

Forensic Testing Capabilities

Understanding what type of fuel you're dealing with at your site can be critical in determining your best course of corrective action. Eurofins Lancaster Laboratories Environmental can provide you with the analysis and expert interpretation of your samples with unknown petroleum products.

Fingerprint TPH by GC/FID

We analyze samples using GC/FID Method SW-846 8015B from C8-C40 to identify the extractable petroleum products in soil, water and natural fuels and compare your sample chromatogram against our petroleum standard reference library.

PAHs, Alkylated PAHs and Biomarker Analysis (SW-846 8270 SIM)

Some of the most important target analytes in damage assessment from petroleum products are PAHs and alkylated PAHs.

They can also be used in forensic analyses when presented as histograms that visually represent the relative target analyte concentrations for the purpose of qualitatively fingerprinting a petroleum sample. Crude oils contain primarily Alkylated PAHs and relatively small concentrations of the unsubstituted parent PAHs.

Eurofins Lancaster Laboratories Environmental analyzes biomarkers, including terpanes, steranes and triaromatic steroids and provides the data in a format that can be used by petroleum experts to evaluate possible sources for the contamination.

Alkanes, Isoprenoids and Standard Hydrocarbons

Similar in scope to ASTM simulated distillation methods, our detailed aliphatic hydrocarbon profile, along with isoprenoid information and pristane/phytane (C17/C18) ratios are valuable tools that can assist in the characterization of crude oil either as a reference source or an environmental contaminant.

Fuel Type	Carbon Range
Gasoline* (semivolatile portion only with extractables TPH; semi-quantitative)	C ₈ – C ₁₂
Stoddard Solvent* (also referred to as mineral spirits, VM&P naphtha)	C ₉ – C ₁₂
Kerosene and Jet Fuels*	C ₉ – C ₁₉
#2 Fuel/Diesel*	C ₁₀ – C ₂₈
#6 Fuel* (also referred to as bunker or residual fuel)	C ₁₀ – C ₄₀
Motor Oil*	C ₁₆ – C ₃₆
Hydraulic Oil	C ₂₀ – C ₄₀
Coal Tar Oil*	C ₁₀ – C ₃₆

*Indicates analysis with reference standards.

Eurofins Lancaster Laboratories Environmental provides analysis of water, soil, sediment, product and tissue samples for alkanes, TPH/SHC/DRO and isoprenoids using GC/FID SW-846 8015, including:

- nC₉ to nC₄₀
- Total TPH (C₉-C₄₀)
- Total SHC
- DRO (C₁₀-C₂₈)
- Total Resolved SHC (C₉-C₄₀)
- 2,6,10-Trimethyldodecane (1380)
- 2,6,10-Trimethyltridecane (1470)
- 2,6,10-Trimethylpentadecane (1650)
- Pristane
- Phytane

See chart on reverse for complete list of GC/MS 8270 PAHs, Alkyl PAHs and Biomarkers.

GC/MS 8270 PAHs, Alkyl PAHs and Biomarkers

Alkylated PAHs

C1-Benzanthrene/chrysenes
C2-Benzanthrene/chrysenes
C3-Benzanthrene/chrysenes
C4-Benzanthrene/chrysenes
C1-Decalin
C2-Decalin
C3-Decalin
C4-Decalin
C1-Dibenzothiophene
C2-Dibenzothiophene
C3-Dibenzothiophene
C4-Dibenzothiophene
C1-Fluoranthrenes/pyrenes
C2-Fluoranthrenes/pyrenes
C3-Fluoranthrenes/pyrenes

C4-Fluoranthrenes/pyrenes
C1-Fluorenes
C2-Fluorenes
C3-Fluorenes
C1-Naphthalenes
C2-Naphthalenes
C3-Naphthalenes
C4-Naphthalenes
C1-Naphthobenzothiophenes
C2-Naphthobenzothiophenes
C3-Naphthobenzothiophenes
C1-Phenanthrenes/anthracenes
C2-Phenanthrenes/anthracenes
C3-Phenanthrenes/anthracenes
C4-Phenanthrenes/anthracenes

PAHs

Acenaphthene
Acenaphthylene
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(e)pyrene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Biphenyl
Chrysene
cis/trans-Decalin
Dibenz(a,h)anthracene
Dibenzofuran
Dibenzothiophene
Fluoranthene
Fluorene
Indeno(1,2,3-cd)pyrene
Naphthalene
1-Methylnaphthalene
2-Methylnaphthalene
Naphthobenzothiophene
Perylene
Phenanthrene
Pyrene
Retene

Biomarkers*

(T4) C23 Tricyclic Terpane
(T5) C24 Tricyclic Terpane
(T6) C25 Tricyclic Terpane
(T6a) C24 Tetracyclic Terpane
(T6b) C26 Tricyclic Terpane-22S
(T6c) C26 Tricyclic Terpane-22R
(T7) C28 Tricyclic Terpane-22S
(T8) C28 Tricyclic Terpane-22R
(T9) C29 Tricyclic Terpane-22S
(T10) C29 Tricyclic Terpane-22R
(T11) 18 α (H)-22,29,30-Trisnorhopane-TS
(T12) 17 α (H)-22,29,30-Trisnorhopane-TM
(T15) 30-Norhopane
(T16) 18 α (H)-30-Norneohopane-C29TS
(X) 17 α (H)-Diahopane
(T17) 30-Normoretane
(T18) Oleanane
(T19) Hopane
(T20) Moretane
(T21) 30-Homohopane-22S

(T22a) Gammacerane
(T22) 30-Homohopane-22R
(T26) 30,31-Bishomohopane-22S
(T27) 30,31-Bishomohopane-22R
(T30) 30,31-Trishomohopane-22S
(T31) 30,31-Trishomohopane-22R
(T32) Tetrakishomohopane-22S
(T33) Tetrakishomohopane-22R
(T34) Pentakishomohopane-22S
(T35) Pentakishomohopane-22R
(S4) 13 β (H), 17 α (H)-20S-Diacholestane
(S5) 13 β (H), 17 α (H)-20R-Diacholestane
(S12) 14 β (H), 17 α (H)-20S-Cholestane
(S17) 14 α (H), 17 α (H)-20R-Cholestane
(S18) 13 β (H), 17 α (H)-20R-Ethylidiacholestane
(S19) 13 α (H), 17 β (H)-20S-Ethylidiacholestane
(S20) 14 α (H), 17 α (H)-20S-Methylcholestane
(S24) 14 α (H), 17 α (H)-20R-Methylcholestane
(S25) 14 α (H), 17 α (H)-20S-Ethylcholestane
(S28) 14 α (H), 17 α (H)-20R-Ethylcholestane

(S14) 14 β (H), 17 β (H)-20R-Cholestane
(S15) 14 β (H), 17 β (H)-20S-Cholestane
(S22) 14 β (H), 17 β (H)-20R-Methylcholestane
(S23) 14 β (H), 17 β (H)-20S-Methylcholestane
(S28) 14 α (H), 17 α (H)-20R-Ethylcholestane
(S27) 14 β (H), 17 β (H)-20S-Ethylcholestane
(A4) C26,20R--+C27,20S-triaromatic steroid
(A6) C28,20S-triaromatic steroid
(A5) C27,20R-triaromatic steroid
(A7) C28,20R-triaromatic steroid
(A1) C20-triaromatic steroid
(A2) C21-triaromatic steroid
(A3) C26,20S-triaromatic steroid

KEY

A - Triaromatic Steroids
C - Carbon
S - Steranes
T - Terpanes
* - Additional Biomarkers Available

Standard Services:

Volatiles
Semivolatiles
Metals
Pesticides/PCBs/Herbicides
Petroleum-Related Analysis
Waste Characterization
Water Quality

Drinking Water
Vapor & Air Analysis
Sediment & Tissue Testing
Method Development
Shale Oil & Gas Analysis

Specialty Services:

Dioxins/Furans
PCB Congeners
Hydrazines/NDMA
Explosives
Perchlorate
Alkyl PAHs, Alkanes, Biomarkers
PFC (PFOA)

Organic Acids
Aldehydes
1,4-Dioxane (low level)
Low-Level Mercury
PMI
Method 25D

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