

Chapter – 4

Materials: Metals and Non-Metals

- Metals are strong and durable. Thus metals are used so widely for making almost everything

Example: Metals are used in making machinery, automobiles, aeroplanes, buildings, trains, satellites, gadgets, cooking utensils, water boilers...etc.

Physical Properties of Metals

- The metal base in an electric iron is for conducting heat, not electricity.
- Metals are very good conductors of heat. Cooking utensils, irons, heaters, etc. are all made of metals which are good conductors of heat.
- Metals can be easily shaped into wires. This property of metals is called ductility.
- Metals can be easily shaped into thin flat sheets. This characteristic of metals is called malleability.
- Metals make a sound when struck with hard objects. Metals can be polished to a shiny appearance.

Chemical Properties of Metals

- metals react with oxygen to produce metal oxides which are basic in nature. Non-metals react with oxygen to produce non-metallic oxides which are acidic in nature.
- Some metals react with water to produce metal hydroxides and hydrogen gas. Generally, non-metals do not react with water.
- Metals react with acids and produce metal salts and hydrogen gas. Generally, non-metals do not react with acids.
- Some metals react with bases to produce hydrogen gas.
- More reactive metals displace less reactive metals from their compounds in aqueous solutions

Physical Properties of Non-metals

- Non-metals are non-lustrous, non-malleable and not ductile, except for carbon fibres,

which are ductile.

- Non-metals are not sonorous. They do not produce any sound when hit..
- Non-metals do not conduct heat and electricity except for graphite

.Chemical Properties of Non-metals·

- Non-metals react with oxygen to form their oxides. Non-metal oxides are acidic or neutral in nature.
- In general non-metals do not react with water though they may be very reactive in air.
- Non-metals do not react with acids

Metals and non-metals are used widely in every day life.