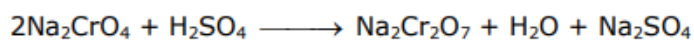


- h. Formation of coloured compounds: They form coloured ions due to presence of incompletely filled d – orbitals and unpaired electrons, they can undergo d – d transition by absorbing colour from visible region and radiating complementary colour.
- i. Formation of complexes: Transition metals form complexes due to (i) presence of vacant d – orbitals of suitable energy (ii) smaller size (iii) higher charge on cations.
- j. Interstitial compounds: Transition metals have voids or interstitials in which C, H, N, B etc. can fit into resulting in formation of interstitial compounds. They are non – stoichiometric, i.e., their composition is not fixed, e.g., steel. They are harder and less malleable and ductile.
- k. Alloys formation: They form alloys due to similar ionic size. Metals can replace each other in crystal lattice, e.g., brass, bronze, steel etc.

9. Preparation of Potassium dichromate ($K_2Cr_2O_7$):

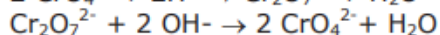
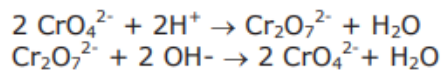
It is prepared by fusion of chromate ore ($FeCr_2O_4$) with sodium carbonate in excess of air.



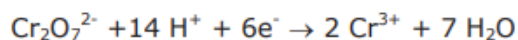
Sodium chromate Sodium dichromate



10. Effect of pH on chromate and dichromate ions: The chromates and dichromates are interconvertible in aqueous solution depending upon pH of the solution. The oxidation state of chromium in chromate and dichromate is the same.



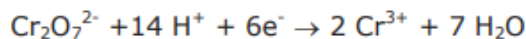
11. Potassium dichromate acts as a strong oxidizing agent in acidic medium.



12. Preparation of Potassium permanganate (KMnO_4):

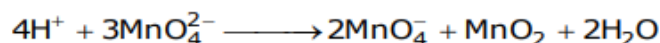
a. Potassium permanganate is prepared by fusion of MnO_4 with alkali metal hydroxide (KOH) in presence of O_2 or oxidising agent like KNO_3 . It produces

medium.



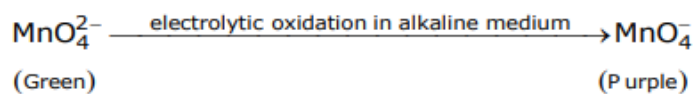
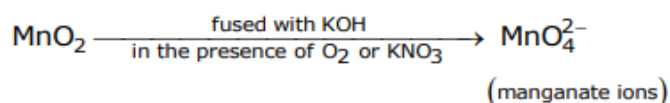
12. Preparation of Potassium permanganate (KMnO_4):

a. Potassium permanganate is prepared by fusion of MnO_2 with alkali metal hydroxide (KOH) in presence of O_2 or oxidising agent like KNO_3 . It produces dark green K_2MnO_4 which undergoes oxidation as well as reduction in neutral or acidic solution to give permanganate.



Or

Commercially it is prepared by the alkaline oxidative fusion of MnO_2 followed by the electrolytic oxidation of manganate (VI).

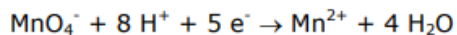


(ii) In laboratory, Mn^{2+} salt can be oxidized by peroxodisulphate ion to permanganate ion.



13. Potassium permanganate acts as a strong oxidizing agent in acidic, neutral or faintly basic medium.

In acidic medium.



In neutral or faintly basic medium,

