

Choloalite

PbCu(Te⁴⁺O₃)₂

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Crystal Data: Cubic. *Point Group:* 432. As octahedra, the larger crystals corroded, to 2 mm.

Physical Properties: *Fracture:* Irregular. *Tenacity:* Brittle. Hardness = 3
D(meas.) = 6.4(1) D(calc.) = 6.41

Optical Properties: Semitransparent. *Color:* Forest-green; deep green in transmitted light.
Streak: Pale green. *Luster:* Adamantine.
Optical Class: Isotropic; may be sectored, with birefringence to 0.011. $n = 2.04$

Cell Data: *Space Group:* $P4_132$. $a = 12.519\text{--}12.586$ $Z = 4$

X-ray Powder Pattern: Moctezuma mine, Mexico.
3.036 (100), 3.343 (60), 7.223 (50), 2.454 (50), 3.472 (40), 3.614 (30), 2.952 (30)

Chemistry:	(1)	(2)	(3)
TeO ₂	50.7	51.81	51.32
Sb ₂ O ₅	trace	1.10	
CuO	11.0	11.81	12.79
ZnO		0.37	
PbO	33.0	31.22	35.89
CaO	trace	0.50	
Cl		1.19	
H ₂ O	3.4		
–O = Cl ₂		0.27	
Total	98.1	97.73	100.00

(1) Moctezuma mine, Mexico; average of four analyses, H₂O by the Penfield method, apparently adsorbed; corresponds to Cu_{2.75}Pb_{2.94}(Te_{1.05}O_{3.05})₆•3.75H₂O. (2) Do.; by electron microprobe, corresponds to Pb_{2.65}(Cu_{2.81}Sb_{0.13}⁵⁺Zn_{0.09})_{Σ=3.03}(Te_{1.02}O_{3.00})₆Cl_{0.92}. (3) PbCu(TeO₃)₂.

Occurrence: With other tellurites and tellurates in the oxidized portions of base and precious metal deposits.

Association: Emmonsite, rodalquilarite, cerussite, jarosite, “opal” (Tombstone, Arizona, USA).

Distribution: From the Oriental (Bambollita) mine, northeast of the Moctezuma (Bambolla) mine, 12 km south of Moctezuma, Sonora, Mexico. On the dumps between the Joe and Grand Central shafts, Tombstone, Cochise Co., Arizona, and at the McAlpine mine, Tuolumne Co., California, USA. From an unidentified locality in Saudi Arabia.

Name: From the Nahuatl language *choloa*, for *evasive*, the mineral having been undetected for many years.

Type Material: Natural History Museum, Paris, France; The Natural History Museum, London, England, 1980,548.

References: (1) Williams, S.A. (1981) Choloalite, CuPb(TeO₃)₂•H₂O, a new mineral. *Mineral. Mag.*, 44, 55–57. (2) (1981) *Amer. Mineral.*, 66, 1099 (abs. ref. 1). (3) Powell, D.W., R.G. Thomas, P.A. Williams, W.D. Birch, and I.R. Plimer (1994) Choloalite: synthesis and revised chemical formula. *Mineral. Mag.*, 58, 505–508. (4) Lam, A.E., L.A. Groat, J.D. Grice, and T.S. Ercit (1999) The crystal structure of choloalite. *Can. Mineral.*, 721–729.