



## **Method Summary**

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

#### **Scope and Range**

This method is suitable for the determination of total cyanide, free (easily liberatable) cyanide and thiocyanate in solids (mg/kg) and is accredited to MCERTS and ISO17025. The detection limit for these compounds is 1mg/kg.

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

#### **References**

Environment Agency Blue Book 235 - The determination of cyanide and thiocyanate in soils and similar matrices (2011)

#### **Principle**

Samples should be collected in a 1 litre plastic tub and kept at 1-5°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.

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.