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Methanol

100

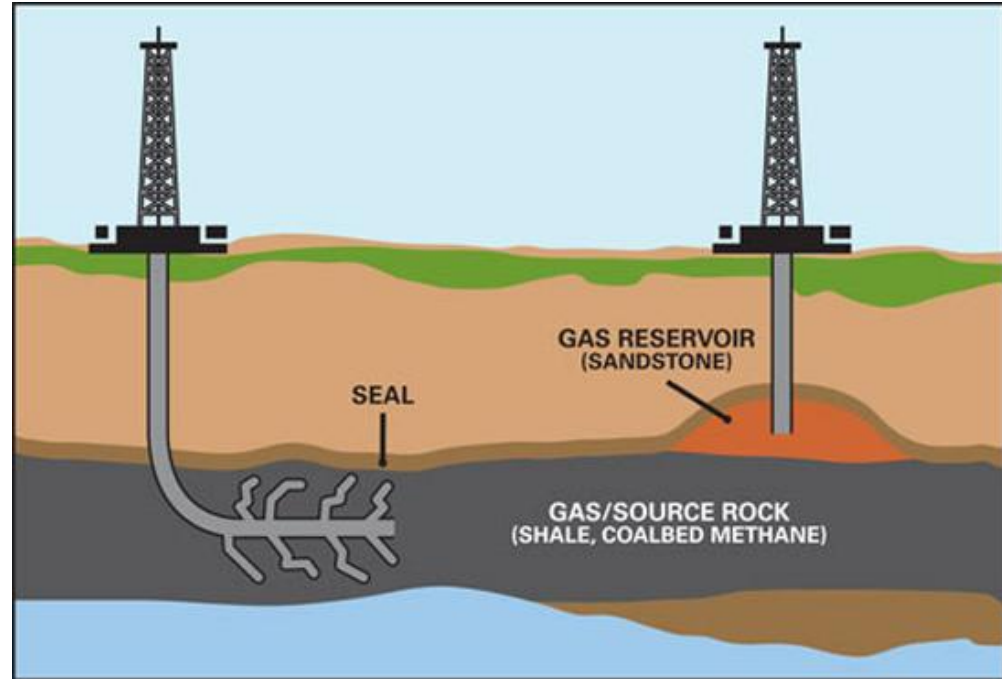


What is natural gas?

Natural gas is one of the most useful and safest forms of energy in everyday life. Natural gas consists largely of methane and other hydrocarbons. Natural gas is easily combustible and burns cleaner than other energy sources making it one of the most used forms of energy.

Where does natural gas come from?

Natural gas is formed from the remains of animals and plants which, after millions of years of being heated and compressed, have been turned into natural gases. It is then collected and trapped in reservoirs beneath earth's surface ready to be transported away.



Why is methanol important and what are its uses?

Methanol is important because it is the simplest form of alcohol and is a polar liquid at room temperature meaning polar solvents, eg. salts, will dissolve in it.

Methanol can be used for:

- An alternative fuel for vehicles.

- A denaturant of ethanol, creating methylated spirits, most commonly used as a fuel for alcohol burners.

- Most importantly it is used to create formaldehyde, which is then used in the creation of explosives, plastics, paints etc.

How is natural gas turned into syngas?

One of the more common ways syngas is produced is by a process called partial oxidisation. In partial oxidisation, the following reaction occurs:

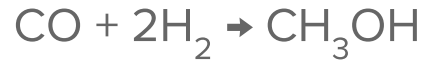


Usually all or some of the CO then flows to a water shift reactor, where the CO reacts with steam, forming a mixture of CO and H₂:



How is methanol produced from syngas?

At high temperatures and pressure syngas can be converted (with the use of a catalyst) into methanol. The reaction takes place in a fixed bed reactor that uses an aluminium pellet coated with zinc and copper oxides as the catalyst. The following reaction takes place:



What is syngas used for?

Syngas can be used as a fuel in internal combustion engines, and can be used to produce organic molecules such as synthetic natural gas. As well as in the production of methanol, syngas is used in the production of ammonia.

References

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