

Chapter 3

METALS AND NON-METALS

Chemical properties of metals:

Reaction of metals with water:

- Highly reactive metals like alkali metals (Na, K etc) vigorously with even cold water. Alkali metals except lithium catches fires when added to water. So, they are generally stored in kerosene to avoid their reaction with the moisture in air.
- Magnesium metal reacts with hot water.
- Metals like Al, Fe and Zn react with steam.
- Metals like Cu, Ag, Pt and Au are very less reactive. So, they do not react with water or even with dilute acids.

Reaction of metals with Air (Oxygen):

- Metals react with oxygen to give their oxides. Generally metal oxides are basic. But some of the metal oxides like Al_2O_3 and ZnO are amphoteric oxides.

- Metal + Oxygen $\longrightarrow$ Metal oxide
- $4 \text{ Na} + \text{O}_2 \longrightarrow 2\text{Na}_2\text{O}$
- Reaction between oxygen and alkali metals (Na, K) is highly vigorous reaction.
- Metals like Al, Zn react slowly with air to form an oxide layer on the surface of the metal which prevents corrosion.
- $4 \text{ Al} + 3 \text{ O}_2 \longrightarrow 2\text{Al}_2\text{O}_3$
- When Mg metal is burnt in air it produces white dazzling light.
- Mg metal ribbons are used in crackers.
- Less reactive metals Ag, Au and Pt do not react with air.

