

# VIDYA BHAWAN BALIKA VIDYAPEETH

## STUDY MATERIAL SCIENCE

### CLASS-VIII

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#### ► Combustion :

The flames of a candle and a kerosene lamp give off light because carbon particles produced due to the incomplete combustion of wax or kerosene that burn with a glow. The same thing can be observed in a Bunsen burner. If the air inlets at the bottom of the burn are closed, the flame becomes luminous and yellow, this is because in the absence of sufficient air, all the molecules of the gas entering the burner cannot undergo complete combustion. Some gas molecules only break up to produce carbon particles, which glow in the heat and give off light. In any gas stove, a yellow flame indicates incomplete combustion and wastage of gas. A yellow flame also deposits black soot on cooking utensils. So, if the gas stove in the kitchen produces yellow flame, it is an indication that the nozzles need to be cleaned.

**Incomplete combustion :** combustion taking place in insufficient oxygen soot is known as incomplete combustion.

#### **Flame of a candle :**

- The outermost layer is almost colourless or blue in colour and is the hottest zone of the flame where complete combustion of wax vapour takes place.

- The second layer is cooler and is the area where the combustion is incomplete. It is in this layer that hot carbon particles glow and give off light.
- The innermost layer the area immediately around the wick, the coolest and contains unburnt wax vapours.
- If a candle flame could be cut horizontally, concentric circles marking the different zones are seen.

The presence of wax vapour in the flame can be easily tested by inserting a glass tube into the flame so that its bottom end gets close to the wick. If a lighted matchstick is brought near the top end of the glass tube, it lights up and produces a flame, as the wax vapours that come up through the tube are burnt.

Similarly, the presence of carbon particles in the flame can be demonstrated by holding a small piece of a glass pane horizontally over the flame such that it touches the luminous part of the flame. When the glass pane is removed after a few seconds, a black ring formed by carbon deposits (soot) can be seen on it.