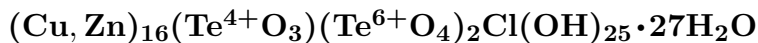


**Tlalocite**

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**Crystal Data:** Orthorhombic. *Point Group:* n.d. As velvety crusts composed of spherules or arcuate bands of subparallel lath-shaped crystals, to 10  $\mu\text{m}$ .

**Physical Properties:** *Tenacity:* Gummy and sectile. Hardness = 1 D(meas.) = 4.55(1) D(calc.) = 4.58

**Optical Properties:** Semitransparent. *Color:* Capri blue; pale green in transmitted light.

*Streak:* Very pale blue.

*Optical Class:* Biaxial (-). *Pleochroism:* X = green; Y = Z = bluish green. *Absorption:* Z > Y > X.  $\alpha = 1.758(2)$   $\beta = 1.796(2)$   $\gamma = 1.810(5)$  2V(meas.) = 64° 2V(calc.) = 61°

**Cell Data:** *Space Group:* n.d.  $a = 16.780(3)$   $b = 19.985(4)$   $c = 12.069(3)$  Z = 4

**X-ray Powder Pattern:** Bambollita mine, Mexico.

16.787 (10), 4.201 (10), 8.394 (8), 3.355 (6), 1.560 (5), 2.796 (3), 2.588 (3b)

**Chemistry:**

	(1)
TeO <sub>3</sub>	15.0
TeO <sub>2</sub>	6.1
CuO	31.0
ZnO	19.3
Cl	1.3
H <sub>2</sub> O	27.7
-O = Cl <sub>2</sub>	0.3
Total	100.1

(1) Bambollita mine, Mexico; results from several partial analyses, CuO and ZnO by AA, Te and Cl by spectrophotometry, H<sub>2</sub>O by gravimetry; corresponds to Cu<sub>9.92</sub>Zn<sub>6.03</sub>(Te<sup>4+</sup>O<sub>3</sub>)<sub>0.97</sub>(Te<sup>6+</sup>O<sub>4</sub>)<sub>2.17</sub>Cl<sub>0.93</sub>(OH)<sub>24.69</sub>•26.78H<sub>2</sub>O.

**Occurrence:** Very rare in partially oxidized portions of a tellurium-bearing polymetallic hydrothermal sulfide vein.

**Association:** Tenorite, azurite, malachite.

**Distribution:** From the Oriental (Bambollita) mine, northeast of the Moctezuma (Bambolla) mine, 12 km south of Moctezuma, Sonora, Mexico.

**Name:** For *Tlaloc*, the Toltec and Aztec god of rain, in allusion to the high essential water content.

**Type Material:** Natural History Museum, Paris; National School of Mines, Paris, France; The Natural History Museum, London, England; Harvard University, Cambridge, Massachusetts, 119091; National Museum of Natural History, Washington, D.C., USA, 135057.

**References:** (1) Williams, S.A. (1975) Xocomecatlite, Cu<sub>3</sub>TeO<sub>4</sub>(OH)<sub>4</sub>, and tlalocite, Cu<sub>10</sub>Zn<sub>6</sub>(TeO<sub>3</sub>)(TeO<sub>4</sub>)<sub>2</sub>Cl(OH)<sub>25</sub>•27H<sub>2</sub>O, two new minerals from Moctezuma, Sonora, Mexico. *Mineral. Mag.*, 40, 221–226. (2) (1976) *Amer. Mineral.*, 61, 504 (abs. ref. 1). (3) Roberts, A.C. (1978) An orthorhombic cell for tlalocite. *Geol. Surv. Can. Paper* 78–1C, 104.