

On-Site Test Kits for Soil



Total Petroleum Hydrocarbons • Total Moisture

TPH In Soil

Relying on laboratory methods to determine hydrocarbon contamination in soil is both time consuming and expensive. Laboratory methods such as EPA Method 8015 are very expensive with turn-around times of one to two weeks. Most samples analyzed by this method limit the results to Gasoline Range Organics (GRO) or Diesel Range Organics (DRO). When limiting the analysis to these two ranges, heavier fractions of hydrocarbons such as fuel oil, motor oil, hydraulic oil, gear oil, transformer oil and greases are "not seen" in the analysis and the soil samples may be incorrectly reported as clean (false negative) if these heavier hydrocarbons are present. Method 418.1 was the only broad spectrum "Total Petroleum Hydrocarbon" field test for soil. Although this test is quite accurate for dry soils, the extraction efficiencies for wet soil can be as low as 10%. This inability to solvate wet soil samples can lead to false negative results. Method 418.1 also uses a chlorinated solvent (Freon) as its extraction solvent. Freon is environmentally unsafe, and its disposal costs are quite high. The analyst now has another choice, an environmentally safe, inexpensive, field portable test, PetroFLAG.

Moisture in Soil

Nationwide, the increasing importance of water conservation cannot be ignored. The currently available methods used for monitoring soil moisture levels to ensure the efficient use of irrigation water in production agriculture fail to provide data that is precise or specific enough to adequately accomplish the task. Single location moisture sensors, moisture tension devices and weather data do not measure water content directly and fail to account for changes in soil types, topography and slope exposure and the effect each has on a soil's water supplying characteristics. A method of monitoring soil moisture that is accurate, practical and portable would contribute greatly to water conservation measures.

PetroFLAG® SYSTEM

An On-site Test for TPH in Soil



USEPA SW-846 Draft Method 9074

The PetroFLAG system is a field portable method for the determination of total petroleum hydrocarbons in soil. It is both safe and easy to use. PetroFLAG does not distinguish between aromatic and aliphatic hydrocarbons, but quantifies all fuels, oils, and greases as total hydrocarbons. Analysis of a 10 gram soil sample is performed using three simple steps: extraction, filtration, and analysis.

The PetroFLAG instrument is easily and quickly calibrated using an extract reagent as the zero and a supplied 1000 ppm hydrocarbon standard. The menu driven display prompts the user through the calibration steps. One set of calibration standards accompanies each box of ten tests. Additional calibration standards can be ordered separately.

The PetroFLAG system is not analyte specific, but measures all hydrocarbons in the sample as the target analyte chosen by the user. Programmed into the instrument are 15 response factors for petroleum hydrocarbons. Five response factors, 11 through 15, are specifically designated for crude oil analysis. By choosing the correct response factor for the target analyte, the calibration curve is adjusted for that specific analyte making for a more precise measurement.

The PetroFLAG system is completely field portable. Everything needed to perform ten soil tests can be conveniently carried to the job site in a briefcase size carrying case. PetroFLAG has been assigned a USEPA SW-846 Draft Method 9074.

PetroFLAG Analyzer

The PetroFLAG meter is a light-weight, rugged, hand-held unit powered by a 9-volt battery. 4,000 tests can be run on a single alkaline battery. The meter is menu driven for ease of use and utilizes an EEPROM memory system. Fifteen response factors are built into the analyzer depending on the analyte of interest. Response factors correlate to fuels ranging from weathered gasoline to heavy crude oil. The results are displayed in ppm on a LCD. The lower limit of detection for most hydrocarbons is 20 ppm, except for weathered gasoline which has a LLD of 1000 ppm. Using the standard 10 gram sample, the analyzer has the ability to quantify all hydrocarbons up to 2000 ppm. Quantifying hydrocarbons above 2000 ppm requires an additional step using PetroFLAG's High Range Reagents;

or the analyst can reduce the sample size and multiply the results by the appropriate factor.

The PetroFlag Analyzer comes complete with timer, electronic balance, one set of calibration standards, ten tests and carrying case.



Analytes	Petroleum Hydrocarbons
Matrix	Soil
Detection Method	Turbidimetric Development
Action Levels	(MDL) 15 - 2000 ppm (analyte dependent)
MDL	15 ppm
MQL	45 ppm
Interferences	Natural Hydrocarbons
Overall Accuracy	10% +/-MDL
Analysis Time	Throughput 1-10 samples in 15 mins.

PetroFLAG Analyzer/Carrying Case

Catalog#
PF-MTR-01

PetroFLAG® REAGENTS

PetroFLAG for Soil Reagents



PetroFLAG reagents come packaged in ten tests per box. Also included in each box is one set of calibration solutions; a "zero" and 1000 ppm standard. The box is designed to fit directly into a space provided in the field carrying case for convenient replenishment of used reagents. All reagents are premeasured and sealed in glass ampoules for quality control assurance. The PetroFLAG reagents consist of patented formulations that are safe and easily disposed of as normal laboratory waste.

Analytes Petroleum Hydrocarbons
Matrix Soil
Detection Method Turbidimetric Development
Action Levels (MDL) 15 -2000 ppm (analyte dependent)
MDL 15 ppm
MQL 45 ppm
Interferences Natural Hydrocarbons
Overall Accuracy 10% +/-MDL
Analysis Time Throughput 1-10 samples in 15 mins.

PetroFLAG Reagents
10 SOIL TESTS
40 SOIL TESTS (One Case)
 (EACH 10 TESTS COMES WITH ONE SET OF CALIBRATION STANDARDS)
12 CALIBRATION REAGENTS
48 CALIBRATION REAGENTS

Catalog #
PF-SRP-10
PF-SRP-CS
PF-CAL-12
PF-CAL-CS

PetroFLAG High Range Reagents

When quantification of hydrocarbons above 2000 ppm is required, PetroFLAG High Range Reagents should be considered. Designed to detect hydrocarbon contamination in the percent range using a one gram or 10 gram sample, the analyst can now extend the range of PetroFLAG to 20% (200,000 ppm). The high range reagents are an extension of the standard PetroFLAG reagents. The new procedure consists of a soil extraction using the High Range Extraction Solvent, then a 10:1 dilution into the standard PetroFLAG solvent, followed by the usual analysis. The linear range for response factor 5 would be 150 ppm to 20,000 ppm using a 10 gram sample and 15,000 ppm to 200,000 ppm for a 1 gram sample. All reagents are chlorine free and can be disposed of in normal laboratory waste.



Analytes Petroleum Hydrocarbons
Matrix Soil
Detection Method Turbidimetric Development
Action Levels 150 ppm to 20,000 ppm
MDL 150 ppm
MQL 450 ppm
Interferences Natural Hydrocarbons
Overall Accuracy 10% +/-MDL
Analysis Time Throughput 1-10 samples in 15 mins.

***PetroFLAG High Range Reagents**
10 Tests
 *For use with regular reagents

Catalog #
PF-HRD-10



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