



SNS College of Technology, Coimbatore-35.
(Autonomous)



AUTOMOBILE ENGINEERING
19AUB301 – AUTOMOTIVE FUELS AND LUBRICANTS
Products of Petroleum Refining

(i) Natural Gas:

Natural gas is found dissolved in petroleum or in huge amounts under earth surface in oil and gas bearing areas. Natural gas is made up mainly of the paraffinic compound methane, a small amount of propane, ethane, butane and other light hydrocarbons plus some nitrogen and oxygen. When natural gas occurs along with petroleum in oil wells, it is called wet gas. On the other hand, when the gas is associated with crude oil, it is called dry gas.

Uses:

- ❖ It is an excellent domestic fuel and can be conveyed over very large distances in pipelines.
- ❖ It has been recently used in the manufacture of a number of chemicals by synthetic processes

(ii) LPG:

Liquefied petroleum gas (LPG) or bottled gas or refinery gas is obtained as a by-product, during the cracking of heavy oils or from natural gas. It is stored in liquid form in special cylinders at a pressure of about 100psi (700 kpa) and the engine is provided with a special fuel system. Its calorific value is about 27800 kcal/m³.

The main constituents of LPG are n-butane, isobutane, butylene and propane, with little or no propylene and ethane.

Advantages:

- ❖ Better mixing with air and improved distribution, which means lesser emissions.
- ❖ No need of a fuel pump.
- ❖ No carbon deposits.
- ❖ No crank case dilution because of vapour form. This means lesser oil consumption
- ❖ High octane rating.
- ❖ Less engine wear.

Disadvantages:

- ❖ Special fuel system has to be provided.
- ❖ Heavy pressure cylinders increase the vehicle weight unnecessarily.
- ❖ Hard to start in winter.

(iii) Gasoline

Gasoline is the lightest liquid petroleum fraction. All material boiling up to 200°C is generally considered as gasoline. This is mixture of a number of hydrocarbons (more than 40). The composition depends upon the crude oil and refining process.

Gasoline lies in specific gravity range 0.70 to 0.78. This covers most of fuels used for spark-ignition engines. Its calorific value is about 47102 kJ/kg

(iv) Kerosene.

The kerosene has heavy fraction than gasoline. Its boiling range is 150°C to 300°C and the specific gravity range is 0.78 to 0.85. Its calorific value is about 46474 kJ/kg

(v) Distillate.

The distillate is slightly heavier than kerosene. These are used as tractor fuels and domestic fuels.

(vi) Diesel Oils.

Diesel oils are fuels which lie between kerosene and lubricating oils. These cover a wide range of specific gravity and boiling point. Boiling range is 200 to 370°C. These form the fuels for compression ignition engines.

(vii) Fuel Oils.

Fuel oils are similar to diesel fuel in specific gravity and distillation range but their composition varies in a range wider than those of diesel fuels. These are used as industrial fuels.

(viii) Lubricating Oils.

Lubricating oils are made up of heavy distillate of petroleum and residual oil. These are used for lubricating purposes.

(ix) Tar and Asphalt.

Tar and asphalt are solid or semi-solid undistilled products of petroleum.

(x) Petroleum Coke.

Petroleum coke is used as solid industrial fuel.