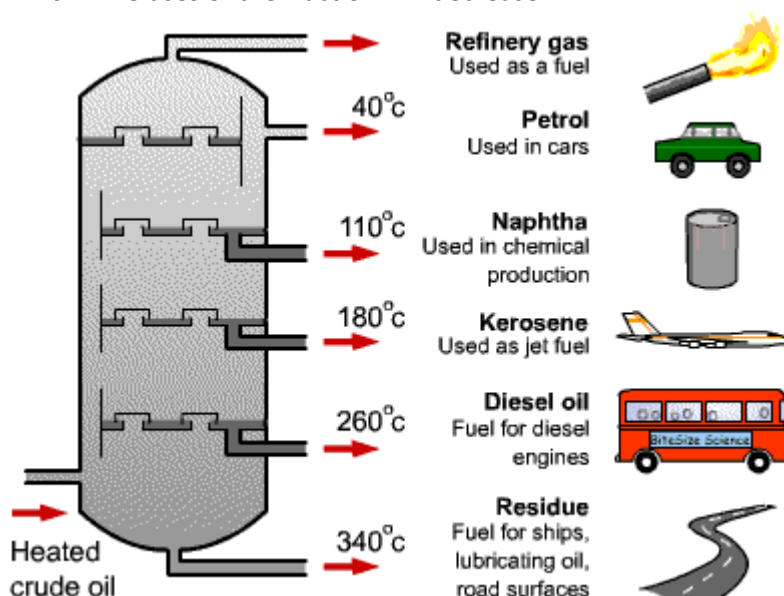


Fractional distillation of crude oil

- Fractional distillation is a process used to separate a mixture into different parts by heating to vapourise and then allowing to condense, so that each part collects at a different point.
- A fractionating column is used to separate the crude oil mixture. The crude oil enters at the bottom of the column, is heated and vapourises. It then cools and condenses collecting at different boiling points, depending on the size of the hydrocarbon. As you go down the fractionating column, the following changes will take place:
 - The size of the hydrocarbon increases.
 - The chain length increases.
 - The boiling point increases.
 - The viscosity increases.
 - The volatility reduces.
 - The flammability reduces.
 - The uses of the fraction will decrease.



- Each fraction of crude oil has a different use (see above). The lighter fractions have more uses.
- This process helps to convert long chain alkanes into shorter chain alkanes.

Cracking of alkanes

- Used in the decomposition of a long chain alkane into a short chain alkane plus an alkene.
- The unsaturated alkene has multiple uses e.g. to make polymers such as plastics by addition polymerisation.
- Two types: Thermal and catalytic cracking.
- Heat (400 to 900°C) and/or a catalyst (Aluminium oxide/zeolite/porcelain) needed.
- Endothermic reaction.
- Easier and cheaper to do with less complex apparatus compared to fractional distillation. The production of an alkene is also an advantage (given the uses of alkenes).

