



Method Summary

Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate in solids using the “Skalar SANS+ System” Segmented Flow Analyser

Scope

This method is suitable for the determination of total cyanide, free (easily liberatable) cyanide and thiocyanate in solids (mg/kg).

The low level detection limit for soils is 0.5mg/kg and the normal level detection limit is 1 mg/kg. The maximum content determinable is 25mg/kg, without dilution.

Principle

Preparation and Extraction

Samples should be collected in a 1 litre plastic tub and kept at 1-8°C until ready for extraction.

7-9g of as received soil is shaken for 30 minutes in 1M sodium hydroxide, as part of a batch. The batch is then filtered and then 8-10ml is poured into disposable tubes. The batch of tubes is kept in a rack until they are loaded onto the instrument autosampler.

Analysis

An aliquot of the sample is passed through a system where it is split into 3 channels, one for each of the species of cyanide. The sample undergoes reactions such as pH buffering, UV digestion and distillation (depending on the species of cyanide) before a colouring agent is added and the sample is passed through a detector. The intensity of colour passing the detector is plotted against time to create a chart with a peak for every sample. The height of this peak is compared to a calibration graph derived from the heights obtained for a set of standards of known concentration, to give a result for the sample.

Complex cyanide can be calculated as the difference between the total cyanide and the easily liberatable cyanide.

Interferences

Strong oxidising agents such as chlorine may oxidise cyanide to cyanate, producing a low result. Presence of sulphides may cause easily liberatable cyanide to convert to thiocyanate.