

Crystal Data: Cubic. *Point Group:* $4/m\bar{3}2/m$. Rarely in very small cubes and octahedra; massive, as cleavages, to 1 cm; granular, myrmekitic in other sulfides.

Physical Properties: *Cleavage:* {001}, perfect. *Fracture:* Subconchoidal. *Tenacity:* Sectile. Hardness = 3 VHN = 47–53, 51 average. $D(\text{meas.}) = 8.19$ $D(\text{calc.}) = 8.27$

Optical Properties: Opaque. *Color:* Tin-white with yellowish tint, tarnishes bronze; in polished section, white with a delicate greenish hue. *Luster:* Metallic.

R: (400) 59.6, (420) 62.6, (440) 65.2, (460) 67.5, (480) 69.3, (500) 70.6, (520) 71.2, (540) 71.1, (560) 70.1, (580) 68.7, (600) 66.8, (620) 65.1, (640) 63.4, (660) 61.9, (680) 60.6, (700) 59.4

Cell Data: *Space Group:* $Fm\bar{3}m$. $a = 6.439$ $Z = 4$

X-ray Powder Pattern: Kirkland Lake, Ontario, Canada.

3.23 (100), 2.29 (80), 1.443 (50), 1.314 (40), 1.859 (30), 1.610 (20), 1.074 (20)

Chemistry:

	(1)	(2)	(3)
Pb	61.52	62.4	61.91
Cu		0.4	
Bi		0.2	
Te	38.48	37.2	38.09
Total	100.00	100.2	100.00

(1) Red Cloud mine, Colorado, USA. (2) Campbell mine, Bisbee, Arizona, USA; by electron microprobe. (3) PbTe.

Occurrence: Typically in hydrothermal vein Au–Te-bearing deposits.

Association: Gold, silver, antimony, tellurium, tellurantimony, galena, pyrite, hessite, nagyágite, tetrahedrite, sylvanite, petzite, calaverite, arsenopyrite, sphalerite, chalcopyrite, jamesonite, boulangerite, bournonite, agularite, pyrrhotite, siderite, cerussite, quartz.

Distribution: Occurrences are too numerous to fully list. Selected localities are: in the Zavodinskii mine, near Ziryansovsk, Altai Mountains, Kazakhstan [TL], hundreds of kg. At the Bereznjakov gold deposit, Southern Ural Mountains, Russia. From Săcărîmb (Nagyág), Romania. At Kalgoorlie, Western Australia. In the Fiji Islands, in the Tuvatu Au–Ag–Te deposit, Viti Levu. From the Bulawan deposit, Negros Occidental, Phillipines. At several mines in the Kirkland Lake area, Ontario, Canada. In the USA, in the Foote mine, Kings Mountain, Cleveland Co., North Carolina; the Red Cloud mine, Gold Hill, Boulder Co., Colorado; the Mayflower mine, Tobacco Root Mountains, Madison Co., Montana; the Hilltop mine, near Las Cruces, Doña Ana Co., New Mexico; the Stanislaus mine, Carson Hill district, Calaveras Co., California; and the Minnamax Cu–Ni–sulfide deposit, Duluth Gabbro complex, near Hibbing, St. Louis Co., Minnesota. From the San Francisco mine, 145 km north of Hermosillo, Sonora, Mexico.

Name: After the locality in the Altai Mountains, Kazakhstan.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 205–207. (2) Berry, L.G. and R.M. Thompson (1962) X-ray powder data for the ore minerals. *Geol. Soc. Amer. Mem.* 85, 48. (3) Sindeeva, N.D. (1964) Mineralogy and types of deposits of selenium and tellurium, 121–125. (4) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 10.