SOME IMPORTANT CHEMICAL COMPOUNDS

(i) Soap & Detergent
(ii) Refining of petroleum
(iii) Dye industries
(iv) concentration of bauxite ore

$2NaCl \longrightarrow 2Na^{+} + 2Cl^{-}$

$2Cl^{-} \longrightarrow Cl_2 + 2e^{-}$ (Anode)

$2Na^{+} + 2Hg + 2e^{-} \longrightarrow 2NaHg$ (Cathode)

$2NaHg + 2H_2O \longrightarrow 2NaOH + H_2 + 2Hg$

Caustic Soda (NaOH)

Uses

Preparation

Plaster of paris ($CaSO_4.1/2H_2O$)

Preparation

$CaSO_4.2H_2O \xrightarrow{373\ K} CaSO_4.1/2H_2O + 3/2H_2$

Uses

(i) In sealing gaps
(ii) Making toys, cosmetics & casts of statues
(iii) Cast for setting broken bones
(iv) Making moulds in pottery
(v) Making design on walls & ceiling

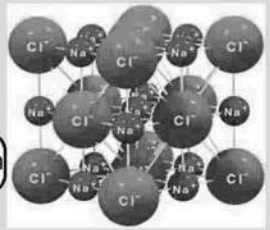
Hydrated salts

Certain short contain definite amount of some H_2O molecules loosely attach on moleculesthese are known as hydrated salts.

Definition

Example
Blue vitrol

$CuSO_4 + 5H_2O \longrightarrow CuSO_4.5H_2O$
White → Blue
vitrol(Blue colour)



Sodium chloride(NaCl)

Preparation

$NaOH(aq) + HCl(aq) \longrightarrow NaCl(aq) + H_2O\ (\ell)$

Uses

(i) In muscle contraction, in conduction of nerve impulse in the nervous system
(ii) It is used as a fertilizers for sugar beet
(iii) In leather industry for leather tanning
(iv) Row material for chemicals like HCl, NaHCO,etc.
(v) In severe cold rock salt is spread on icy roads to melt ice.

Bleaching powder Ca(OCl)Cl

Uses

(i) To make wool shrink proof
(ii) Used as bleaching agent in paper & textile industries
(iii) for disinfecting water to make it free from germs
(iv) in preparation of chloroform ($CHCl_3$)

Preparation

$Ca(OH)_2 + Cl_2 \xrightarrow{313\ K} Ca(OCl)Cl + H_2O$

Baking soda $NaHCO_3$

Uses

(i) used in baking powder
(ii) In medicine as soda bicarb (antacid)
(iii) In fire extinguisher

$2NaHCO_3 + H_2SO_4 \longrightarrow Na_2SO_4 + H_2O + CO_2$

iv) In paper, textile, ceramic etc.industries

Preparation

$2NH_3 + H_2O + CO_2 \longrightarrow (NH_4)_2CO_3$

$(NH_4)_2CO_3 + 2NaCl \longrightarrow Na_2CO_3 + NH_4Cl$

$Na_2CO_3 + H_2O + CO_2 \longrightarrow 2NaHCO_3$

Washing soda $Na_2CO_3.10H_2O$

Preparation

$Na_2CO_3 + 10H_2O \rightleftharpoons Na_2CO_3.10H_2O$

Uses

(i) Cleansing agent
(ii) Softening hardwater
(iii) Manufacture of glass
(iv) Consituent of several dry soap powder
(v) Manufacture of borax ($Na_2BP_7.10H_2O$)