

Burckhardtite **$\text{Pb}_2(\text{Fe}^{3+}, \text{Mn}^{3+})\text{Te}^{4+}(\text{AlSi}_3)\text{O}_{12}(\text{OH})_2 \cdot \text{H}_2\text{O}$**

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Crystal Data: Monoclinic (?), pseudohexagonal. *Point Group:* n.d. Rarely as hexagonal crystals, to 50 μm , typically overgrown on dickite; as crystal rosettes, < 0.2 mm.

Physical Properties: *Cleavage:* Perfect micaceous, basal. Hardness = ~ 2 D(meas.) = n.d. D(calc.) = 4.96 Paramagnetic.

Optical Properties: Transparent to translucent. *Color:* Carmine to violet-red. *Streak:* Pale red. *Luster:* Adamantine to slightly pearly.

Optical Class: Biaxial (-). *Pleochroism:* X = pale magenta; $Y = Z$ = carmine. $\alpha = 1.82$ $\beta = 1.85$ $\gamma = 1.85$ $2V(\text{meas.}) = \text{Small}$.

Cell Data: *Space Group:* C-centered cell (?). $a = 5.21$ $b = 9.04$ $c = 12.85$ $\beta = 90^\circ$ $Z = 2$

X-ray Powder Pattern: Moctezuma, Mexico.

3.11 (100), 12.8 (90), 3.70 (90), 2.60 (70), 1.840 (60), 1.590 (50), 2.26 (30b)

Chemistry:

	(1)
SiO_2	20.28
TeO_2	17.03
Al_2O_3	5.44
Fe_2O_3	7.25
Mn_2O_3	1.18
PbO	45.23
H_2O	[3.59]
Total	[100.00]

(1) Moctezuma, Mexico; by electron microprobe, valences of Te, Fe, and Mn inferred from the oxidized state of the deposit, H_2O by difference; corresponds to $\text{Pb}_{1.83}(\text{Fe}_{0.82}^{3+}\text{Mn}_{0.14}^{3+})_{\Sigma=0.96}\text{Te}_{0.97}(\text{Si}_{3.04}\text{Al}_{0.96})_{\Sigma=4.00}\text{O}_{12.7} \cdot 1.80\text{H}_2\text{O}$.

Occurrence: In a breccia, loosely cemented by dickite, in very thin disseminations on quartz fragments.

Association: Moctezumite, zemannite, tellurite, barite, dickite, quartz.

Distribution: In the Moctezuma mine, Moctezuma, Sonora, Mexico.

Name: To honor Mexican geologist Carlos Burckhardt (1869–1935).

Type Material: University of Delaware, Newark, Delaware; Harvard University, Cambridge, Massachusetts, 125476, 119081, 119085; National Museum of Natural History, Washington, D.C., USA, 136509, 144110, 164347, 164348.

References: (1) Gaines, R.V., P.B. Leavens, and J.A. Nelen (1979) Burckhardtite, a new silicate-tellurite from Mexico. *Amer. Mineral.*, 64, 355–358.