- **Behavior** - LPG exists as a gas at normal atmospheric pressure & temperatures, but may be liquefied by the application of moderate pressure. If the pressure is release the liquid will revert back to vapour.
- **Color** – LPG as a liquid is colourless and as a vapour, cannot be seen.
- **Smell** – Pure LPG has no distinctive smell so for safety reasons a stanching agent is added during production to give a pungent, unpleasant smell and so aid detection.
- **Toxicity** – LPG is non-toxic but a very high concentrations in air, LPG vapour acts as an anesthetic and subsequently an asphyxiate by diluting or decreasing the available oxygen.
- **Flammability** – When LPG is mixed with air, a high flammable mixture is produced. The flammability range is between 2% to 11% by volume of gas to air. Outside this range any mixture is wither or rich to potentially ignite.
- **Vaporization** – One volume of liquid will produce approximately 250 volume of gas vapour. “A little goes a long way treat LPG with respect”.
- **Vapour Density** – LPG vapour is heavier than air. Any escape will find its way to the lowest level where it can remain and form a flammable mixture. Therefore LPG vessels must be sited away from drains and appliances must not be sited in basements or cellars. Cylinders in boats and ships must be stored in purpose built sealed gas locker.
- **Liquid Density** – LPG liquid is lighter than water and therefore floats on top of it in a similar way to oil and petrol. Therefore LPG vessels must be sited away from drains and gullies.
- **Vapour Pressure** – The pressure LPG exerts on a vessel varies with ambient temperature. The higher the temperature of the liquid the higher the vapour pressure, conversely the lower the temperature the lower the pressure.
  This means LPG must be protected from heat sources and protective safely distances imposed on the siting and storage of LPG. Commercial Propane has a vapour pressure of approximately 7bar (100 psi) at 15oC (Similar to the pressure found in a lorry tyre).
  Commercial Butane has a vapour pressure of approximately 2bar (30psi) at 15oC (Similar to the pressure found in a car tyre).
  Because of these characteristics Commercial Butane can be used indoors and Commercial Propane must only be used outdoors.
- **Expansion** – When LPG is heated it expands very rapidly. In order to allow for expansion LPG cylinders and tanks are only filled by volume to a maximum of 87 % of the total volume of the retaining vessel.
- **Boiling Point** – The boiling point is the temperature below which LPG will not vaporize to form gas vapour.
  Boiling point of Commercial Propane is approximately – 42oCBoiling point of Commercial Butane is approximately – 2oCCommercial Butane can be affected by cold weather resulting in poor pressure and should not be used outdoors in winter months. Commercial Propane is not adversely affected by cold weather in the UK and is an ideal fuel source for heating, cooking and industrial applications. However care must be taken for skin not to come in contact with liquid LPG as cold burns may occur.
- **Searching** – LPG in both its liquefied and gaseous state has a very low viscosity and will flow very easily like water, petrol etc. This means they will flow with and penetrate any break or weakness in the installation. Therefore, special jointing compounds must be used for LPG installations and certified for use with the service conditions.
- **Chemical Reaction** – LPG is aggressive to certain non-metallic material like natural rubber and many plastics; therefore equipment and hoses must be suitable for LPG.- use only the best rubber.
- **Calorific Value** – The Calorific Value of a fuel is described as “The amount of heat released when a known quantity of fuel is burned”.
  Commercial Propane = 95 MJ / m3Commercial Butane = 121 MJ / m3Natural Gas = 38 MJ / m3
  Because LPG appliances release more heat than Natural Gas, it is important that any gas appliances fuelled by LPG are designed and manufactured for that purpose i.e. they will often require special conversion by qualified persons.
- **Fuel / Air Mix** – Commercial Propane = 23:1
  Commercial Butane = 30:1
  Natural Gas = 9.6:1
  Therefore, it is important that appliances fuelled by LPG are provided with adequate ventilation and serviced regularly to ensure that they burn efficiently.