



>>Entry Name: Iron(III) sulfate (Fe₂(SO₄)₃)

ENTRY UNDER REVIEW

Synonym(s): Ferric sulfate. Ferric trisulfate. Iron persulfate. Ferriclear

CAS Registry Number: 10028-22-5

Extra CAS Registry Numbers(s): 10124-49-9 15244-10-7

Fe₂(SO₄)₃

Molecular Formula: Fe₂O₁₂S₃

Molecular Weight: 399.885

Accurate Mass: 399.725068

Percentage Composition: Fe 27.93%; O 48.01%; S 24.06%

Source/Synthesis: Synth. from boiling anhydrous Fe(II)SO₄ with conc. H₂SO₄

Use/Importance: Commercially available as pentahydrate. Conditioner for alkaline soil. Used in pigments, etching, iron chelation, water treatment, coal desulfurization. Disinfectant. Mordant. Catalyst for a variety of organic conversions

Physical Description: Yellow cryst. or grey-white powder

Solubility: Sl. sol. H₂O; soly. increased if trace FeSO₄ present

Other Data: Thermal dec. to Fe₂O₃ + SO₃; forms [Fe(OH₂)₆]³⁽⁺⁾ in soln., stabilised by H⁽⁺⁾ ion

Fluka: 44990

Sigma: F0638

>>Derivative: Hexahydrate

Molecular Formula: Fe₂H₁₂O₁₈S₃

Molecular Weight: 507.976

Accurate Mass: 507.788458

Percentage Composition: Fe 21.99%; H 2.38%; O 56.69%; S 18.94%

Physical Description: Purple

>>Derivative: Nonahydrate

Synonym(s): Paracoquimbite. Coquimbite

Molecular Formula: Fe₂H₁₈O₂₁S₃

Molecular Weight: 562.022

Accurate Mass: 561.820153

Percentage Composition: Fe 19.87%; H 3.23%; O 59.78%; S 17.12%

Source/Synthesis: Mineral, occurs as coquimbite in USA, Chile, Hungary, Germany, Cyprus and as paracoquimbite in Chile

Physical Description: Pale violet cryst., dimorphic

Other Data: Various other (synthetic) hydrates also known including tri-, penta-, hexa- and dodecahydrates

>>Derivative: Hydrosulfate

Synonym(s): Rhomboclase

Molecular Formula: FeH₉O₁₂S₂

Molecular Weight: 321.043

Accurate Mass: 320.888484

Percentage Composition: Fe 17.40%; H 2.83%; O 59.80%; S 19.98%

Source/Synthesis: Mineral occurs in Argentina, Peru, Arizona and Czechoslovakia

Physical Description: White to pink powder; mineral may be yellow/green cryst.

Melting Point: Mp 80° (loses H₂O)

Solubility: Sol. H₂O

Other Data: Formulated as HFe(III)(SO₄)₂·4H₂O or as Fe₂O₃·4SO₃·9H₂O

>>Derivative: Double salt with ammonium sulfate

References: