

Iron(II) sulfate heptahydrate (*Ferrum sulfuricum*)



$$M = 278,01$$

Iron(II) sulfate heptahydrate forms green, weathering crystals with a density of 1.9 g/cm³, melts at 64°C during heating. Heated above 100°C, it becomes salt monohydrate. Anhydrous iron(II) sulfate can only be obtained when heated at 250-300°C. In air, iron(II) sulfate is easily oxidized to brown iron(III) sulfate Fe₂(SO₄)₃. Acidified FeSO₄ solutions are easily oxidized by such oxidants as H₂O₂, KMnO₄, K₂Cr₂O₇ and others according to e.g. reaction:



This reaction is used in chemical analysis for the quantitative determination of iron.

Iron(II) sulfate is obtained also by treating metallic iron with sulfuric acid according to the reaction equation:



Realisation:

As a raw material, you can use thin wire, small nails or iron filings, from which FeSO₄ can be obtained under the action of dilute sulfuric acid. Dry the resulting salt at 50°C, then weigh and calculate the process efficiency.

Equipment:

- Beakers: 100-150 cm³,
- Graduated cylinder for 50 cm³,
- Glass Buchner Funnel,
- Vacuum desiccator,
- Filtration set,
- Stirring rod,
- Test tubes.

Reagents:

- Iron (thin wire, small nails, filings) – 10 g,
- Sulfuric acid – 2M H₂SO₄ – 100 cm³,
- Methanol or ethanol – 50 cm³.

