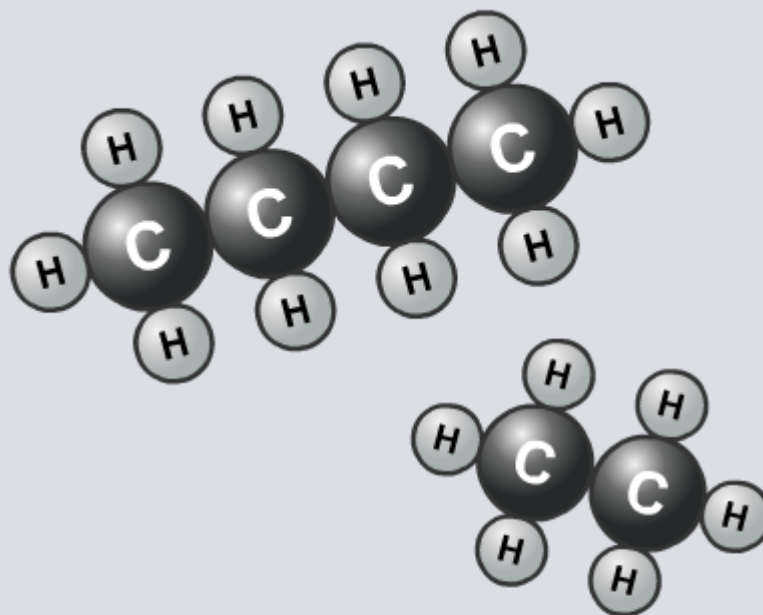
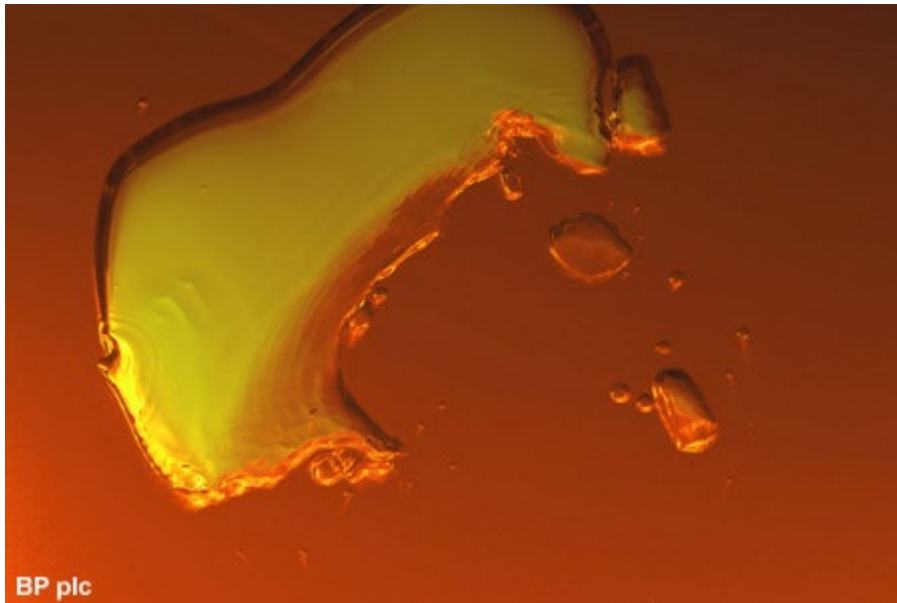


Crude Oil



What is crude oil?

Crude oil is a fossil fuel and one of the most important substances in the world. It is a mixture of hundreds of different compounds.



Crude oil is used to make fuels for transportation, heating and generating electricity.

It is also used to make plastics and hundreds of different types of chemicals.

Every day, the world uses over 70 million barrels of oil. If you filled bath tubs with this amount of oil and put them end-to-end, they would stretch around the Earth 7.5 times!



Crude oil: a brief history

The modern oil industry began in the mid-19th century when kerosene was distilled from crude oil and used as a cheap and clean-burning fuel for lamps.

Gasoline was a byproduct in kerosene production, and was initially used as a solvent.

It wasn't until the development of the internal combustion engine and gasoline-powered cars in the late 19th century that gasoline became highly valuable.

This led to a great increase in the demand for crude oil, which has continued to this day.



How was crude oil made?

Crude oil is thought to have been made from the remains of marine plants and animals that died millions of years ago.

These remains sank to the bottom of the sea, where they were buried in layers of sand and mud, preventing them from rotting. These layers gradually became sedimentary rock.

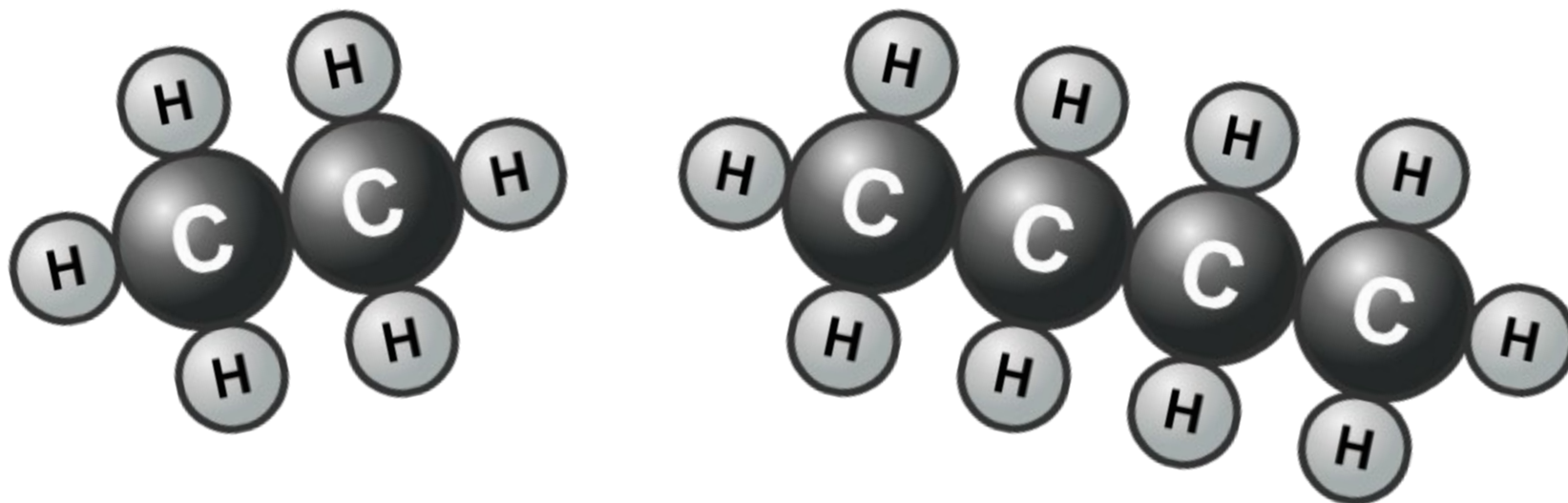


Over millions of years the layers of rock built up, increasing the heat and pressure. This caused the remains to be broken down into the molecules that form crude oil and natural gas.



Hydrocarbons in crude oil

Many compounds in crude oil only contain the elements carbon and hydrogen. They are called **hydrocarbons**.



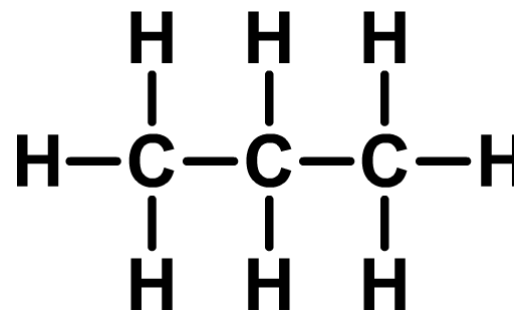
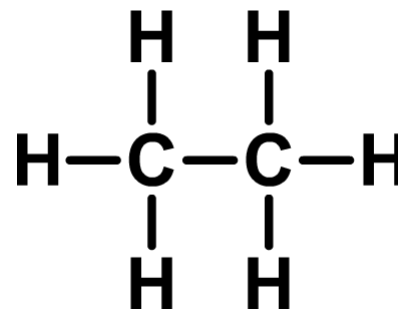
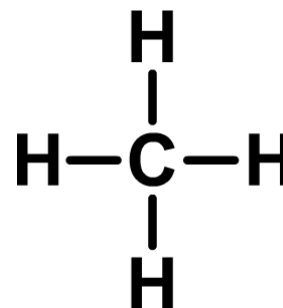
Most hydrocarbons in crude oil are compounds called **alkanes**. Alkanes contain a single chain of carbon atoms with hydrogen atoms bonded along the side.



What are alkanes?

Alkanes are a family of hydrocarbon compounds with the general formula C_nH_{2n+2} .

- The simplest alkane is **methane**. It has the formula CH_4 .
- The second simplest alkane is **ethane**. It has the formula C_2H_6 .
- The third simplest alkane is **propane**. It has the formula C_3H_8 .



Where in the world is crude oil?



Crude oil is often found trapped in rocks of the seabed.



Oil rigs or drilling platforms are used to drill through the seabed to obtain the oil.

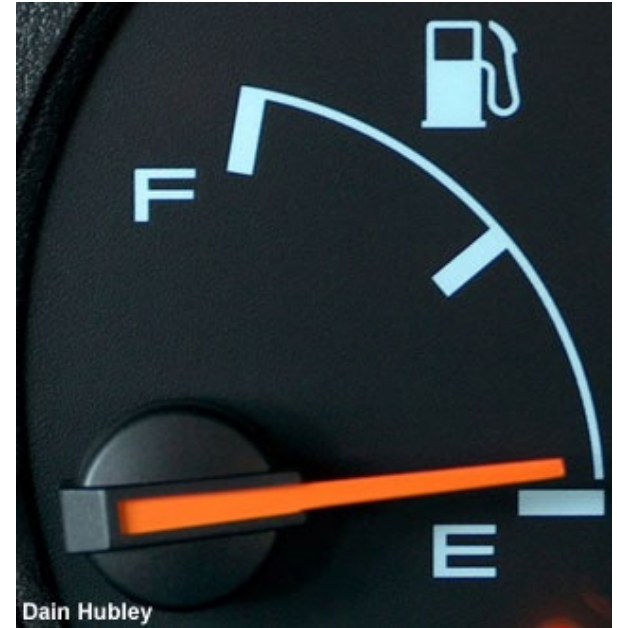
Once the oil has been removed from the seabed, it is pumped in long pipelines to an oil tanker terminal or an oil refinery on land.



When will crude oil run out?

It is difficult to say when crude oil will run out because no one knows exactly how much oil there is left in the world.

In 2004, there were over 1 million billion (10^{18}) barrels of crude oil in **proven** oil reserves.



If the 2004 rate of use is maintained, this will last about 44 years, but the amount of oil used in the world increases each year.

Some scientists believe there is a lot more oil still to find, but others think that most oil has already been discovered.



Crude oil is extremely useful but it has several drawbacks:

- Burning the products of crude oil as fuel produces gases and particles that contribute to global warming and air pollution.
- Removing oil from the ground, as well as oil spillages and slicks, can be very damaging to wildlife and the environment.
- The high value of oil means it is sometimes the cause of military conflict, especially because a large amount of oil comes from countries that are politically unstable.

