

COMPONENTS OF AIR AND THEIR APPLICATIONS

OXYGEN:

Oxygen forms 21% of the air by volume and is very vital for our existence and the existence of all forms of animals and vegetable life. It is due to absorption of oxygen, that our respiratory system burns food materials at controlled rate, to produce heat energy which not only maintains our body temperature at 37°C, but also helps us to perform various life activities.

In air : It constitutes 21% by volume of air. It constitutes 23% by weight of air.

Physical properties of oxygen

1. **Nature :** It is colourless, odourless and tasteless gas.
2. **Vapour density :** It is slightly heavier than air.

APPLICATIONS :

1. Oxygen can be used as a sterilizing agent to kill certain anaerobic bacteria that are killed by sufficient exposure to the gas.
2. Oxygen is needed for the reaction that converts carbon to carbon dioxide gas in steel working, which takes place under high temperatures in a blast furnace. The carbon dioxide produced allows for the reduction of iron oxides into more pure iron compounds.
3. Oxygen is used in other applications involving metal and requiring high temperatures (2800°C), such as welding torches .
4. Oxygen is used to degrade hydrocarbon compounds, like methane by the process of combustion.
5. Oxygen is used in sewage-treatment and water- purification plants.
6. It reacts with hydrogen at high temperature and pressure to produce water.
7. Oxygen helps in burning .
8. A mixture of 95% oxygen and 5% carbondioxide is called Carbogen.

ACTIVITY :

TO PROVE OXYGEN SUPPORTS COMBUSTION:

Take a candle and fix it on a table. The candle is lighted. The candle will continue to burn due to continuously available fresh air providing the required oxygen for combustion.

Now cover the burning candle by putting an inverted gas jar over it. After a short time, the candle stops burning and gets extinguished. When the burning candle is covered with gas jar, then the candle takes away the oxygen necessary for burning from the air enclosed in the gas jar. After some time, when all the oxygen of air inside the gas jar is used up, then the burning candle gets extinguished. This proves that air is necessary for combustion of substances.