



Method Summary

Determination of Phenols in Waters and Leachates by HPLC

Scope

This method is suitable for the determination of phenol, cresols, xylenols, 2-isopropylphenol and 2,3,5-trimethylphenol in waters and leachates in mg/l.

A monohydric phenols result is the total of the phenol, cresols and xylenols results obtained.

A total phenols result is the total of all of the five groups that we analyse.

The detection limit for waters is 0.015mg/l for total monohydric phenols. The maximum level is 5mg/l, without dilution.

Principle

Preparation

Water samples should be preserved in bottle ALE 244 (sulphuric acid), without rinsing the bottle. (ref: ISO EN BS5667)

Leachates are preserved with sulphuric acid after leaching.

Samples should be stored at 1-8°C until ready for analysis.

All samples are organised into batches, then filtered through 0.45µm filters into vials and racked up before being transferred to the instrument autosampler.

Analysis

An aliquot of the sample is injected onto a liquid chromatography column, where it is separated by reverse phase HPLC. The separated compounds are carried past an electrochemical detector with the flow of eluent through the system. The detector senses a change in conductivity as each of the compounds passes it. This change in conductivity is recorded and when plotted over time gives a peak for each compound. Each compound peak is integrated to find the area beneath it and a result is obtained by comparison to a set of standards of known concentration.

Groups of compounds, such as the 3 cresol isomers or the 6 xylene isomers partially co-elute and are therefore only available as group results and not as individual isomers.

Interferences

Hydrocarbons in soil samples may interfere with the chromatography due to the leaching properties of the methanol/deionised water extractant. Samples with high background conductivity may also interfere with the detector. If there is severe interference shown in the chromatogram, the samples should be analysed by alternative methods such as Phenols by GCMS.