

Leisingite

(Cu, Mg, Zn)₂(Mg, Fe²⁺)Te⁶⁺O₆•6H₂O

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Crystal Data: Hexagonal. *Point Group:* 3*m*. Hexagonal plates, to 0.2 mm, prominent {0001} and {000 $\bar{1}$ }, with {10 $\bar{1}$ 0}, {11 $\bar{2}$ 0}; may be isolated or in clusters.

Physical Properties: *Cleavage:* {001}, perfect. *Fracture:* Uneven. *Tenacity:* Brittle to flexible. Hardness = 3–4 D(meas.) = n.d. D(calc.) = 3.41

Optical Properties: Transparent to translucent. *Color:* Pale yellow to pale yellow-orange. *Streak:* Pale yellow. *Luster:* Vitreous, may be satiny or frosted. *Optical Class:* Uniaxial (-). $\omega = 1.803(3)$ $\epsilon = [1.581]$ calculated by Gladstone-Dale relation.

Cell Data: *Space Group:* $P\bar{3}1m$. $a = 5.316(1)$ $c = 9.719(2)$ $Z = 1$

X-ray Powder Pattern: Centennial Eureka mine, Utah, USA.
9.70 (100), 4.834 (80), 2.556 (70), 2.326 (70), 4.604 (60), 2.655 (60), 1.789 (40)

Chemistry:	(1)
	TeO ₃ 36.94
	FeO 6.86
	CuO 24.71
	ZnO 0.45
	MgO 6.19
	<u>H₂O [21.55]</u>
	Total [96.70]

(1) Centennial Eureka mine, Utah, USA; by electron microprobe, total Fe as Fe²⁺ [although the crystal-structure analysis indicates a probability of Fe³⁺], H₂O confirmed as present by IR; corresponds to (Cu_{1.56}²⁺Mg_{0.25}Zn_{0.03}) $\Sigma=1.84$ (Mg_{0.52}Fe_{0.48}) $\Sigma=1.00$ Te_{1.06}⁶⁺O_{6.02}•5.98H₂O.

Occurrence: A very rare secondary mineral in dump material from the oxidized zone of a tellurium-bearing Cu–Au–Ag deposit.

Association: Quartz, jensenite, cesbronite, hematite.

Distribution: From the Centennial Eureka mine, Tintic district, Juab Co., Utah, USA.

Name: Honoring Joseph F. Leising (1949–), Reno, Nevada, USA, geologist and mineral collector, who helped collect the material.

Type Material: Canadian Geological Survey, Ottawa, Canada, 67882.

References: (1) Roberts, A.C., L.A. Groat, J.D. Grice, R.A. Gault, and M.C. Jensen (1996) Leisingite, Cu(Mg, Cu, Fe, Zn)₂Te⁶⁺O₆•6H₂O, a new mineral species from the Centennial Eureka mine, Juab County, Utah. *Mineral. Mag.*, 60, 653–657. (2) (1997) *Amer. Mineral.*, 82, 208 (abs. ref. 1). (3) Margison, S.M., J.D. Grice, and L.A. Groat (1997) The crystal structure of leisingite, (Cu²⁺, Mg, Zn)₂(Mg, Fe)Te⁶⁺O₆•6H₂O.