CHAPTER 02

Acids, Bases and Salts

Plaster of Paris and Hydrated salts:

It is commonly known as Plaster of Paris. Chemically, Plaster of Paris is calcium sulphate hemihydrate. CaSO4. $\frac{1}{2}H_2O$.

Plaster of Paris is generally obtained from gypsum. Gypsum is calcium sulphate dehydrate.$CaSO_4.2H_2O$.

When gypsum is strongly heated at 373K, it loses water molecules of crystallization to give Plaster of Paris.

$$CaSO_4.2H_2O \xrightarrow[\Delta]{373K} CaSO_4.\frac{1}{2}H_2O + \frac{3}{2}H_2O$$

Plaster of Paris is a white colour powder, when added to water, mixed thoroughly and gets hardened due to formation of gypsum.

$$CaSO_4.\frac{1}{2}H_2O + \frac{3}{2}H_2O \rightarrow CaSO_4.2H_2O$$

This process is highly exothermic and gypsum will be turned into very hard mass.

Uses:

It is used for,

- Supporting fractured by doctors.
- In preparation of toys, decorative articles (or)
- To make surfaces and
- In making of false ceilings etc.

Hydrated crystals are the solids, which contain number of water molecules in their structure. The no of water molecules present in the crystal structure is fixed for the given compound.

- Washing soda, chemical formula $Na_2CO_3.10H_2O$ per one molecule of sodium carbonate 10 molecules are present in crystal structure.
- Gypsum, chemical formula $CaSO_4.2H_2O$, which contain two water molecules per one molecule of $CaSO_4$.

Plaster of Paris chemical formula $CaSO4.\frac{1}{2}H_2O$ contain ½-water molecule per one molecule of $CaSO_4$.

Copper sulphate $CuSO4.5H_2O$. Hydrated copper sulphate, which is blue coloured powder, when heated strongly loses water molecules of hydration and turns white.

When water molecules are present, it appears blue. When water molecules are absent, it appears white.