Method Summary

Determination of Low-Level Phenols in Waters and Leachates by HPLC

Scope and Range

This method is suitable for the determination of resorcinol, catechol, phenol, cresols, xylenols, naphthol, 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 speciated phenols result is the total of all of the eight groups that we analyse.
The detection limit for all analytes and totals is 0.5µg/l, except the sum of speciated phenols, which is 0.64µg/l.
The maximum level is 10µg/l, without dilution. Any samples significantly over this range may be transferred to the more appropriate normal range method.
This method is currently unaccredited.

References

none

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 1-5°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 xylenol isomers partially co-elute and are therefore only available as group results and not as individual isomers

Interferences

Ethylphenols may co-elute with xylenols. 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.