visocolor® HE

Calcium CA 20

Test kit for the determination of residual hardness in soft water

Method:
Complexometric titration

Contents of test kit (*refill pack):
sufficient for 200 tests with an average hardness of 10 °d

25 mL CA 20–1*
10 mL CA 20–2*
100 mL CA 20-TL*
1 test tube with ring mark
1 titration syringe 0–20 °d resp. 0–3.6 mmol/L
(1 graduation mark ≙ 0.5 °d resp. 0.1 mmol/L)
2 plastic dropping tips

Hazard warning:
Information regarding safety can be found on the box' label and in the safety data sheet. You can download the SDS from ***www.mn-net.com/SDS***.

Procedure:

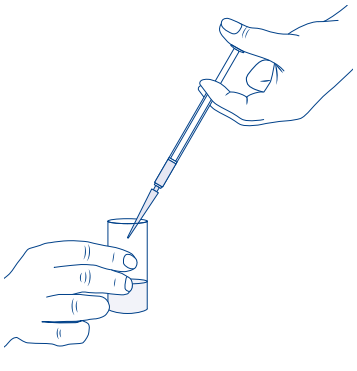
1. Rinse test tube several times with the test sample and fill to ring mark.
2. Add 2 drops CA 20–1 and shake. The test sample can get turbid.
3. Add 2 drops CA 20–2 and shake. The test sample turns red. If sample turns blue, no calcium is present (0 °d).
4. Put dropping tip onto the titration syringe, press down plunger, dip the tip into the titration solution CA 20-TL and draw up plunger slowly, until the lower rim of the black plunger O-ring agrees with value 0 on the barrel scale. The small air pocket below the plun-ger tip does not disturb the determination.
5. Addition of the titration solution: We recommend taking the syringe in the left hand and the test tube in the right hand (see drawing) and adding titration solution dropwise while smoothly shaking the test tube. As soon as the red color turns lighter, drop more slowly until the solution turns completely blue. If the test solution turns grey after 15–30 s, add dropwise titration solu-tion CA 20-TL until color change repeats to blue.
   Read off calcium hardness in °d or mmol/L from the syringe barrel (lower rim of the black plung-er O-ring). Color change is followed easily when holding test tube before a light background (e.g. sheet of white paper).
6. If the first syringe filling isn't enough to reach color change (calcium hardness > 20 °d), fill sy-ringe once more with titration solution CA 20-TL and titrate to color change (as above). Read off calcium hardness and add for each used syringe filling 20 °d.

°d	°e	°f	mg/L CaO	mg/L $CaCO_3$	mmol/L H^+
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

This method can be applied also for the analysis of sea water after dilution (1+4) and using 6 drops of sodium hydroxide solution.

Disposing of the samples:
Information regarding disposal can be found in the safety data sheet. You can download the SDS from ***www.mn-net.com/SDS***

Remark:
The magnesium content is the difference between total hardness (*VISOCOLOR® HE* Total Hardness H 20 F, REF 915005) and calcium hardness.



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