Method Number: TM 242

Method Summary

Determination of Fluoride in soils by Discrete Analyser

Scope and Range

This method determines fluoride in aqueous samples by colorimetry, using the discrete analyser
This method is applicable to soils and sludges.

Method range: 1 - 6.00 mg/kg.
Range with Auto Dilution: 1 - 12.00 mg/kg

References

Method 4500-F E. AWWA / APHA 19th Ed., 1995.
Method 340.3, Fluoride, EPA, 1997

Principle

Preparation and Extraction:
20g of dried and crushed sample has 50ml of 0.02M Sodium Hydroxide and is shaken for one hour at 200rpm. The sample is then filtered through a Whatman 542 filter papers or equivalent and put into a Kone cup.

Analysis:
Samples are analysed using a discrete analyser. Alizarin forms a red complex with either lanthanum (III) or cerium (III), which turns blue upon the addition of fluoride due to the formation of a mixed ligand complex containing both fluoride and alizarin. Additional reagents are added to enhance reagent stability and provide optimum pH for the colour forming reaction. This method uses the cerium alizarin complex, which is measured at 620 nm.

Interferences

Aluminium concentrations > 1000 µg/l gives 9.5% reduction in recoveries of fluoride. To ensure all matrix interferences are eliminated, all samples are diluted 100:1 and the neat result compared with the dilution. Any conflicting results are re-scheduled for IC.