

Crystal Data: Monoclinic. *Point Group:* $2/m$. Crystals are rare, equant, pseudo-octahedral, to short prismatic [001], showing {120}, {001}, may be thick tabular {010}, {10 $\bar{2}$ }, many smaller modifying forms, to 20 cm; commonly stalactitic, in concretions and crusts, massive, pulverulent, and as efflorescences.

Physical Properties: *Cleavage:* On {001}, perfect; on {120}, distinct. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 2 D(meas.) = 1.895–1.898 D(calc.) = 1.897(4) Soluble in H_2O ; taste sweetish, astringent, metallic.

Optical Properties: Transparent to translucent. *Color:* Green, pale green, greenish blue, bluish green, colorless; colorless to pale green in transmitted light. *Streak:* White. *Luster:* Vitreous.

Optical Class: Biaxial (+) (synthetic). *Orientation:* $Y = b$; $Z \wedge c = 61^\circ$. *Dispersion:* $r > v$, weak, inclined. $\alpha = 1.471$ $\beta = 1.478$ $\gamma = 1.486$ $2V(\text{meas.}) = 85^\circ 27'$

Cell Data: *Space Group:* $P2_1/c$. $a = 14.072(10)$ $b = 6.503(7)$ $c = 11.041(10)$
 $\beta = 105^\circ 34(5)'$ $Z = 4$

X-ray Powder Pattern: Synthetic.

4.90 (100), 3.776 (60), 4.87 (50), 3.732 (20), 3.291 (16), 4.028 (14), 5.49 (12)

Chemistry:

	(1)	(2)
SO_3	29.19	28.80
FeO	22.27	25.84
MgO	1.87	
H_2O	45.79	45.36
Total	99.12	100.00

(1) Falun, Sweden. (2) $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$.

Mineral Group: Melanterite group.

Occurrence: A post-mine product of oxidation of pyrite and marcasite ores; rarely a volcanic sublimate.

Association: Pisanite, chalcantite, epsomite, pickeringite, halotrichite, other sulfates.

Distribution: Occurs at many localities, a few with large crystals. In Germany, from the Rammelsberg mine, near Goslar, Harz Mountains. At Falun, Sweden. From Rio Tinto, Huelva Province, Spain. At Idria, Slovenia. Large crystals on the island of Cyprus. From Cantiere Conche, Elba, Italy. At Baia Sprie (Felsőbánya), Romania. From Damar, Murgul, northeast Anatolia, Turkey. In the USA, at the Alma mine, Leona Heights, Alameda Co., and the Island Mountain mine, Trinity Co., California; from Ducktown, Polk Co., Tennessee; at Butte, Silver Bow Co., Montana; in the Lucky Boy mine, Bingham district, Salt Lake Co., Utah. At volcanoes on the Kamchatka Peninsula, Russia. From Tierra Amarilla, southeast of Copiapó, Atacama, Chile.

Name: From the Greek for a *black metallic dye*.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 499–504. (2) Baur, W.H. (1964) On the crystal chemistry of salt hydrates. III. The determination of the crystal structure of $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ (melanterite). Acta Cryst., 17, 1167–1174. (3) (1970) NBS Mono. 25, 8, 38.