

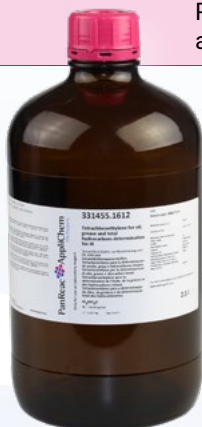


Tetrachloroethylene for the analysis of oils, greases, and hydrocarbons by IR

At PanReac AppliChem we offer you **the highest quality tetrachloroethylene** for the extraction of **oils, greases, and hydrocarbons from environmental samples** (water and soil) for subsequent IR (**Infrared Spectroscopy**) analysis in **concentration ranges from 0.01-100 mg/L**.

Specifications of Tetrachloroethylene (331455)

Minimum assay (G.C.)	99.8%
Density at 20/4	1.620 – 1.624
APHA colour	10
Acidity	0.0005 meq/g
Non-volatile matter	0.001%
Chlorine (Cl ₂)	Passes test
Chloride (Cl)	0.0001%
Hydrocarbons (Absorbance of the maximum peak at 2930 cm ⁻¹ ; range 3200-2700 cm ⁻¹ ; related to Hexadecane: Isooctane: Benzene)	5 ppm
Water (H ₂ O)	0.005%
Product packaged under nitrogen atmosphere	



The main advantages are:

- **Exceptional baseline** in the IR, in the working range from 3200 cm⁻¹ to 2700 cm⁻¹ (see figure 1).
- **Peak at 2930 cm⁻¹ lower than 5 ppm of hydrocarbons** (see figure 1).
- **Appropriate bottle size (2.5 L)** to minimize weight impact (2.5 L container size ~ 5.4 kg).
- **Ozone friendly solvent.**

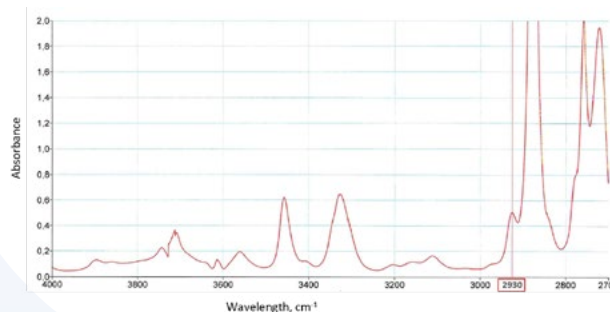


Figure 1. IR spectrum of Tetrachloroethylene (code 331455).

Product code	Product name	CAS number	Pack size	Packaging material
331455.1612	Tetrachloroethylene for oil, grease and total hydrocarbons determination for IR	127-18-4	2.5 L	Glass



Other reagents used in this analysis:

Product code	Product name	CAS number	Pack size	Packaging material
131020.1211	Hydrochloric Acid 37% (max. 0.0000005% Hg) (Reag. USP) for analysis, ACS, ISO	7647-01-0	1 L	Plastic
131020.1611			1 L	Glass
131020.1212			2.5 L	Plastic
131020.1612			2.5 L	Glass
131020.1214			5 L	Plastic
131716.1211	Sodium Sulfate anhydrous (Reag. USP) for analysis, ACS, ISO	7757-82-6	1 L	Plastic
131716.1214			2.5 L	Plastic

Oils, greases, and hydrocarbons

What are they?

Oils and greases (OG) are a variety of substances that include vegetable oils (such as olive or sunflower oil), animal (such as fish oil) or mineral oils (derived from petroleum such as fuels, lubricants or motor oils) and animal greases (such as butter or lard). **Total petroleum hydrocarbons (TPH)** is a term used to describe a broad family of several hundred chemical compounds originally derived from crude oil (such as hexane, benzene or toluene).

All of them, mainly of **anthropogenic origin**, should be contained and/or recycled to prevent them from reaching **the environment**. Their accumulation in **water or soil** can have **negative effects** such as water **pollution** (affecting aquatic life), damage to ecosystems (affecting flora and fauna), soil contamination (minimizing its capacity to support plants), **toxicity** (due to the accumulation of toxic compounds in the food chain), impact on human health (if drinking water sources are contaminated or contaminated food is ingested) and **organoleptic effects**.

Standards and methods of analysis

There are **regulations** governing the permitted levels of oils and fats in water, which vary depending on the country, but all agree that the presence of these compounds should be minimal so as **not to affect water quality or the environment**.

There are different **analytical methods** for the determination of OG, but **infrared spectroscopy** is widely used because it is **fast, sensitive and economical**. The method is based on the extraction of the OG using a solvent and subsequent measurement of the absorbance of the C-H bond, of the aliphatic CH₂ groups at 2930 cm⁻¹, of the CH₃ groups at 2960 cm⁻¹ and of the aromatic C-H bonds at 3010-3100 cm⁻¹.

The **solvents** used in OG extraction must exhibit **adequate transmission** in the region of interest, as well as being unreactive and soluble with the compounds of interest. Many of these solvents were banned due to the damage they have caused to the ozone layer, such as 1,2-trichloro-1,2,2-trifluoro-1,2,2-trifluoroethane (Freon 113) and tetrachloromethane (CCl₄).

Debido a esta situación, muchos laboratorios han validado métodos **IR** para análisis de OG en diferentes tipos de aguas y suelos, utilizando el **tetracloroetileno** (C₂Cl₄) como disolvente de extracción. Estos métodos están basados en los métodos estándar SM5520 C F, ASTM D 7066, ASTM D8193, ASTM D 3921-96, EPA-418.1, EPA 413.2, EPA 1664 o NMX-AA-117-SCFI.

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