



Method Summary

Determination of Extractable Petroleum Hydrocarbons from Soil by GC-FID

Scope and Range

Petroleum Hydrocarbons is a complex mixture of aliphatic and aromatic species. This method describes a procedure for the analysis of solvent (n-Hexane/Acetone) Extractable Petroleum Hydrocarbons (EPH), in the carbon number range C10 to C40 by Gas Chromatography (GC) with flame ionisation detection (FID). It is also applicable to Aliphatic (Mineral Oil) fractions, following suitable clean-up procedures of the solvent extract. This method is applicable to contaminated soils and oil based cuttings.

Test	LOD Type	LOD
EPH C10-C40	UCM	<35mg/kg
EPH C10-C40 Mineral Oil	Single Peak	<1mg/kg

Detection limits for this method are based on 10g of soil being used for the extraction, however the detection limits will vary if less sample is available for extraction. Any dilution factor (DF) required is taken into account in the calculation of results.

References

Total Petroleum (1998). Analysis of Petroleum Hydrocarbons in Environmental Media. Total Petroleum Hydrocarbon Criteria Working Group Series. Amherst Scientific Publishers. Vol 1.

Principle

Preparation and Extraction:

Samples should be collected in glass containers and kept at 4±3°C until ready for extraction. 10g of as received sample is put into a 100ml syrup vial and is extracted using shaker extraction. Analytical reagent are added and a portion of the sample extract is sent to the analysis laboratory. If an estimation of the Aliphatic (Mineral Oil) fraction is required, an aliquot of the extract is passed through a silica column which removes the aromatic fraction.

Analysis:

The vials are loaded onto the GC autosampler along with vials containing standards, blanks, and AQC samples. An AQC sample and a blank are extracted with and run with every twenty samples. The standards used for quantitation are a mixture of Diesel and Lube oil and a five-point calibration is run. Any extracts with concentrations higher than the top standard are diluted and re-run until they fall within the calibration range.

Interferences

Interferences co-extracted from the sample will vary considerably from source to source. If analysis of an extracted sample is prevented due to interferences, it may be necessary to dilute the sample before GC analysis in order to reduce the effect of interferences.

Flame ionisation is a non-specific means of detection, therefore any substances that co-elute from the chromatographic column with any of the components of interest will interfere with this determination.