PHOTOMETER 660

3.2-Test

RIELE

110 Al ALUMINIUM

0.02 - 0.7 ppm \ 60 + 60 Tests

Formation of a ternary associate of Aluminium hydroxyde with Chromazurol B and an alkanol polyglycol ether

- Fill 16mmØ tube with a fully extended (3.2mℓ) syringe of sample
- Fill 3.2mℓ distilled water into a second tube for a coloured blank
- Add 3 drops of **Al-1** to each tube and mix completely
- Add 3 drops of **Al-2** to each tube and mix
- Add 3 drops of **Al-3** to each tube and mix
- Set aside for 5'
- Switch on the Photometer 660
- Enter [1][1][0] and press [E] for 110 Al
- Adjust filter as indicated to 578 nm and press [E]
- Insert tube with prepared blank and press [B]
- Insert tube with prepared sample and press [M]
- Record as Aluminium ppm (mg/ℓ)

The colorimetric determination of aluminium traces has always been considered as tricky. Its reproducibly reactive form is restricted to newly generated aluminium hydroxide sols within a predetermined narrow pH-range. Their formation is subject to a number of factors inherent to the analyte, while the dye-surfactant reagent Al-3 itself has the properties of a pH-indicator. Ideally, the sample material should have a low solute-content. The critical pH of the reaction at 6.3 requires perfectly formed drops of Al-1, an acid masking agent for iron and of Al-2 as the buffering neutralizer for the development of the colourless $Al(OH)_3$-Sol. The adsorbate on adding Al-3 is royal blue in its pure form, leading to sample colours ranging from olive to blue-green. These always need to be measured against a freshly developed yellow-orange aluminium-free blank. Whereas natural occurrences in water are of little significance, aluminium, mostly as sulfate, is a common additive in the process of water purification. This forms $Al(OH)_3$-flakes usually somewhat above pH 7 which attract a large number of impurities in water, removing them by adsorption and co-precipitation. The analysis of the supernatant clear water then serves to indicate the dissolved rest.

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