



# InterEnerStat

Harmonisation of Definitions  
of Energy Products and Flows

Products: **Oil**



# Oil

A group of liquid hydrocarbons of fossil origins comprising Crude (that is, unprocessed) oil and fully or partly processed products from the processing of Crude oil. Functionally similar liquid hydrocarbons and organic chemicals from vegetal or animal origins are identified separately within oil under liquid biofuels.



# Crude Oil

Crude oil is a mineral oil of fossil origin extracted from underground reservoirs and which comprises a mixture of hydrocarbons and associated impurities, such as sulphur. It exists in the liquid phase under normal surface temperature and pressure and usually flows to the surface under the pressure of the reservoir. The physical characteristics (density, viscosity, etc.) are highly variable.

In its marketable state crude oil may include field or lease condensate recovered from associated and non-associated gas where it is commingled with the commercial crude oil stream.

Crude oil may also be extracted from reservoirs containing heavy oils or tar sands which need heating or emulsifying in situ before they can be brought to the surface.



# Natural Gas Liquids (NGL)

NGL are liquid or liquefied hydrocarbons recovered from wet (associated or non-associated) natural gas in separation facilities or gas processing plants. See entry for natural gas for an explanation of some of the terms used here.

Natural gas liquids comprise ethane, propane, butane (normal and iso-), (iso) pentane and pentanes plus (sometimes referred to as natural gasoline or plant condensate).

NGL may be distilled with crude oil in refineries, blended with refined petroleum products or used directly depending on their characteristics.

**Do not confuse NGL with Liquefied Natural Gas (LNG).**



# Refinery Feedstock

A product from crude oil refining or the processing of hydrocarbons in the petrochemical industry which is destined for further processing in the refinery excluding blending.



# Additives/Oxygenates

Additives and oxygenates are non-hydrocarbon compounds added to or blended with a product to modify fuel properties (octane, cetane, cold properties, etc.):

- oxygenates, such as alcohols (methanol, ethanol), ethers (such as MTBE (methyl tertiary butyl ether), ETBE (ethyl tertiary butyl ether), TAME (tertiary amyl methyl ether);
- esters (e.g. rapeseed or dimethylester, etc.);
- chemical compounds (such as TML, TEL and detergents).



# Liquid Biofuels

Liquid biofuels are derived from organic matter and used as complete or partial substitutes for petroleum products at the point of use.

The most common liquid biofuels are biogasoline and biodiesel.



# Bituminous Sands

**Omit? See definition above for Crude Oil.**



## Other Hydrocarbons

This group comprises crude oil extracted from reservoirs with in situ heating or emulsifying (for example, Orimulsion) and oils extracted from the in situ processing of coal reserves. It also includes liquid fuels (usually gasoline) produced from the conversion of natural gas.



# Refinery Gas

Refinery gas includes a mixture of non-condensable gases mainly consisting of hydrogen, methane, ethane and olefins obtained during distillation of crude oil or treatment of oil products (e.g. cracking) in refineries or from nearby petrochemical plants. It is used mainly as a fuel within the refinery.



# Ethane

A naturally gaseous straight-chain hydrocarbon ( $C_2H_6$ ) extracted from wet natural gas at gas processing plants or during the refining of crude oil. Ethane is a valuable feedstock for petrochemical manufacture.



# Liquefied Petroleum Gas (LPG)

LPG refers to liquefied propane and butane or mixtures of both. Commercial grades are usually mixtures of the gases with small amounts of propylene, butylene, isobutene and isobutylene stored under pressure in metal containers. The exact mixtures vary according to purpose and season of the year. The gases may be extracted from wet natural gas at gas processing plants or at plants degasifying imported Liquefied Natural Gas. They are also obtained during the refining of crude oil.



# Naphthas

Light or medium oils distilling between 30 °C and 210 °C, for which there is no official definition, but which do not meet the standards laid down for motor spirit. The properties depend upon consumer specification.

Different naphthas are distinguished by their density and an analysis based on the content of paraffins, isoparaffins, olefins, naphthenes and aromatics.

The primary uses for naphthas are as feedstock for high octane gasolines and the manufacture of olefins in the petrochemical industry.



# Motor Gasoline

A mixture of light hydrocarbon products distilling between 35 °C and 215 °C and additives which improve performance in spark ignition internal combustion engines. Aircraft engines are excluded.



# Biogasoline

A biomass derived liquid which is blended with fossil fuel derived gasoline. The blending may take place in refineries or at or near the point of sale. Common examples are:

- bioethanol
- biomethanol
- bio ETBE (ethyl-tertio-butyl-ether)
- bio MTBE (methyl-tertio-butyl-ether)



# Aviation Gasoline

Motor spirit prepared especially for aviation piston engines, with an octane number varying from 80 to 145 RON and a freezing point of  $-60\text{ }^{\circ}\text{C}$ .



## Gasoline Type Jet Fuel

This includes all light hydrocarbon oils for use in aviation turbine power units, distilling between 100 °C and 250 °C. They are obtained by blending kerosenes and gasoline or naphtha in such a way that the aromatic content does not exceed 25% in volume, and the vapour pressure is between 13.7 kPa and 20.6 kPa.



# Kerosene Type Jet Fuel

This is a distillate used for aviation turbine power units. It distills between 150 °C and 300 °C and has a flash point above 38 °C. In these respects it is identical to kerosene for other purposes. In addition, it has particular specifications (such as freezing point) which are established by the International Air Transport Association (IATA).

This category includes kerosene blending components.



## Other Kerosene

Medium oil distilling between 150 °C and 300 °C and a flash point above 38 °C. It is used as an illuminant and as a fuel in heating appliances and certain types of spark-ignition engines, such as those used for agricultural tractors and stationary engines.

Other names for this product are burning oil, vaporizing oil, power kerosene and illuminating oil.



## Gas/Diesel Oil (Distillate Fuel Oil)

Gas/diesel oil is primarily a medium distillate oil which distills between 180 °C and 380 °C. Several grades are available depending on uses: transport diesel, heating and feedstock use.



# Transport Diesel

**Gas/Diesel oil (usually of low sulphur content) for use in compression ignition (Diesel) engines fitted in land vehicles.**



# Biodiesel

Oil derived from biological sources and modified chemically so that it can be used as fuel in diesel engines either directly or after blending with petroleum diesel. Biodiesel is a linear alkyl ester made by transesterification of vegetable oils or animal fats with methanol. The transesterification distinguishes biodiesel from straight vegetable and waste oils. Straight oils can be used as fuel only if the engine is modified; for this reason, it is not recommended to report them as biodiesel. Biodiesel has a flash point of around 150°C and a density of 0.86 kg/litre. Biological sources of biodiesel include, but are not limited to, vegetable oils made from canola (rapeseed), soybeans, corn, oil palm, peanut, or sunflower.



## Heating and Other Gas Oil

Oils meeting the specifications for Gas/Diesel Oil (see above) which are used as a light heating oil for industrial and commercial uses or in marine and rail locomotive diesel engines.

In addition this category includes other gas oil including heavy gas oils which distil between 380 °C and 540 °C and which are used as petrochemical feedstocks.



# Fuel Oil

Comprises residual or heavy fuel oil which is a blended product based on the residues from various refinery, distillation and cracking processes.

Fuel oils have a kinematic viscosity above 27.5 cSt at 38 °C. Their flash point is always above 50 °C and their specific gravity is above 0.90.

Heavy fuel oil is used in medium to large industrial plants, marine applications and power stations in combustion equipment such as boilers, furnaces and diesel engines.

Heavy fuel oil is a general term and other names commonly used to describe this range of products include: residual fuel oil, bunker fuel, bunker C, fuel oil No. 6, industrial fuel oil, marine fuel oil and black oil.



# White Spirit and SBP

White Spirit and SBP (Special Boiling Point Industrial Spirits) are defined as refined distillate intermediates with a distillation in the naphtha/kerosene range. They are mainly used for non-fuel purposes and sub-divided as:

- **Industrial Spirit (SBP):** Light oils distilling between 30 °C and 200 °C. There are 7 or 8 grades of industrial spirit, depending on the position of the cut in the distillation range. The grades are defined according to the temperature difference between the 5% volume and 90% volume distillation points (which is not more than 60 °C).
- **White Spirit:** Industrial spirit with a flash point above 30 °C. The distillation range of white spirit is 135 °C to 200 °C.



# Lubricants

Oils produced from the vacuum distillation of residues from atmospheric distillation. They are subjected to further processing depending on the lubricant base stock required. Lubricants are mainly used to reduce friction on sliding surfaces and in metal cutting operations. In both cases they also carry heat away from surfaces in contact. Engine oils often contain additives with the lubricant base stock which help carry particles in suspension.



# Paraffin Waxes

These are residues extracted when dewaxing lubricant oils. They have a crystalline structure which is more-or-less fine according to the grade and are colourless, odourless and translucent, with a melting point above 45 °C.



# Petroleum Coke

Petroleum coke is a black solid obtained mainly by cracking and carbonising heavy hydrocarbon oils and tars and pitches. It consists mainly of carbon (90 to 95%) and has a low ash content.

The two most important categories are "green coke" and "calcined coke".

Green coke (Raw coke) is the primary solid carbonization product from high boiling hydrocarbon fractions obtained at temperatures below 630 °C. It contains 4 -15 per cent by weight of matter that can be released as volatiles during subsequent heat treatment at temperatures up to approximately 1330 °C.

Calcined coke is a petroleum coke or coal-derived pitch coke obtained by heat treatment of green coke to about 1330 °C. It will normally have a hydrogen content of less than 0.1 wt.%.



# Bitumen

Bitumen is a solid, semi-solid or viscous hydrocarbon with a colloidal structure, being brown to black in colour, obtained as a residue in the distillation of crude oil, by vacuum distillation of oil residues from atmospheric distillation. Bitumen is also known as asphalt, a name used in some countries for the mixture of bitumen and stone aggregate used for road pavements. In addition to its major use for road pavements, bitumen is also used as an adhesive and waterproofing agent for roof coverings.



## Other Products

**Products of petroleum origin (including partly refined products) not specified above.**

**They will include basic organic chemicals destined for use within the refinery or for sale to or processing in the chemical industry.**