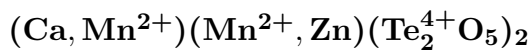


Denningite



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Crystal Data: Tetragonal. *Point Group:* $4/m\ 2/m\ 2/m$. Rare as octagonal thin platy crystals, flattened on {001}, with {001}, {110}, and {100}, to 4 mm; most commonly in cleavable masses.

Physical Properties: *Cleavage:* Perfect on {001}. *Fracture:* Conchoidal. Hardness = 4
D(meas.) = 5.05(5) D(calc.) = 5.07

Optical Properties: Translucent to transparent. *Color:* Pale green to pale gray, may be colorless; colorless in transmitted light. *Streak:* White. *Luster:* Adamantine.
Optical Class: Uniaxial (+), may be biaxial. $\omega = 1.89(1)$ $\epsilon = 2.00(1)$ $2V(\text{meas.}) = 0^\circ\text{--}15^\circ$

Cell Data: *Space Group:* $P4_2/nbc$. $a = 8.82(5)$ $c = 13.04(5)$ $Z = 4$

X-ray Powder Pattern: Moctezuma mine, Mexico.

4.42 (vs), 3.38 (s+), 3.12 (s), 2.62 (s), 2.03 (s), 1.53 (ms), 6.26 (m)

Chemistry:

	(1)
TeO ₂	82.34
MnO	10.28
ZnO	2.63
CaO	4.23
H ₂ O	0.03
excess O	0.09
insol.	0.03
rem.	0.27
Total	99.90

(1) Moctezuma mine, Mexico; Mg determined spectrographically, after deduction of minor components corresponds to $(\text{Ca}_{0.60}\text{Mn}_{0.40})_{\Sigma=1.00}(\text{Mn}_{0.72}\text{Zn}_{0.24}\text{Mg}_{0.04})_{\Sigma=1.00}(\text{Te}_2\text{O}_5)_{2.01}$.

Occurrence: In a hydrothermal Au–Te deposit.

Association: Tellurium, tellurite, paratellurite, spiroffite, zemannite.

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

Name: To honor Reynolds McConnell Denning (1916–1967), Professor of Mineralogy, University of Michigan, Ann Arbor, Michigan, USA.

Type Material: Natural History Museum, Paris, 175.81; National School of Mines, Paris, France; Royal Ontario Museum, Toronto, Canada, M25000–M25005.

References: (1) Mandarino, J.A., S.J. Williams, and R.S. Mitchell (1961) Denningite, a new tellurite mineral from Moctezuma, Sonora, Mexico. *Can. Mineral.*, 7, 340–341 (abs.). (2) (1962) *Amer. Mineral.*, 47, 1484 (abs. ref. 1). (3) Mandarino, J.A., S.J. Williams, and R.S. Mitchell (1961) Denningite, a new tellurite mineral from Moctezuma, Sonora, Mexico. *Can. Mineral.*, 7, 443–452. (4) (1963) *Amer. Mineral.*, 48, 1419 (abs. ref. 3). (5) Walitzi, E.M. (1965) Die Kristallstruktur von Denningit, $(\text{Mn}, \text{Ca}, \text{Zn})\text{Te}_2\text{O}_5$. Ein Beispiel für die Koordination um vierwertiges Tellur. *Tschermaks Mineral. Petrog. Mitt.*, 10, 241–255 (in German with English abs.).