Coal and Petroleum

PETROLEUM

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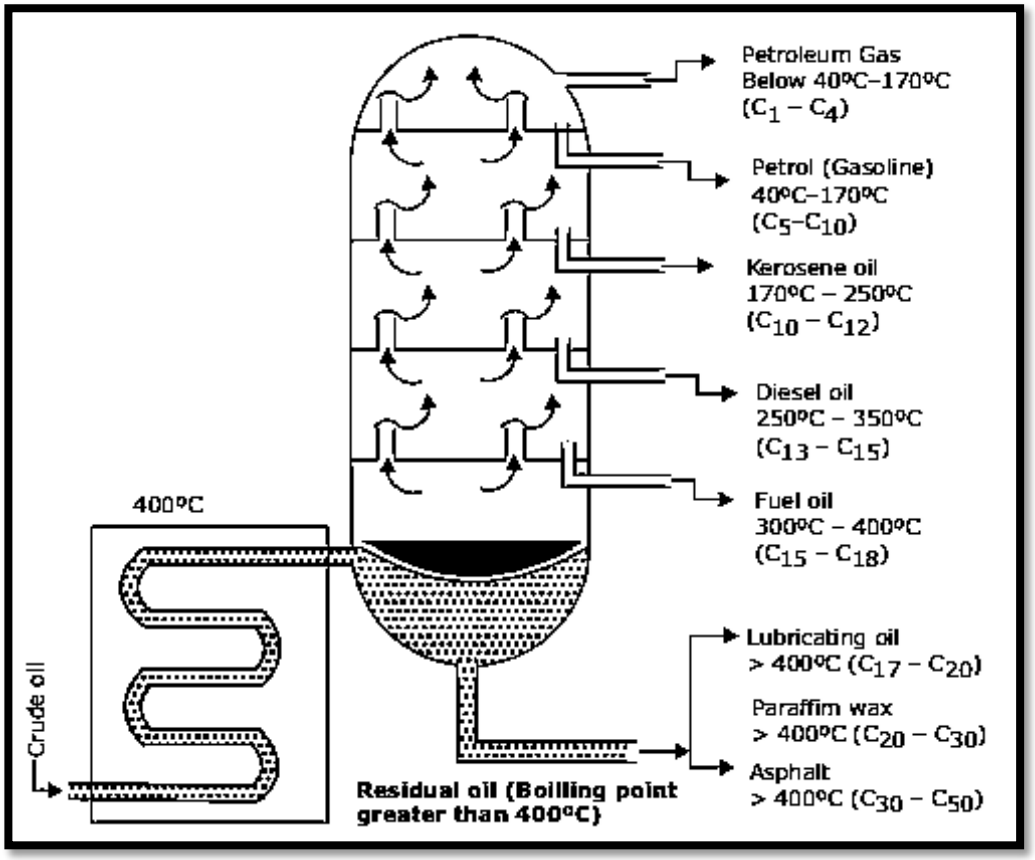
Petroleum is a naturally occurring oil that consists chiefly of hydrocarbons with some other elements, such as sulphur, oxygen and nitrogen. It is now known that petroleum contains hydrocarbons of the paraffin series, with unto 100 or more carbon atom s in the chain. The unrefined form of petroleum is called crude oil or rock oil (petra = rock; oleum = oil).

❖ Refining

The process of separating the various components of petroleum from one another is known as the refining of petroleum. This is done by a process called fractional distillation which is based on the fact that the different components of petroleum have distinctly different boiling points.



❖ PRODUCTS OF PETROLEUM REFINING:

(i) **Asphalt:** Asphalt is a black and sticky substance. It is used for making the surface of roads. It does not burn readily.

(ii) **Paraffin Wax:** It boils at above 673 K. It is obtained by the fractionation of residual oil. It is used for making candles, Vaseline, grease, polishes, etc.

(iii) **Lubricating Oil:** It boils at well above 673 K. It is obtained by the fractionation of residual oil. It is used for lubricating machinery.

(iv) **Fuel Oil:** The boiling range of fuel oil is 623 K to 673 K. It is used in industries to heat boilers and furnaces. It is a better fuel than coal because it burns completely leaving behind no ash, whereas coal burns producing a large amount of ash which has to be removed regularly.

(v) **Diesel Oil:** Its boiling range is 573 K to 623 K. It contains straight-chain alkanes with the number of carbon atoms varying from 20 to 25. It is used in cars, trucks, buses, and locomotives.

(vi) **Kerosene:** Its boiling ranges is 443 K to 523 K. It contains straight-chain alkanes with 10-16 carbon atoms. It is used for domestic purposes, for lighting petromax, lanterns, lamps, stoves, etc.

(vii) **Petrol:** Its boiling range is 313 K to 443 K. It is also called gasoline. it contains paraffins from pentane to do decane. It is used as a fuel in two-wheelers, three-wheelers and cars.

(viii) **Residual Oil:** The residual oil obtained from the primary distillation of petroleum is known as reduced crude. Reduced crude is distilled in vacuum to yield bitumen as residue. Bitumen is largely used in making road surfaces, and also for coating cables to provide electrical insulation.

❖ USES:

(i) Petroleum gas is used as a fuel. It is also used in the form of liquefied petroleum gas (LPG) for domestic purposes.

(ii) Gasoline or petrol is used as a fuel in cars, scooters, etc.

(iii) Kerosene is used as a household fuel.

(iv) Diesel oil is used as a furnace fuel and fuel for diesel engines.

(v) Lubricating oil is used for lubrication of machinery, etc.

(vi) Vaseline is used for softening skin.

(vii) Paraffin wax is used for making candles

(viii) Most industrial chemicals are produced from petroleum and natural gas. These chemicals are called petrochemicals. **Petroleum is the major source of medicines, insecticides, rubbers, plastics, perfumes, explosives, motor fuels, etc.**