

Special instruction

Version 1

Determination of sodium in water

General information

The first 16 km of the earth's crust contains 2.43% of chemical bound sodium. In nature, sodium can mostly be found as silicate (albite), chloride (rock salt), carbonate and nitrate (Chile saltpeter). Seawater contains 27 kg sodium chloride per ton (i.e. 10.6 kg Na/t) which is equivalent to 77% of the dissolved salts in seawater. In general, ion selective electrodes are used for quantitative determinations. However in natural waters besides sodium, mostly calcium and magnesium are present. For an easy determination of sodium, the VISOCOLOR® titration test kits, based on the following principle, can be used.

Instructions	
Parameter	Sodium
Product group	VISOCOLOR®
Reagents and equipment	VISOCOLOR® HE Carbonate hardness C 20 (REF 915 003) VISOCOLOR® HE total hardness H 20 F (REF 915 005) VISOCOLOR® HE Acidity AC 7 (REF 915 006) CHROMAFIX® 400-PS-H ⁺ (REF 731 861) Syringe 5 mL (REF 914 661)
Sample preparation	No sample preparation steps are necessary.
Analysis	<ol style="list-style-type: none"> Determination of carbonate hardness (result A, in mmol/L) according to the instructions. Determination of total hardness (result B, in mmol/L) according to the instructions. Ion exchange with CHROMAFIX® cartridge and subsequent determination of acidity with VISOCOLOR® HE AC 7 (result C, in mmol/L). Fill syringe with sample, connect CHROMAFIX® cartridge with syringe and press sample through the cartridge into the sample vessel up to the ring mark (5 mL). Determine the acidity in accordance to the instructions. (Acidity = Sum of all cations, on the assumption specified above this corresponds to the content of Ca, Mg and Na). <p>Remark: Available carbonate will be displaced through the ion exchange: $\text{HCO}_3^- + \text{H}^+ \rightarrow [\text{H}_2\text{CO}_3] \rightarrow \text{H}_2\text{O} + \text{CO}_2 \uparrow$ Thereby the appropriate portion of H⁺ of the carbon is eluded of the determination and must be considered by the determination of the carbonate hardness (HCO₃⁻) before the ion exchange.</p>
Interpretation	Calculation of results: $(2A + C - 2B) \times 23 = \text{mg/L Na}^+$ A = carbonate hardness in mmol/L B = total hardness in mmol/L C = acidity after ion-exchange in mmol/L

Contact

If you have further questions, please do not hesitate to contact us:

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