



>>Entry Name: Iron(III) chloride

ENTRY UNDER REVIEW

Synonym(s): Ferric chloride. Iron trichloride

CAS Registry Number: 7705-08-0

Related CAS Registry Numbers(s): 10025-77-1 18497-67-1

Extra CAS Registry Numbers(s): 24290-40-2

FeCl₃

Molecular Formula: Cl₃Fe

Molecular Weight: 162.205

Accurate Mass: 160.841495

Percentage Composition: Cl 65.57%; Fe 34.43%

Source/Synthesis: Synth. from (1) Fe + Cl₂, (2) Fe₂O₃ or FeS₂ + CCl₄, (3) Cl₂ + FeSO₄. Dehydration of FeCl₃·6H₂O leads to oxychlorides. Occurs as mineral *Molysite* around volcanoes

Use/Importance: Commercially available. Used in sewage and waste treatment. Chlorination catalyst. Etchant. Friedel-Crafts halogen carrier, oxidant, starting material for iron(III) compds. Disinfectant. Styptic. ⁵⁹Fe-labelled compd. used as a radioactive agent (*Ferric chloride Fe 59*, USAN)

Physical Description: Hygroscopic dark green or black cryst. Aq. solns. are strongly acidic

Melting Point: Mp 303 dec.°

Boiling Point: Bp 315°

Solubility: Sol. H₂O to give hydrates. Sol. MeOH, Et₂O

Hazard & Toxicity: OES: long-term 1 mg m⁻³ (as Fe); short-term 2 mg m⁻³ (as Fe). Irritant. Locally corrosive in presence of moisture. LD₅₀ (rat, orl) 1872 mg/kg

Aldrich: 36100-3

Fluka: 44943

Sigma: F7134

>>Derivative: Hexahydrate

>>Derivative: Compd. with graphite

Synonym(s): Graphite compd. with iron chloride (FeCl₃), 9Cl. Iron chloride (FeCl₃) compd. with graphite. FeCl₃-graphite intercalate

CAS Registry Number: 68896-16-2

Source/Synthesis: Synth. from C + FeCl₃ + Cl₂ in CHCl₃, or FeCl₃/KCl melt

Use/Importance: Catalyses NH₃ synth. at low temp. after redn. Reduced to Fe metal or low oxidn. state by alkali metals, BuLi, etc.

Other Data: Wide range of composition. Struct. contains layers of C and layers of FeCl₃. May contain Fe^{II}

References:

Gmelin Handbook Inorg. Chem., Syst. No. 59, 1929, **B1**, 221, (bibl, rev)

Inorg. Synth., 1950, **3**, 191; 1957, **5**, 153; 1963, **7**, 163, (synth)

Bardawil, A.B. et al., Inorg. Chem., 1964, **3**, 149, (synth)

Colton, R. et al., Halides of the First Row Transition Metals, Wiley, N.Y., 1969, 273, (bibl, rev)

Hosking, C.S., Aust. Paediatr. J., 1970, **6**, 92, (tox)

Brauer, G., Handbuch Prap. Anorg. Chem., 3rd edn., Ferdinand Enke Verlag, 1975, **3**, 1641, (synth)

Inagaki, M. et al., J. Chim. Phys. Phys.-Chim. Biol., 1987, **84**, 1439-1442; CA, **109**, 15459, (compd with graphite)

Ibrahim, A.K. et al., Phys. Rev. B: Condens. Matter, 1987, **35**, 1860-1868, (compd with graphite, magnetism)

Yazami, R., Synth. Met., 1987, **20**, 383-386, (compd with graphite, reactions)

Abou Aly, A.I. et al., Synth. Met., 1989, **34**, 479-484, (compd with graphite, props)

Wang, Z.D. et al., Carbon, 1991, **29**, 423-427, (compd with graphite, Mössbauer)

El-Shazly, O. et al., J. Phys. Chem. Solids, 1991, **52**, 643-646, (compd with graphite, synth, props)

Stolzenberg, A.M., Kirk-Othmer Encycl. Chem. Technol., 4th edn., Wiley, 1991, **14**, 881

Kalucki, K. et al., Stud. Surf. Sci. Catal., 1991, **63**, 487-496; CA, **115**, 190720, (compd with graphite, use)

Wang, Z.D. et al., Synth. Met., 1991, **44**, 165-176, (compd with graphite)

Martindale, The Extra Pharmacopoeia, 30th edn., Pharmaceutical Press, 1993, 1370

Encyclopedia of Food and Color Additives, (ed. Burdock, G.A.), CRC Press, 1997, 1097-1098

Bretherick, L., Handbook of Reactive Chemical Hazards, 4th edn., Butterworths, 1990, 3835

Luxon, S.G., Hazards in the Chemical Laboratory, 5th edn., Royal Society of Chemistry, 1992, 742

Lewis, R.J., Sax's Dangerous Properties of Industrial Materials, 8th edn., Van Nostrand Reinhold, 1992, FAU000; FAV000