Siderotil $(Fe^{2+}, Cu)SO_4 \cdot 5H_2O$

Crystal Data: Triclinic (synthetic). *Point Group:* $\overline{1}$ or 1. Rare acicular crystals, to 0.1 mm, typically fibrous to powdery.

Physical Properties: Hardness = n.d. D(meas.) = 2.1–2.2 D(calc.) = 2.212 Soluble in H_2O.

Optical Properties: Semitransparent. *Color:* Pale green. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Biaxial (–). α = 1.513–1.515 β = 1.526 γ = 1.534–1.535 2V(meas.) = 50°–60°

Cell Data: *Space Group:* $P\overline{1}$ or $P1$. $a = 6.292(5)$ $b = 10.632(8)$ $c = 6.072(5)$ $\alpha = 82.62(1)°$ $\beta = 110.01(1)°$ $\gamma = 105.18(1)°$ Z = 2

X-ray Powder Pattern: Yerington, Nevada, USA.
4.89 (10), 3.73 (8), 5.57 (6), 5.73 (5), 3.21(4), 2.92 (4), 2.68 (4)

Chemistry:

	(1)	(2)
SO_3	[32.99]	33.10
FeO	15.9	29.70
CoO	0.35	
CuO	14.1	
H_2O	36.66	37.20
Total	[100.00]	100.00

(1) Yerington, Nevada, USA; SO_3 by difference; corresponds to $(Fe_{0.55}Cu_{0.44}Co_{0.01})_{\Sigma=1.00}$ $SO_4 \cdot 5H_2O$. (2) $FeSO_4 \cdot 5H_2O$; some copper is required to stabilize the structure.

Mineral Group: Chalcanthite group.

Occurrence: Forms by dehydration of cuprian melanterite.

Association: Melanterite.

Distribution: Originally incompletely described from Idrija (Idria), Slovenia, where it may or may not occur. Some authenticated localities include: in the USA, in Nevada, from the Yerington district, Lyon Co., at the Watt mine, Reese River district, Lander Co., and from Steamboat Springs, Steamboat Springs district, Washoe Co.; at Bingham Canyon, Salt Lake Co., Utah; from the Mt. Diablo mercury mine, Contra Costa Co., California; in the Campbell shaft, Bisbee, Cochise Co., Arizona; at Ducktown, Polk Co., Tennessee. In the Capillitas mine, Catamarca Province, Argentina. At Grandola, near Lisbon, Portugal. In the Clara mine, near Oberwolfach, Black Forest, Germany. From Les Vallettes, Valais, Switzerland.

Name: From the Greek for iron, *sideros*, and for fiber, *tilos*, for its composition and structure.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 491–492. (2) Jambor, J.L. and R.J. Traill (1963) On rozenite and siderotil. Can. Mineral., 7, 751–763. (3) Peterson, R.C. and Y. Zhang (2002) The atomic structure of siderotil $(Fe, Cu)SO_4 \cdot 5H_2O$. IMA, 18th General Meeting, 118–119 (abs.).