



Method Summary

Determination of Low-Level Total and Free (Easily Liberatable) Cyanides in Waters and Leachates using the "Skalar SANS+ System" Segmented Flow Analyser

Scope and Range

This method is suitable for the determination of total cyanide and free (easily liberatable) cyanide in waters and leachates (mg/l).

This method is accredited to ISO17025 for surface waters, found waters, trade effluents and landfill leachates.

The detection limit for free cyanide is 2.5µg/l, with a maximum content of 500µg/l, without dilution.

The detection limit for total cyanide is 5µg/l, with a maximum content of 500µg/l, without dilution.

References

Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500

Principle

Preparation and Extraction:

Samples should be taken using the preserved bottle ALE245 (sodium hydroxide), without rinsing the bottle. Preserved samples should be stored at 1-5°C until ready for analysis.

8-10ml of each sample is filtered through 0.45µm filters into a disposable tube. Tubes are capped and racked up until they are transferred to the instrument autosampler.

Analysis:

An aliquot of the sample is passed through a system where it is split into 2 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.