Alkanes
Alkanes

Crude oil

What are alkanes?

Summary activities
**What is crude oil?**

Crude oil is a fossil fuel that comes directly from the Earth’s crust and is one of the most important substances in the world. Crude oil is a complex **mixture** of hundreds of **compounds**.

The compounds in a mixture are not chemically combined together, meaning they can be separated by methods such as **fractional distillation**.

Crude oil is used to make fuels for transport, heating and generating electricity. It is also used to make plastics and hundreds of **petrochemicals**.

![Image of crude oil barrels](image-url)
Crude oil is biological in origin. Millions of years ago, plankton, algae and other very small animals died and collected in the sediment on the seafloor.

As more layers of sediment formed above them, the remains of these animals were compacted.

The heat and pressure turns the sediment into rocks, known as sedimentary rocks.

The heat and pressure from the sediment causes the animal remains to turn into crude oil.
Where is crude oil?

Crude oil is often found trapped in sedimentary rocks under the sea bed.

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

Once the oil has been released from the sea bed, it is pumped in long pipelines to an oil tanker terminal or an oil refinery on land.
Production and consumption
Alkanes

- Crude oil
- What are alkanes?
- Summary activities
Hydrocarbons

Many of the 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 are made up of a single chain of carbon atoms with hydrogen atoms bonded to them.

**Methane**, **ethane**, **propane** and **butane** are all alkanes.
Hydrocarbons or not hydrocarbons?
Alkanes are a family of hydrocarbon compounds with the general formula $C_nH_{2n+2}$. This means that an alkane will have two hydrogen atoms for every carbon atom, plus two more.

- 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 $C_3H_8$. 
Saturated hydrocarbons

Hydrocarbons like alkanes, which contain chains of carbon atoms joined by single carbon–carbon covalent bonds, are called saturated hydrocarbons.

Some hydrocarbons contain carbon–carbon double or even triple bonds. These are called unsaturated hydrocarbons.

A saturated hydrocarbon. An unsaturated hydrocarbon.
Saturated or unsaturated?
Alkanes

- Crude oil
- What are alkanes?
- Summary activities
Multiple-choice quiz