

**Crystal Data:** Cubic. *Point Group:* 432. Massive, fine granular to compact and as irregular shaped blebs, to 2 mm.

**Physical Properties:** *Cleavage:* {001}. *Fracture:* Subconchoidal. *Tenacity:* Slightly sectile to brittle. Hardness = 2.5–3 VHN = 48 (10 g load). D(meas.) = 8.7–9.4 D(calc.) = 8.74

**Optical Properties:** Opaque. *Color:* Bright steel-gray to iron-gray to iron-black, commonly tarnished from bronze-yellow to sooty black; in reflected light, grayish white with a pale bluish tint. *Luster:* Metallic. *Anisotropism:* Noticeable in part.

R: (400) 45.0, (420) 43.7, (440) 42.4, (460) 41.4, (480) 40.6, (500) 39.9, (520) 39.3, (540) 38.8, (560) 38.5, (580) 38.3, (600) 38.2, (620) 38.1, (640) 38.0, (660) 37.8, (680) 37.8, (700) 37.8

**Cell Data:** *Space Group:* I4<sub>1</sub>32. *a* = 10.385(4) Z = 8

**X-ray Powder Pattern:** Botés, Romania.

2.77 (100), 2.12 (80), 2.03 (70), 2.44 (60), 2.32 (60), 7.31 (50), 1.893 (50)

**Chemistry:**

	(1)	(2)	(3)
Ag	41.37	41.87	41.71
Au	23.42	25.16	25.39
Te	33.00	33.21	32.90
Hg	2.26		
Cu	0.16		
Total	100.21	100.24	100.00

(1) Kalgoorlie, Australia. (2) Mother Lode district, California, USA. (3) Ag<sub>3</sub>AuTe<sub>2</sub>.

**Occurrence:** With other tellurides in vein-controlled gold deposits.

**Association:** Gold, hessite, sylvanite, krennerite, calaverite, altaite, montbrayite, melonite, frohbergite, tetradymite, rickardite, vulcanite, pyrite.

**Distribution:** Noted in small amounts at a number of localities other than those listed here. In Romania, from Săcărîmb (Nagyág) [TL], Botés, and Baia Sprie (Felsőbánya). At the Kochbulak gold deposit, Chatkal-Kuramin Mountains, eastern Uzbekistan. From the Byn'govsk Au–Te deposit, Central Ural Mountains, Russia. In the Zhana-Tyube Au–Te deposit, northern Kazakhstan. In the USA, at Gold Hill, Boulder Co., Lake City, Hinsdale Co., and Leadville, Lake Co., Colorado; from California, in the Golden Rule and Norwegian mines, Tuttletown, and the Jamestown mine, Tuolumne Co., in the Stanislaus and Melones mines, Carson Hill district, Calaveras Co., and in other mines along the Mother Lode; from the Buster mine, Olinghouse district, Washoe Co., and elsewhere in Nevada. In Canada, at the Hollinger mine, Timmins, and the Lake Shore mine, Kirkland Lake, Ontario; in Quebec, at the Robb-Montbray mine, Montbray Township, the Noranda mine at Rouyn, the Horne mine at Noranda, and many other localities. From El Indio, east of Coquimbo, Chile. At Kalgoorlie, Western Australia. From the Tuvatu Au–Ag–Te deposit, Viti Levu, Fiji Islands. At the Bulawan deposit, Negros Occidental, Phillipines.

**Name:** After W. Petz, who first analyzed the mineral.

**Type Material:** Harvard University, Cambridge, Massachusetts, 99348; National Museum of Natural History, Washington, D.C., USA, R9556.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 186–187. (2) Frueh, A.J., Jr. (1959) The crystallography of petzite, Ag<sub>3</sub>AuTe<sub>2</sub>. Amer. Mineral., 44, 693–701. (3) Chamid, S., E.A. Pobedinskaya, E.M. Spiridonov, and N.V. Belov (1978) Refinement of the structure of petzite AuAg<sub>3</sub>Te<sub>2</sub>. Kristallografiya (Sov. Phys. Crystal.), 23, 483–486 (in Russian). (4) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 434.

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