hardness (°d).
4. After use, rinse out the specimen jar thoroughly.
5. Seal the dropping bottles immediately after use. Do not touch the dropping pipette.

This technique can be used also for analyzing sea water.

### Disposing of the samples:

The used analysis specimens can be flushed down the drain with tap water and channeled off to the local sewage treatment works.

### Interferences:

The carbonate hardness would ordinarily be lower than the overall hardness. If, however, the carbonate hardness is higher than the total water hardness, the ratios are abnormal and should be clarified; e.g. introduction of alkali hydrogen carbonates or high buffering capacity.

### Conversion table:

°d	°e	°f	mg/L CaO	mg/L CaCO <sub>3</sub>	mmol/L H <sup>+</sup>
1	1.3	1.8	10	18	0.36
2	2.5	3.6	20	36	0.71
3	3.8	5.4	30	54	1.07
4	5.0	7.1	40	71	1.43
5	6.3	8.9	50	89	1.78
6	7.5	10.7	60	107	2.14
7	8.8	12.5	70	125	2.50
8	10.0	14.3	80	143	2.86
9	11.3	16.1	90	161	3.21
10	12.5	17.8	100	178	3.57

### Storage:

Store the test kit in a cool (< 25 °C) and dry place.