

**Method Number: TM 062**

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Page 1 of 1

**Method Summary****Determination of Phenols in Soils by HPLC****Scope and Range**

This method is suitable for the determination of: - 2-isopropylphenol, 2,3,5-trimethylphenol, cresols (methylphenols), phenol, and, xylenols (dimethylphenols) which are accredited to ISO17025 and MCERTS. This method is also suitable for the determination of 1-naphthol, resorcinol and catechol and these are unaccredited.

A monohydric phenols result is the total of the phenol, cresols and xylenols results obtained and is accredited to ISO17025 and MCERTS.

A total phenols result is the total of the 2-isopropylphenol, 2,3,5-trimethylphenol, phenol, cresols and xylenols and is accredited to ISO17025 and MCERTS

NG speciated phenols is the sum of all listed compounds and is unaccredited.

The detection limit for soils is 0.035mg/kg for total phenols.

**References**

National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 section 3.9

**Principle**

Preparation:

Samples should be taken in 1 litre plastic tubs and stored at 1-8°C until ready for extraction. 8-12g of 'as received' soil is shaken for 30 minutes in 60:40 methanol: deionised water.

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 extracted 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, a dilution will be applied to these samples. 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.