



CHAPTER- 6.

COMBUSTION AND FLAME

**NOTES:**

➤ **Combustion**

- **Combustion:** A chemical process in which substance reacts with oxygen to give off heat is called combustion.
- Light is also given off during combustion either as a flame or as a glow.
- **Combustible substance or a fuel:** The substance that undergoes combustion is called combustible substance or a fuel. Fuel may be solid, liquid or gas.
- For combustion, air or oxygen is necessary.
- **Ignition temperature:** The lowest temperature at which a substance catches fire is called its ignition temperature.
- **Inflammable substances:** The substances which have very low ignition temperature and can easily catch fire with a flame are called inflammable substances.  
e.g. Petrol, alcohol. Liquified petroleum gas (LPG), etc.
- Fuel, air (to supply oxygen) and heat (to raise the temperature of the fuel beyond the ignition temperature) are the three essential requirements for producing fire.

**Types of combustion**

- i. Rapid combustion: A combustion that takes place producing heat and light is called rapid combustion.
- ii. Spontaneous combustion: The type of combustion in which a material suddenly bursts into flame, without the application of any apparent cause is called spontaneous combustion.
- iii. Explosion: The process of combustion in which large amount of gases are evolved with the production of heat, light and sound is called explosion

**Flame:-** A region of burning gases is called flame

➤ **Structure of a flame**

• **Three different Zones of a flame:**

- i. Dark Zone: Innermost Zone of a flame, black in colour, presence of unburnt carbon particles.
- ii. Luminous Zone- Middle Zone of partial combustion, yellow in colour and produces light.
- iii. Non-Luminous Zone: Outer zone of complete combustion, blue in colour.

➤ **Fuel**

- **Fuel** : A fuel is a substance, which may be burnt to produce large amount of heat without leaving any undesirable substances.
- **Ideal fuel** : The fuel, which fulfills all the requirement for a particular use is called as ideal fuel.

**Fuel Efficiency**

- **Calorific value**: The amount of heat energy produced on complete combustion of 1 kg of a fuel is called its calorific value. It is expressed in a unit called kilo joule per kg (kj/kg)
- **Deforestation**: The process of cutting of trees to use the wood as a fuel is called deforestation.
- **Global warming**: It is the rise in temperature of the atmosphere of the earth. Increased concentration of carbon dioxide in the air is believed to cause global warming.
- **Acid rain**: when oxides of sulphur and nitrogen are dissolved in rainwater, it forms acid. Such rain is called acid rain.



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