Polarite Pd_2PbBi

Crystal Data: Orthorhombic. *Point Group:* $mm2$. As grains, to 0.3 mm.

Physical Properties: Hardness = n.d. VHN = 168–232 (50 g load). D(meas.) = n.d. D(calc.) = 12.51

Optical Properties: Opaque. *Color:* White with yellowish tint in reflected light. *Luster:* Metallic. *Anisotropism:* Slight; gray to pale brown in oil.
R: (400) — , (420) — , (440) 55.4, (460) 56.8, (480) 55.9, (500) 56.4, (520) 58.2, (540) 59.2, (560) 59.6, (580) 59.6, (600) 59.9, (620) 59.5, (640) 60.9, (660) 61.2, (680) 60.9, (700) 61.8

Cell Data: *Space Group:* $Ccm2_1$. $a = 7.191$ $b = 8.693$ $c = 10.681$ $Z = 16$

X-ray Powder Pattern: Talnakh area, Russia.
2.65 (100), 2.16 (90), 2.25 (50), 1.638 (50), 2.50 (30), 1.400 (30), 1.220 (30)

Chemistry:

	(1)	(2)	(3)	(4)
Pd	32.8	33.1	35.0	33.84
Pt			2.0	
Pb	34.0	29.0		32.94
Bi	33.4	36.4	59.4	33.22
Te			5.2	
Total	100.2	98.5	101.6	100.00

(1) Talnakh area, Russia; by electron microprobe, corresponds to $Pd_{1.95}Pb_{1.04}Bi_{1.01}$. (2) Do.; by electron microprobe, corresponds to $Pd_{1.99}Pb_{0.90}Bi_{1.11}$. (3) Union mine, South Africa; by electron microprobe, corresponds to $(Pd_{1.98}Pt_{0.06})_{\Sigma=2.04}(Bi_{1.71}Te_{0.24})_{\Sigma=1.95}$. (4) Pd_2PbBi.

Occurrence: In hydrothermal Cu–Ni–Fe sulfide veins (Talnakh area, Russia).

Association: Chalcopyrite, talnakhite, cubanite, stannopalladinite, paolovite, sobolevskite, sperrylite, cabriite, palarstanide, nickeloan platinum, sphalerite, silver (Talnakh area, Russia).

Distribution: From the Majak mine, Talnakh area, Noril'sk district, Polar Ural Mountains, western Siberia, Russia [TL]. At the Union mine, in the Merensky Reef, Bushveld complex, Transvaal, South Africa. From Fox Gulch, Goodnews Bay, Alaska, USA.

Name: For its occurrence in the Polar Ural Mountains, Russia.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 73002; Canadian Museum of Nature, Ottawa, Canada, 10401; National Museum of Natural History, Washington, D.C., USA, 160244.

References: (1) Genkin, A.D., T.L. Evstigneeva, N.V. Troneva, and L.N. Vyal'sov (1969) Polarite, Pd(Pb, Bi) a new mineral from copper–nickel sulfide ores. Zap. Vses. Mineral. Obshch., 98, 708–715 (in Russian). (2) (1970) Amer. Mineral., 55, 1810 (abs. ref. 1). (3) Cabri, L.J. and R.J. Traill (1966) New palladium minerals from Noril'sk, western Siberia. Can. Mineral., 8, 541–550. (4) Mayer, H. (1979) ??title?? J. Less-Common Metals, 66, 1–??. (5) Tarkian, M. (1987) Compositional variations and reflectance of the common platinum-group minerals. Mineral. Petrol., 36, 169–190. (6) Cabri, L.J., Ed. (1981) Platinum group elements: mineralogy, geology, recovery. Can. Inst. Min. & Met., 130–131.