

Crystal Data: Hexagonal, probable. *Point Group:* n.d. As grains, to 0.1 mm; may be in myrmeketic intergrowths with other species.

Physical Properties: Hardness = n.d. VHN = 236 (50 g load). D(meas.) = n.d. D(calc.) = 11.88

Optical Properties: Opaque. *Color:* Pale pinkish orange; in polished section, grayish white with creamy tint. *Anisotropism:* Strong; in reddish lilac, brown, and pale cream shades. R_1 – R_2 : (400) —, (420) —, (440) —, (460) —, (480) 46.7–52.2, (500) 48.3–53.6, (520) 50.4–56.1, (540) 52.4–57.7, (560) 54.3–59.7, (580) 55.5–61.0, (600) 56.5–62.0, (620) 57.8–63.5, (640) 59.3–65.0, (660) 60.2–66.2, (680) 60.5–67.5, (700) 60.8–68.3

Cell Data: *Space Group:* n.d. $a = 4.23$ $c = 5.69$ $Z = 2$

X-ray Powder Pattern: Oktyabr mine, Russia. 3.07 (100), 2.26 (100), 2.11 (90), 1.690 (50), 1.182 (50), 1.74 (40), 1.342 (40)

Chemistry:	(1)	(2)	(3)		(1)	(2)	(3)
Pd	34.4	35.47	33.74	Pb		2.10	
Pt		0.11		Sb		0.09	
Sn		0.11		Bi	66.2	54.14	66.26
Cu		0.12		Te		7.65	
				Total	100.6	99.79	100.00

(1) Oktyabr mine, Russia; by electron microprobe, corresponding to $\text{Pd}_{1.01}\text{Bi}_{1.00}$. (2) Do.; by electron microprobe, corresponding to $(\text{Pd}_{1.00}\text{Cu}_{0.01})_{\Sigma=1.01}(\text{Bi}_{0.78}\text{Te}_{0.18}\text{Pb}_{0.03})_{\Sigma=0.99}$. (3) PdBi.

Polymorphism & Series: Forms a series with kotulskite.

Mineral Group: Nickeline group.

Occurrence: In massive and disseminated Cu–Ni–PGE minerals; in copper deposits in organic-rich limestones; along grain boundaries in silicates in layered intrusives.

Association: Paolovite, sperrylite, altaite, taimyrite, silver, polarite, talnakhite, chalcopyrite, cubanite, mooihoekite, troilite, pyrrhotite, galena (Oktyabr mine, Russia); platinum gold, palladium (Lubin mine, Poland).

Distribution: In Russia, from the Oktyabr mine, Talnakh area, Noril'sk region, western Siberia [TL]; in the Federov Pansky layered mafic intrusion, Kola Peninsula; at the Vostok deposit, Lukkulaisvaara layered intrusion, and the Burakovsky complex, Karelia; in the Kingash massif, eastern Sayan. From the Keivitsansarvi Ni–Cu–PGE deposit, Keivitsa intrusion, northern Finland. In the Lubin and Polkovice copper mines, near Legnica, Zechstein copper district, Lower Silesia, Poland. From the Onverwacht mine, in the Merensky Reef, Bushveld complex, Transvaal, South Africa. At the Wellgreen Ni–Cu–PGE deposit, Yukon Territory; from Blue Lake, Quebec; in footwall and deposits of the Sudbury igneous complex, Ontario, Canada. From the Bacuri complex, Amapá, Brazil. Additional localities are now known.

Name: Honors Petr Grigorevich Sobolevski (1781–1841), Russian metallurgist, who studied the platinum deposits of the Ural Mountains.

Type Material: Institute of Geology of Ore Deposits, Petrology, Mineralogy, and Geochemistry, Moscow; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia.

References: (1) Evstigneeva, T.L., A.D. Genkin, and V.A. Kovalenker (1975) A new bismuthide of palladium, sobolevskite, and the nomenclature of minerals of the system PdBi–PdTe–PdSb. Zap. Vses. Mineral. Obshch., 104, 568–579 (in Russian). (2) (1976) Amer. Mineral., 61, 1054 (abs. ref. 1). (3) Cook, N.J., C.L. Ciobanu, R.K.W. Merkle, and H.-J. Bernhardt (2002) Sobolevskite, taimyrite, and Pt_2CuFe (tulameenite?) in complex talnakhite ore, Noril'sk orefield, Russia. Can. Mineral., 40, 329–340.

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