PHOTOMETER 660

3.2-Test

130 Ca CALCIUM

1 - 30 ppm \ 120 Tests

*Formation of a violet complex with Calcion S*L

- Fill 16mmØ tube with a fully extended syringe (3.2mℓ) of sample
- Add 3 drops of **Ca-1** and mix
- Add 3 drops of **Ca-2** and mix
- Set aside for 3'
- Switch on the Photometer 660
- Enter 1 3 0 and press E for 130 Ca
- Set filter as indicated to 546nm and press E
- Insert tube with plain water and press B
- Insert tube with prepared sample and press M
- Record as ppm (mg/ℓ) Calcium
  10ppm Ca ≡ 1.4°DH ≡ 1.46 gpg ≡ 25ppm $CaCO_3$

Calcium bicarbonate and –sulfate are the commonest substances dissolved in fresh waters and in a typical ratio of about 3:1 Ca:Mg the cause of water hardness. The rato is inverted in the case of sea salt with 1.18% Ca to 3.68% Mg. This is the result of calcium carbonate making up the hard structures of organisms ranging from algae to animals since the beginning of life on the earth, resulting in their eventual deposition and lithification with a relative Ca-depletion in seawater. These deposits form the more (chalk, marble) or less (marl) pure limestones of the continents, which when attacked by carbon dioxide in groundwater, return some of the calcium to the sea. Magnesium and especially the sodium-portion (30,6%) remain primarily or totally in the oceans, which in the case of the latter can only become incorporated into the continents once more by a climate change with salt-lakes drying out (→ evaporites). According to the classification of waters with equivalent Ca-values it is possible to determine the hardness of very soft waters undiluted up to 30ppm Ca. A tenfold dilution of the samples with distilled water covers all levels of calcium likely to be encountered up to 300ppm Ca, equivalent to 42°DH, when multiplying the reading by 10. Magnesium hardness can be determined with 3.2-Test **260**.

very soft	0 - 4° DH	0 - 29 ppm Ca
soft	4-8	29 - 57
medium hard	8 - 12	57 - 86
fairly hard	12 - 18	86 - 129
hard	18 - 30	129 - 214
very hard	> 30	> 214

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