

Crystal Data: Monoclinic. *Point Group:* 2/m. Rarely as prismatic crystals, to 2 mm, showing {110}, {010}, and {011}; in cleavable masses.

Physical Properties: *Cleavage:* Perfect on {001}. *Hardness* = 2–2.5 VHN = 87–132, 108 average (25 g load). D(meas.) = 4.02 D(calc.) = 4.14

Optical Properties: Opaque, translucent in thin fragments. *Color:* Deep red to maroon, tarnishing to darker red or blue; pale gray in reflected light, with abundant deep red internal reflections. *Streak:* Bright brick-red. *Luster:* Vitreous to metallic if tarnished.

Optical Class: Biaxial. *Anisotropism:* Distinct. *Birefractance:* Weak to moderate in oil; pale rose to dusky rose.

R₁–R₂: (400) 29.8–32.0, (420) 29.3–31.8, (440) 28.6–31.6, (460) 27.8–31.0, (480) 27.3–30.6, (500) 27.0–30.4, (520) 26.1–29.6, (540) 25.1–28.9, (560) 23.6–27.5, (580) 23.1–26.9, (600) 22.6–26.2, (620) 22.2–25.8, (640) 21.9–25.4, (660) 21.6–25.2, (680) 21.4–24.9, (700) 21.2–24.8

Cell Data: *Space Group:* P2/n. a = 9.584(3) b = 5.679(2) c = 21.501(6) β = 10.07(2)°
Z = 2

X-ray Powder Pattern: Mercur deposit, Utah, USA.

3.077 (100), 2.814 (100), 3.63 (90), 2.502 (70), 1.766 (70), 4.14 (60), 3.87 (60)

Chemistry:

	(1)
Tl	28.4
As	39.3
Sb	2.2
S	28.7
Total	98.6

(1) Mercur deposit, Utah, USA; by electron microprobe, average of five analyses; corresponding to Tl_{2.02}As_{7.62}Sb_{0.26}Σ=7.88S_{13.00}.

Occurrence: In a sediment-hosted disseminated gold deposit, in organic-rich unoxidized carbonates.

Association: Orpiment, realgar, lorandite, raguinite, pyrite, barite, calcite.

Distribution: From the Mercur gold deposit, southern Oquirrh Mountains, about 56 km southwest of Salt Lake City, Tooele Co., USA [TL].

Name: To honor James C. Gilluly (1896–1980), U.S. Geological Survey, who worked in the area of the Mercur deposit.

Type Material: Royal Ontario Museum, Toronto, Canada; Harvard University, Cambridge, Massachusetts, 130781; National Museum of Natural History, Washington, D.C., USA, 170773.

References: (1) Wilson, J.R., P.D. Robinson, P.N. Wilson, L.W. Stanger, and G. L. Salmon (1991) Gillulyite, Tl₂(As, Sb)₈S₁₃, a new thallium arsenic sulfosalt from the Mercur gold deposit, Utah. *Amer. Mineral.*, 76, 653–656. (2) Wilson, J.R., P.K. Sen Gupta, P.D. Robinson, and A.J. Criddle (1993) Fangite, Tl₃AsS₄, a new thallium arsenic sulfosalt from the Mercur Au deposit, Utah, and revised optical data for gillulyite. *Amer. Mineral.*, 78, 1096–1103. (3) Foit, F.F., Jr., P.D. Robinson, and J.R. Wilson (1995) The crystal structure of gillulyite, Tl₂(As, Sb)₈S₁₃, from the Mercur gold deposit, Tooele County, Utah, U.S.A. *Amer. Mineral.*, 80, 394–399. (4) Makovicky, E. and T. Balič-Žunić (1999) Gillulyite Tl₂(As, Sb)₈S₁₃: reinterpretation of the crystal structure and order-disorder phenomena. *Amer. Mineral.*, 84, 400–406.