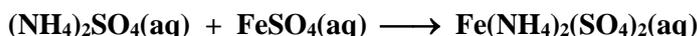
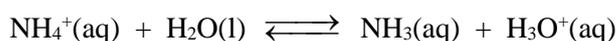


Preparation of ammonium iron(II) sulphate hexahydrate

Ammonium iron(II) sulphate hexahydrate $\text{Fe}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6 \text{H}_2\text{O}$, called also Mohr's salt, forms stable pale turquoise crystals. Mohr's salt can be prepared by crystallization from the saturated solution containing equimolar mixture of ammonium sulphate and iron(II) sulphate.



In aqueous solution is Mohr's salt totally ionized. Hexaaquairon(II) cation $[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$ and ammonium cation NH_4^+ act as a weak Brønsted acids, e.g. they hydrolyze poorly.



Work

Prepare ammonium iron(II) sulphate hexahydrate.

Chemicals

- ammonium sulphate, $(\text{NH}_4)_2\text{SO}_4$, white crystalline,
- iron(II) sulphate heptahydrate, $\text{FeSO}_4 \cdot 7 \text{H}_2\text{O}$, pale turquoise crystalline,
- sulphuric acid, H_2SO_4 , concentrated, $w(\text{H}_2\text{SO}_4) = 0,96$.

Procedure

Prepare the saturated solution of ammonium iron(II) sulphate at 65 °C by dissolving 5,3 g (0,040 mol) of ammonium sulphate in 18,4 cm³ of warm water acidified with few drops of concentrated sulphuric acid (to depress the hydrolysis). After dissolving ammonium sulphate, add 11,1 g (0,040 mol) of iron(II) sulphate heptahydrate. Heat the resulting solution saturated at 65 °C to 80 °C and filter it through a fluted filter directly to a crystallization dish. After cooling to room temperature filter off the crystals of Mohr's salt on the Büchner funnel. Use pieces of filter paper to dry them up.

Safety instructions

Ammonium sulfate – $(\text{NH}_4)_2\text{SO}_4$

R36/37/38 Irritating to eyes, respiratory system and skin.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

S36 Wear suitable protective clothing

Iron(II) sulfate heptahydrate – $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$

R22 Harmful if swallowed.

Sulfuric acid – H_2SO_4

R23 Toxic by inhalation.

R34 Causes burns.

R49 May cause cancer by inhalation.

S23 Do not breathe gas/fumes/vapour/spray (appropriate wording to be specified by the manufacturer)

S45 In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)

S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

Ammonium iron(II) sulfate hexahydrate – $\text{Fe}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$

R36/37/38 Irritating to eyes, respiratory system and skin.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

S36 Wear suitable protective clothing