

# Merenskyite

# (Pd, Pt)(Te, Bi)<sub>2</sub>

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**Crystal Data:** Hexagonal. *Point Group:* 3*m*. As minute grains, intimately intergrown with other Pd–Pt minerals.

**Physical Properties:** Hardness = ~3.5 VHN = 82–128 (10 g load). D(meas.) = n.d. D(calc.) = 8.547

**Optical Properties:** Opaque. *Color:* In polished section, white. *Pleochroism:* Weak, white to grayish white in air, more distinct in oil, from white to slightly creamy to light grayish white. *Anisotropism:* Distinct to strong, from dark brown to light greenish gray.  
R<sub>1</sub>–R<sub>2</sub>: (400) – , (420) 63.6–65.0, (440) 63.5–65.2, (460) 62.5–64.7, (480) 62.3–64.6, (500) 62.3–64.8, (520) 62.4–65.4, (540) 62.8–66.0, (560) 63.3–66.7, (580) 63.1–67.2, (600) 63.5–68.0, (620) 64.8–69.1, (640) 65.2–69.7, (660) 65.7–71.0, (680) 67.7–73.0, (700) 66.8–73.0

**Cell Data:** *Space Group:* P3*m*1. *a* = 3.978(1) *c* = 5.125(2) *Z* = 1

**X-ray Powder Pattern:** Merensky Reef, South Africa.  
2.92 (100), 2.10 (60), 3.07 (30), 2.02 (30), 1.67 (30), 1.54 (30), 2.51 (20)

<b>Chemistry:</b>	(1)	(2)	(4)	(1)	(2)	(4)
Pd	25.7	13.2	29.42	Sb	0.3	
Pt	2.0	24.0		Te	56.5	61.4
Bi	15.8					70.58
				Total	[100.0]	98.9
						100.00

(1) Rustenburg mine, South Africa; by electron microprobe, recalculated to 100.0%; corresponds to (Pd<sub>0.93</sub>Pt<sub>0.04</sub>)<sub>Σ=0.97</sub>(Te<sub>1.71</sub>Bi<sub>0.29</sub>)<sub>Σ=2.00</sub>. (2) Messina, South Africa; by electron microprobe, corresponds to (Pd<sub>0.50</sub>Pt<sub>0.50</sub>)<sub>Σ=1.00</sub>(Te<sub>1.95</sub>Sb<sub>0.01</sub>)<sub>Σ=1.96</sub>. (3) PdTe<sub>2</sub>.

**Polymorphism & Series:** Forms a series with melonite.

**Mineral Group:** Melonite group.

**Occurrence:** A principal Pd–Pt-bearing mineral, associated with numerous other Pt–Pd species; typically in disseminated interstitial segregations of Cu–Fe–Ni sulfides and enclosing silicates.

**Association:** Moncheite, melonite, kotulskite, michenerite; sperrylite, laurite, cooperite; chalcopyrite, pyrrhotite, pentlandite, pyrite; chromite, magnetite.

**Distribution:** Some well-studied occurrences are: in South Africa, in Transvaal, from the Rustenburg mine, in the Merensky Reef, Bushveld complex [TL]; and at Messina. In the Great Dyke, Zimbabwe. From the Gabbro Akarem intrusion, Eastern Desert, Egypt. In Canada, in Ontario, at Werner Lake; Rathbun Lake; Temagami Island in Temagami Lake; the Lac des Iles complex; in the Thierry mine, near Pickle Lake; at the Sudbury district; from the Geordie Lake intrusion, Coldwell complex; in the Wellgreen Ni–Cu–PGE deposit, Yukon Territory; and elsewhere. In the USA, from the Stillwater complex, Montana; the New Rambler Cu–Ni mine, Medicine Bow Mountains, east of Encampment, Albany Co., Wyoming; and in the Key West mine, east of Moapa, Bunkerville district, Clark Co., Nevada. From the Las Aguilas Ni–Cu deposit, San Luis Province, Argentina. In China, from Shiaoananshan, Inner Mongolia, and in the Jinchuan deposit, Gansu Province. At Kambalda, Western Australia. From the Noril'sk region, western Siberia, Russia. Numerous other localities are now known.

**Name:** To honor Dr. Hans Merensky (1871–1952), who was instrumental in the discovery of the “Reef” also named for him.

**Type Material:** n.d.

**References:** (1) Kingston, G.A. (1966) The occurrence of platinoid bismuthotellurides in the Merensky Reef at Rustenburg platinum mine in the western Bushveld. *Mineral. Mag.*, 35, 815–834. (2) (1967) *Amer. Mineral.*, 52, 926 (abs. ref. 1). (3) Pell, ?? ?? (1996) ??title?? *Acta Cryst.*, 1331C–??. (3) Cabri, L.J., Ed. (1981) *Platinum group elements: mineralogy, geology, recovery.* *Can. Inst. Min. & Met.*, 118–119, 156. (4) Criddle, A.J. and C.J. Stanley, Eds. (1993) *Quantitative data file for ore minerals*, 3rd ed. Chapman & Hall, London, 365.

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