# CAIE Chemistry IGCSE

## 11.3 Fuels

### Flashcards

# Name three fossil fuels

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Coal

Natural gas

Petroleum (crude oil)

# What is the main constituent of natural gas?

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Methane, $CH_4$

# What is a hydrocarbon?

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Hydrocarbons are compounds that only contain hydrogen and carbon.

# What is petroleum?

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Petroleum (also known as crude oil) is a mixture of hydrocarbons.

# Name and describe the process which can be used to separate petroleum

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Fractional distillation:

1. The petroleum is vaporised and released into a fractionating column.
2. The column has a temperature gradient and is hotter at the bottom.
3. The hydrocarbon vapours rise up the column and condense at different fractions due to their different boiling points. Hydrocarbons with a lower boiling point will condense further up the column.

Crude oil can be separated into fractions by fractional distillation. What are the differences between hydrocarbons at each fraction?

Crude oil can be separated into fractions by fractional distillation. What are the differences between hydrocarbons at each fraction?

- Boiling points
- Volatility
- Viscosity
- The number of hydrogen and carbon atoms in the molecules (chain length)

Where in the fractionating column do hydrocarbons with the lowest viscosity condense?

Where in the fractionating column do hydrocarbons with the highest viscosity condense?

Viscosity is how thick and sticky a substance is.

The hydrocarbons with the lowest viscosity (like refinery gases) are collected at the top of the fractionating column.

What are the properties of hydrocarbons that are tapped from the top of the fractionating column?

What are the properties of hydrocarbons that are tapped from the top of the fractionating column?

- Low boiling point
- Highly volatile
- Low viscosity
- Shorter carbon chains (small molecules).

# Why is petroleum separated?

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Unseparated petroleum isn't very useful but the separated products are very useful.

Refinery gas is a fraction of petroleum. What are its common uses?

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Gas used for heating and cooking.

# Which fractions of petroleum are used as fuel in cars?

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Petrol (gasoline)

Diesel

Naphtha is a fraction of petroleum. What is a common use of naphtha?

Naphtha is a fraction of petroleum. What is a common use of naphtha?

Making chemicals (acts as a chemical feedstock)

Kerosene is a fraction of petroleum. What is a common use of kerosene?

Kerosene is a fraction of petroleum. What is a common use of kerosene?

Aircraft fuel

Diesel oil is fraction of petroleum. What is it commonly used for?

Diesel oil is a fraction petroleum. What is it commonly used for?

Fuel for diesel engines

Fuel oil is a fraction of petroleum. What is it commonly used for?

Fuel oil is a fraction of petroleum. What is it commonly used for?

Fuel for large ships, in some power stations and home heating systems

# What are products from the lubricating fraction of petroleum used for?

What are products from the lubricating fraction of petroleum used for?

Lubricants, waxes and polishes.

# Which fraction of petroleum is used for road surfacing and roofs?

Which fraction of petroleum is used for road surfacing and roofs?

Bitumen