

Clinochalcomenite



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Crystal Data: Monoclinic. *Point Group:* $2/m$. Crystals prismatic along and striated \parallel [001], to 0.6 mm; {110} and {011} dominant, {210}, {100}, {010}, {001} and {101} observed. Also as crusts and patchy coatings on chalcomenite.

Physical Properties: *Cleavage:* Perfect on {110}. *Tenacity:* Brittle. Hardness = 2
D(meas.) = 3.28 D(calc.) = 3.42

Optical Properties: Transparent. *Color:* Blue-green to pale green, may be black from included umangite; pale blue-green in transmitted light. *Luster:* Vitreous.

Optical Class: Biaxial (-). *Pleochroism:* $X = Y =$ colorless; $Z =$ blue-green. *Orientation:* $Y = b$; $X \wedge a = 3^\circ$; $Z \wedge c = 10^\circ$. *Dispersion:* $r < v$. $\alpha = 1.675$ $\beta = 1.723$ $\gamma = 1.765$
 $2V(\text{meas.}) = 78^\circ$

Cell Data: *Space Group:* $P2_1/n$. $a = 8.177$ $b = 8.611$ $c = 6.290$ $\beta = 97^\circ 16'$ $Z = 4$

X-ray Powder Pattern: Gansu Province, China.

5.89 (10), 3.66 (9), 2.926 (8), 4.06 (7), 2.694 (7), 2.482 (7), 1.818 (7)

Chemistry:

	(1)	(2)
SeO ₂	53.27	48.98
CuO	37.15	35.11
H ₂ O		15.91
Total		100.00

(1) Gansu Province, China; by electron microprobe, here converted to oxides, 2H₂O by analogy to ahlfeldite and cobaltomenite. (2) CuSeO₃•2H₂O.

Polymorphism & Series: Dimorphous with chalcomenite.

Occurrence: A very rare secondary mineral in the oxidized zone of a uranium deposit in brecciated carbonaceous slate (China); in a hydrothermal selenium vein deposit (El Dragón mine, Bolivia).

Association: Volborthite, chalcomenite, umangite, malachite (China); chalcomenite, cobaltomenite, alunite (El Dragón mine, Bolivia).

Distribution: From an undisclosed locality in Gansu Province, China. At the El Dragón mine, 30 km southwest of Cerro Rico de Potosí, Potosí, Bolivia.

Name: As the monoclinic dimorph of *chalcomenite*.

Type Material: n.d.

References: (1) Luo Keding, Wei Jun, Zhang Jingyi, and Gu Qifang (1980) Clinochalcomenite, a new mineral of selenite. *Kexue Tongbao*, 25, 85–89 (in Chinese), 427–433 (in English).

(2) (1981) *Amer. Mineral.*, 66, 217 (abs. ref. 1). (3) Luo Keding, Chen Zhangru, and Ma Zhesheng (1984) Crystal structure of clinochalcomenite. *Kexue Tongbao*, 29, 352 (in English).