

Year 11 – Paper 2 - Chemistry Knowledge Organiser –Organic Chemistry

Crude oil

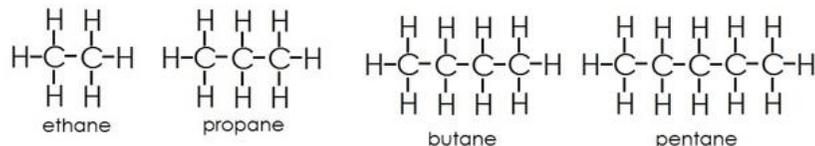
Crude oil is the name given to the oil that is pumped up from under the ground. It's a black syrupy liquid that is the fossilized remains of microorganisms from millions of years ago.

Crude oil can be split into many different parts that can be used to make millions of different things.



Hydrocarbons

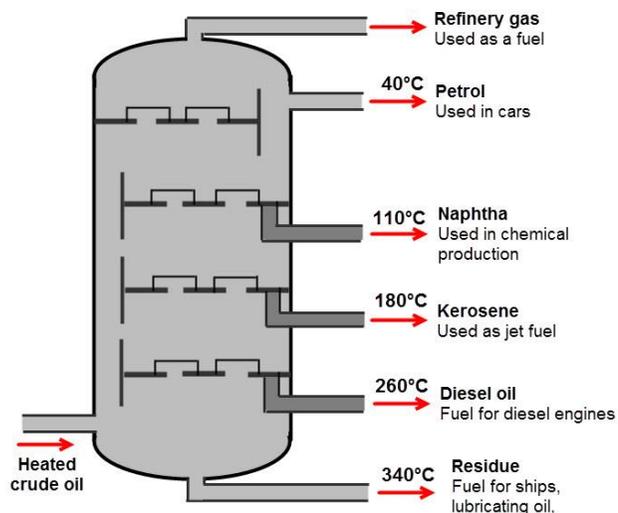
The things that make up Crude oil are Hydrocarbons. These molecules are called hydrocarbons because they are made of Hydrogen and Carbon. They come in a variety of different sizes as shown below.



Fractional distillation

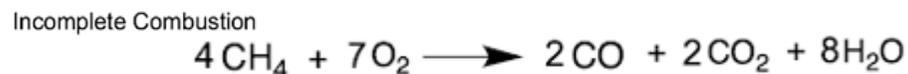
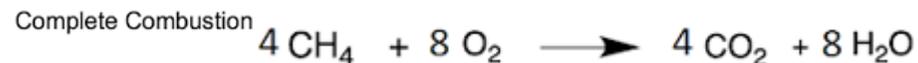
How we separate these different hydrocarbons out of crude oil so that we have just one rather than a mix of them all is by a process called Fractional Distillation. This is performed in a "Distillation Tower" like the one shown to the right.

The oil is heated in the absence of Oxygen and the injected into the tower, the fractions then separate based on their boiling points.

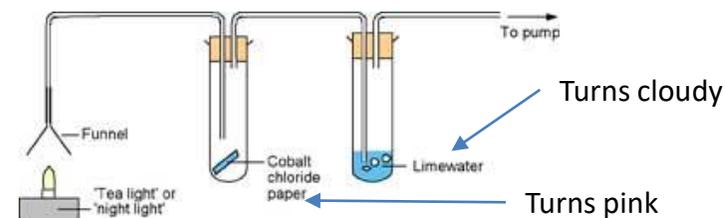


Combustion

When these fuels are burnt in oxygen then produce carbon dioxide and water as you can see from the equation below.



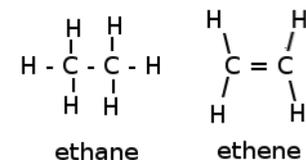
We can test for each of these products using equipment like the set up below.



Alkanes and Alkenes

Alkanes and Alkenes are the two names of the two different forms of Hydrocarbons that are found in Crude oil.

They take on 2 different structures as show in the example below.



As you can see the key difference is the Double Bond between the carbon atoms, this means that Alkanes have as much Hydrogen as they can have bonded to them (saturated), whereas, Alkenes do not have the maximum amount of hydrogen bonded to them (unsaturated).

An easy way to remember which one is which is to think Alkenes = Double E = Double bond.

You can test to see if you have an Alkane or an Alkene by adding in to Bromine water. Alkanes stay Oroange but Alkenes go clear.