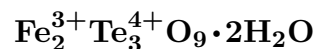


Emmonsite



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Crystal Data: Triclinic. *Point Group:* $\bar{1}$. Crystals thin, scaly to hairlike, to 5 mm, in rosettes and sprays; in fibrous globular aggregates and crusts, microcrystalline massive. *Twinning:* Noted.

Physical Properties: *Cleavage:* Perfect on {010}; good on {100} and {001}. Hardness = ~ 5 D(meas.) = 4.52–4.55 D(calc.) = 4.719

Optical Properties: Opaque to translucent, transparent in small grains. *Color:* Yellowish green; pale yellow-green in transmitted light. *Luster:* Vitreous.

Optical Class: Biaxial (–). *Pleochroism:* Weak. *Orientation:* $Y = b$. *Dispersion:* $r > v$, strong. *Absorption:* $Z > X$. $\alpha = 1.962(2)$ $\beta = 2.09(2)$ $\gamma = 2.10(2)$ $2V(\text{meas.}) = \leq 20^\circ$

Cell Data: *Space Group:* $P\bar{1}$. $a = 7.90(1)$ $b = 8.00(1)$ $c = 7.62(1)$ $\alpha = 96^\circ 44(10)'$ $\beta = 95^\circ 00(10)'$ $\gamma = 84^\circ 28(10)'$ $Z = 2$

X-ray Powder Pattern: Goldfield, Nevada, USA.

3.14 (10), 2.87 (9), 2.52 (9), 3.69 (8), 2.67 (8), 1.80 (8), 5.81 (7)

Chemistry:

	(1)	(2)
TeO ₂	71.80	70.98
Al ₂ O ₃	0.58	
Fe ₂ O ₃	22.81	23.68
H ₂ O	4.82	5.34
Total	100.01	100.00

(1) Cripple Creek, Colorado, USA; corresponds to $(\text{Fe}_{1.91}\text{Al}_{0.08})_{\Sigma=1.99}\text{Te}_{3.01}\text{O}_{9.00} \cdot 1.78\text{H}_2\text{O}$.

(2) $\text{Fe}_2\text{Te}_3\text{O}_9 \cdot 2\text{H}_2\text{O}$.

Occurrence: An alteration product formed from earlier tellurium minerals in the oxide zone of some hydrothermal precious metal deposits.

Association: Tellurium, tellurite, rodalquilarite, mackayite, sonoraite, cuzticite, eztlite, gold, pyrite.

Distribution: In the USA, from the W.P.H., Moose, and Deadwood mines, Cripple Creek, Teller Co., Colorado; in the Toughnut-Empire mine and between the Joe and Grand Central mines, Tombstone, Cochise Co., Arizona; from the Wilcox district, Catron Co., and the Sylvanite district, Hidalgo Co., New Mexico; at the Mohawk mine, Goldfield, Esmeralda Co., Nevada; from the Clinton mine, Lawrence Co., South Dakota. In the Moctezuma (Bambolla) mine, 12 km south of Moctezuma, Sonora, Mexico. At the El Plomo mine, Tegucigalpa, Honduras. In the Wendy open pit, Tambo, El Indio-Tambo district, east of La Serena, Coquimbo, Chile. From the Zod gold deposit, 14 km east of Vardenis, Armenia.

Name: To honor Samuel Franklin Emmons (1841–1911), American economic geologist, U.S. Geological Survey.

Type Material: Yale University, New Haven, Connecticut, 5.6300; Harvard University, Cambridge, Massachusetts, USA, 97503.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 640–641. (2) Gaines, R.V. (1972) New data on emmonsite and a second locality for sonoraite. Mineral. Record, 3, 82–84. (3) Pertlik, F. (1972) Der Strukturtyp von Emmonsit, $\{\text{Fe}_2[\text{TeO}_3]_3 \cdot \text{H}_2\text{O}\} \cdot x\text{H}_2\text{O}$ ($x = 0-1$). Tschermaks Mineral. Petrog. Mitt., 18, 157–168 (in German with English abs.). (4) Williams, S.A. (1980) The Tombstone district, Cochise Co., Arizona. Mineral. Record, 11, 251–256.

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