



>>Entry Name: **Iron(III) nitrate (Fe(NO<sub>3</sub>)<sub>3</sub>)**

**Synonym(s):** Ferric nitrate

**CAS Registry Number:** 10421-48-4

**Related CAS Registry Numbers(s):** 14104-77-9 60803-54-5

Fe(NO<sub>3</sub>)<sub>3</sub>

**Molecular Formula:** FeN<sub>3</sub>O<sub>9</sub>

**Molecular Weight:** 241.862

**Accurate Mass:** 241.898396

**Use/Importance:** Catalyst. Mordant; reagent, corrosion inhibitor; fertiliser

>>Derivative: Hexahydrate

**Synonym(s):** Hexaaquairon(3+) nitrate. Ferric nitrate hexahydrate

**CAS Registry Number:** 13476-08-9

**Molecular Formula:** FeH<sub>12</sub>N<sub>3</sub>O<sub>15</sub>

**Molecular Weight:** 349.953

**Accurate Mass:** 349.961786

**Percentage Composition:** Fe 15.96%; H 3.46%; N 12.01%; O 68.58%

**Source/Synthesis:** Synth. from Fe<sub>2</sub>O<sub>3</sub>.*n*H<sub>2</sub>O + HNO<sub>3</sub>

**Physical Description:** Violet cubic cryst., aq. solns. usually brown

**Melting Point:** Mp 35°

**Solubility:** V. sol. H<sub>2</sub>O

**Other Data:** Dec. at Bp

>>Derivative: Nonahydrate

**Synonym(s):** Hexaaquairon(3+) nitrate trihydrate. Ferric nitrate nonahydrate

**CAS Registry Number:** 7782-61-8

**Molecular Formula:** FeH<sub>18</sub>N<sub>3</sub>O<sub>18</sub>

**Molecular Weight:** 403.999

**Accurate Mass:** 403.993481

**Percentage Composition:** Fe 13.82%; H 4.49%; N 10.40%; O 71.28%

**Source/Synthesis:** Obt. by action of conc. HNO<sub>3</sub> on Fe, or iron oxides

**Use/Importance:** Commercially available. Used in dyeing; tanning; analytical chem., as an oxidising agent

**Physical Description:** Colourless to pale violet deliquescent cryst. (H<sub>2</sub>O); gives brown soln.

**Melting Point:** Mp 47.2°

**Solubility:** Sol. H<sub>2</sub>O, EtOH, Me<sub>2</sub>CO; sl. sol. HNO<sub>3</sub>. Source of [Fe(OH<sub>2</sub>)<sub>6</sub>]<sup>3(+)</sup> in aq. soln.

**Other Data:** Dec. at 125°

**Hazard & Toxicity:** Irritant; oxidant. Fire risk when in contact with organic chemicals

**Aldrich:** 21682-8

**Fluka:** 44952

**Sigma:** F8508

>>Derivative: N<sub>2</sub>O<sub>4</sub> complex

>>Derivative: Pentakis(tetrathiafulvalene) complex

**Source/Synthesis:** Synth. from Fe(NO<sub>3</sub>)<sub>3</sub>.9H<sub>2</sub>O in MeOH and excess tetrathiafulvalere

**Use/Importance:** Charge transfer compd.

**Physical Description:** Dark purple solid

**Other Data:** μ<sub>eff</sub> 0.62μ<sub>B</sub> (300K), 0.34μ<sub>B</sub> (80K); low spin Fe<sup>II</sup>. Conductivity (r.t.) 77 S cm<sup>-1</sup>

**References:**