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Crystal Data: Tetragonal. Point Group: $\overline{4}2m$. Equant, tetrahedral-shaped crystals, may be modified by scalenohedral faces, to as large as 10 cm. Sphenoidal faces $\{112\}$ typically large, dull in luster and striated $\parallel [1\overline{1}0]$; $\{\overline{1}12\}$ faces are small and bright. Commonly massive, compact; can be botryoidal. Twinning: Twin plane $\{112\}$, composition surface commonly $\{112\}$; twin plane $\{012\}$; also by rotation about [001] with composition plane $\{110\}$, producing penetration twins.

Physical Properties: Cleavage: Poor on $\{011\}$ and $\{111\}$. Hardness = 3.5–4 VHN = 187–203 (basal section); 181–192 (vertical section) (100 g load). D(meas.) = 4.1–4.3 D(calc.) = 4.283

Cell Data: Space Group: $I\overline{4}2d$. a = 5.281 c = 10.401 Z = 4

X-ray Powder Pattern: Merkur mine, Ems, Hesse, Germany. 3.038 (100), 1.8570 (35), 1.5927 (27), 1.8697 (22), 1.5753 (14), 2.644 (5), 1.2025 (5)

Chemistry:

	(1)	(2)
Cu	35.03	34.63
Fe	31.00	30.43
\mathbf{S}	34.96	34.94
Total	100.99	100.00

(1) Western mines, Vancouver Island, British Columbia, Canada; by electron microprobe, leading to $Cu_{1.01}Fe_{1.01}S_{2.00}$. (2) $CuFeS_2$.

Polymorphism & Series: Forms a series with eskebornite.

Mineral Group: Chalcopyrite group.

Occurrence: A primary mineral in hydrothermal veins, stockworks, disseminations, and massive replacements; an exsolution product in mafic igneous rocks; of sedimentary origin controlled by redox conditions.

Association: Sphalerite, galena, tetrahedrite, pyrite, many copper sulfides.

Distribution: A very common copper mineral, so only a few outstanding localities can be mentioned. In the USA an important ore mineral at many of the copper mines of Arizona, as at Bisbee, Cochise Co.; large crystals from the Groundhog mine, Vanadium, Grant Co., New Mexico; in crystals from New York, at the Rossie lead mines, St. Lawrence Co.; at French Creek, Chester Co., Pennsylvania; in Missouri, at Joplin, Jasper Co. From Cananea, Sonora, Mexico. At Huaron, Peru. In Canada, in the Rouyn district, Quebec, at the Noranda mine; from Ontario, in the Kidd Creek mine, near Timmins, and at Sudbury. In Slovakia, at Baňská Štiavnica (Schemnitz). In the Czech Republic, at Horní Slavkov (Schlaggenwald). From Freiberg, Saxony; Dillenburg, Hesse; in the Georg mine, near Horhausen, Westerwald; and a number of mines in North Rhine-Westphalia, Germany. At Vinsknoes, Karmoen, Norway. From the Ani and Arakawa mines, Akita Prefecture, Japan. Large crystals in the Nababiep mine, Cape Province, South Africa.

Name: From the Greek for brass and pyrite.

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