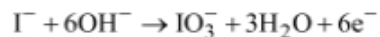


In alkaline medium it oxidises potassium iodide to potassium iodate and nitro toluene to nitro benzoic acid.



- **Action of hydrogen** - It burns on heating in a current of.



- **Equivalent weight of KMnO_4 in different medium**

- Equivalent weight in acid medium = $\frac{\text{Molecular weight}}{5}$

- Equivalent weight in alkaline medium = $\frac{\text{Molecular weight}}{1}$

- Equivalent weight in neutral medium = $\frac{\text{Molecular weight}}{3}$

(See ionic equations above)

ISES

is oxidising agent, disinfectant, 1% alkaline solution of KMnO_4 is used to test unsaturation in organic

compounds under the name of Baeyer's reagent. It is used for the volumetric estimation of Fe^{++} salts, oxalic acid etc.

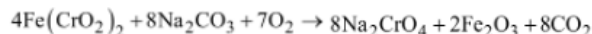
COMPOUNDS OF CHROMIUM

POTASSIUM DICHROMATE $K_2Cr_2O_7$

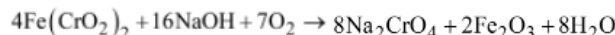
PREPARATION

It is manufactured from chromite ore ($FeCr_2O_4$). The steps involved are -

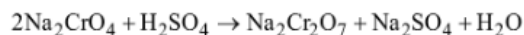
- **Preparation of sodium dichromate** - Finely powdered chromite is mixed with soda ash and quick lime and roasted in reverberatory furnace or rotary furnace in excess of air.



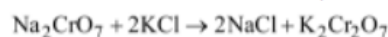
Chromite can be fused with molten alkali in presence of air.



The solution is filtered and acidified with dil. H_2SO_4 when sodium dichromate is obtained.



- Conversion of sodium dichromate to potassium dichromate.



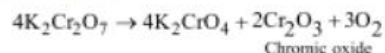
Hot concentrated solution of Potassium dichromate ($Na_2Cr_2O_7$) is less soluble and separates out on crystallisation.

PROPERTIES

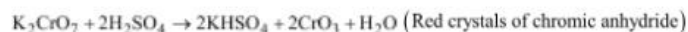
It is orange red crystalline compound having melting point $300^\circ C$. Soluble in water.

CHEMICAL PROPERTIES

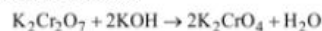
- **Action of heat**



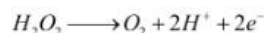
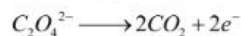
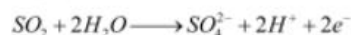
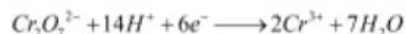
- **Action of cold H_2SO_4**



- **Action of alkali**



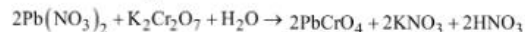
- **Oxidising nature** - It is powerful oxidising in nature.



- **Formation of chromyl chloride** - When a chloride is heated with potassium dichromate and conc. orange red vapour of chromyl chloride are formed.



- With lead salts it gives insoluble chromate salt.



- In photography
- Chromic acid (mixture of $K_2Cr_2O_7 + H_2SO_4$) used as cleaning agent,
- In preparation of compounds such as $K_2SO_4 \cdot Cr_2(SO_4)_2 \cdot 24H_2O, CrO_2Cl_2$ etc.

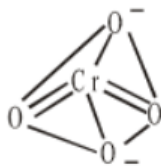
STRUCTURE

It consists of two tetrahedra with common oxygen atom



Dichromate ion

Structure of chromate ion : It has tetrahedral structure



Chromate ion CrO_4^{2-}

At pH about 4 dichromate ion ($Cr_2O_7^{2-}$) and chromate ion (CrO_4^{2-}) exist in equilibrium. These are interconvertible.

