



>>Entry Name: Iron(II) sulfate (FeSO₄)

Synonym(s): Ferrous sulfate, JAN, USAN. Feosol

CAS Registry Number: 7720-78-7

Related CAS Registry Numbers(s): 7782-63-0 20908-72-9

Extra CAS Registry Numbers(s): 10124-49-9

FeSO₄

Molecular Formula: FeO₄S

Molecular Weight: 151.911

Accurate Mass: 151.886669

Percentage Composition: Fe 36.76%; O 42.13%; S 21.11%

Source/Synthesis: Anhydr. form obt. by heating monohydrate at 300° under H₂

Use/Importance: Catalyst. Removes cyanide from aq. soln. (waste treatments). Component of dyes. Herbicide

Biological Use/Importance: Haematinic, astringent

Other Data: Component of Formalox, Cytoferin and Mediatric. ⁵⁹FeSO₄ used as radioactive agent (Ferrous sulfate Fe 59, USAN). Paramagnetic, $\mu_{\text{eff}} = 4.9\mu_{\text{B}}$

Hazard & Toxicity: Effects of excessive oral or parenteral iron therapy (which may be delayed) include gastrointestinal, renal, and hepatic toxicities. Average human lethal dose from ingestion *ca.* 200-500 mg Fe/kg. LD₅₀ (rat, orl) 319 mg/kg. Exp. reprod. and teratogenic effects. OES: long-term 1 mg m⁻³ (as Fe); short-term 2 mg m⁻³ (as Fe)

>>Derivative: Monohydrate

CAS Registry Number: 13463-43-9

Extra CAS Registry Numbers(s): 17375-41-6

Molecular Formula: FeH₂O₅S

Molecular Weight: 169.926

Percentage Composition: Fe 32.87%; H 1.19%; O 47.08%; S 18.87%

Source/Synthesis: By heating heptahydrate *in vacuo* at 140°, or by crystallising it from 50% H₂SO₄

>>Derivative: Tetrahydrate

Molecular Formula: FeH₈O₈S

Molecular Weight: 223.971

Percentage Composition: Fe 24.93%; H 3.60%; O 57.15%; S 14.32%

Source/Synthesis: Formed by cryst. of FeSO₄ in aq. soln. above 56°

>>Derivative: Hexahydrate

Synonym(s): Iron(II) sulfate hexahydrate. Ferrous sulfate hexahydrate. Hexaaquairon(2+) sulfate

CAS Registry Number: 42120-27-4

Molecular Formula: FeH₁₂O₁₀S

Molecular Weight: 260.002

Accurate Mass: 259.950059

Percentage Composition: Fe 21.48%; H 4.65%; O 61.54%; S 12.33%

>>Derivative: Heptahydrate

Synonym(s): Iron vitriol. Copperas. Green vitriol. Sal chalybis

CAS Registry Number: 7782-63-0

Extra CAS Registry Numbers(s): 15491-23-3

Molecular Formula: FeH₁₄O₁₁S

Molecular Weight: 278.017

Accurate Mass: 277.960624

Percentage Composition: Fe 20.09%; H 5.08%; O 63.30%; S 11.53%

Source/Synthesis: Occurs as the mineral *Melanterite*, a weathering product of pyrite and marcasite

Use/Importance: Commercial source of Fe²⁽⁺⁾

Physical Description: Hygroscopic blue-green cryst.

Melting Point: Mp 64°

Solubility: Sol. H₂O to give [Fe(H₂O)₆]²⁽⁺⁾; acidic soln. insol. EtOH

Other Data: Loses 7H₂O at 300°. $\mu_{\text{eff}} = 5.22\mu_{\text{B}}$

Aldrich: 31007-7

Fluka: 44980

Sigma: F7002