SOME IMPORTANT CHEMICAL COMPOUNDS

Caustic Soda (NaOH)

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

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

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

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

Preparation

Uses

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

Hydrated salts

Definition

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

Example

Blue vitrol

$CuSO_4 + 5H_2O \longrightarrow CuSO_4.5H_2O$

White → Blue vitrol(Blue colour)

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

Preparation

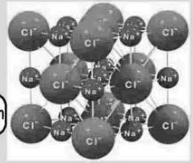
$CaSO_4.2H_2O \xrightarrow{373\ K} CaSO_4.1/2H_2O + 3/2H_2$

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

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, $NaHCO_3$,etc.
(v) In severe cold rock salt is spread on icy roads to melt ice.

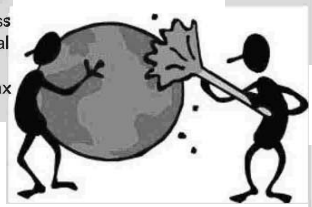
Washing soda ($Na_2CO_3.10H_2O$)

Preparation

$Na_2CO_3 + 10H_2O \rightarrow Na_2CO_3.10H_2O$

Uses

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



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 ($NaHCO_3$)

Preparation

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

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

$Na_2CO_3 + H_2O + CO_2 \longrightarrow 2NaHCO_3$

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

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