

Aim: To perform the identification test for ferrous sulphate

Requirements:

Chemicals & Reagents: Ferrous sulphate crystals, dilute H_2SO_4 , phenanthroline, ceric ammonium sulphate, potassium ferricyanide, dilute HCl , potassium ferrocyanide, barium chloride, lead acetate, ammonium acetate, dilute NaOH , iodine solution, strontium chloride.

Glassware: Test tube, beaker, funnel watch glass, spatula

Chemical Formula: $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$

Theory: Ferrous sulfate occurs as a crystalline bluish green powder. It has a tendency to rapidly oxidize on exposure to moist air. It is odorless and is characterized through its metallic taste (styptic) taste. It is soluble in water but insoluble in alcohol.

Use: It is used as an important hematinic agent in various iron formulations for treatment of The identification reactions for ferrous sulphate are summarized as below:

A) Identification test for Fe^{+2}

Sr. No	Test	Observation	Inference
1.	To a small quantity of salt, add dilute H_2SO_4 and phenanthroline	Red colouration	Fe^{+2} may be present
2.	Add ceric ammonium sulphate	Red colour discharged	Fe^{+2} is confirmed
3.	Take salt and add potassium ferricyanide	Blue precipitates observed	Fe^{+2} is confirmed
4.	Add dilute HCl	Precipitates are insoluble	Fe^{+2} ion confirmed
5.	Take salt and add potassium ferrocyanide and add dilute HCl	White precipitates are formed and rapidly becomes blue	Fe^{+2} may be present
6.	Add dilute HCl	The precipitates are insoluble	Fe^{+2} is confirmed

Result: The given sample contains Fe^{+2} cations.

B) Identification test for SO_4^{2-}

Sr. No	Test	Observation	Inference
1.	To a small quantity of salt, add water with dilute HCl and BaCl_2	White precipitate	SO_4^{2-} may be present
2.	Take salt and add lead acetate	White precipitate	SO_4^{2-} may be present
3.	Add $\text{CH}_3\text{COONH}_4$ with NaOH	Precipitate dissolve	SO_4^{2-} ion confirmed
4.	Take salt and add iodine solution	Suspension of yellow colour is obtained	SO_4^{2-} may be present
5.	To the above suspension, add SnCl_2 and boil the mixture	No colour precipitate obtained	SO_4^{2-} ion confirmed

Result: The given sample contains SO_4^{2-} anions.