



Republic of Iraq
Ministry of Higher Education
and Scientific Research
Al-Mustaqbal University College
Chemical Engineering and Petroleum Industries
Department

Subject: Fuel Technology
2nd Class

Lecture 10

GASOUS FUEL

Liquefied Petroleum Gas (LPG)

It is mainly a mixture of propane and butane used mainly as:

- cooking gas in domestic ovens.
- for industrial heating in furnaces (e.g. heating of annealing furnaces).

C3 (propane etc.) and C4 (butane etc.) hydrocarbons are easily liquified at room temperature with the application of very low pressure. Hence, propane and butane is liquified, stored and transported in light cylinders. Generally, a mixture of about 80% butane and 20% propane is used for filling in LPG cylinders (also called bottled gas).

- LPG have high calorific value.
- LPG is odorless, hence odorants like mercaptans (50 ppm) or sulphides are added to detect its leakage from cylinders by smell, as mercaptans have very pungent smell.
- The lighter grade LPG commercially available contains 90% propane and 10% butane.

Use of LPG as Engine Fuel:

Use of LPG in a spark ignition engine offers following:

Advantages:

- LPG is readily miscible with air.
- It leaves less combustion chamber deposits.
- Gives lower emission of pollutants like unburnt hydrocarbons & carbon monoxide.
- Its anti-knocking properties .

Disadvantages

- LPG has to be stored & transported in bulky tanks capable of withstanding very high pressure.
- Some of the unsaturated compounds present in LPG have a comparatively poor octane number and are prone to causing high speed knock.