

# 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 <sub>2</sub>	53.27	48.98
CuO	37.15	35.11
H <sub>2</sub> O		15.91
Total		100.00

(1) Gansu Province, China; by electron microprobe, here converted to oxides, 2H<sub>2</sub>O by analogy to ahlfeldite and cobaltomenite. (2) CuSeO<sub>3</sub>•2H<sub>2</sub>O.

**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).