

Genkinite



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Crystal Data: Tetragonal. *Point Group:* 422. As irregular grains, to about 165 μm .

Physical Properties: Hardness = n.d. VHN = 603–677 (25 g load). D(meas.) = n.d. D(calc.) = 9.256

Optical Properties: Opaque. *Color:* Pale brown or tan with a yellowish tinge. *Pleochroism:* Weak in oil for some grains. *Birefractance:* Weak. *Anisotropism:* Moderate to strong; from gray to extinction.

R_1 – R_2 : (400) 45.6–45.6, (420) 46.5–46.7, (440) 47.6–48.0, (460) 48.7–49.2, (480) 49.9–50.4, (500) 51.1–51.5, (520) 52.3–52.7, (540) 53.5–53.8, (560) 54.5–54.8, (580) 55.5–55.8, (600) 56.5–56.7, (620) 57.4–57.6, (640) 58.2–58.2, (660) 58.9–58.9, (680) 59.5–59.5, (700) 60.0–60.1

Cell Data: *Space Group:* n.d. $a = 7.736(1)$ $c = 24.161(2)$ $Z = 8$

X-ray Powder Pattern: Onverwacht mine, South Africa. 2.265 (100), 3.020 (90), 1.934 (60), 1.910 (50), 0.9043 (50b), 0.9025 (50b), 2.146 (40)

Chemistry:

	(1)	(2)
Pt	44.4	41.86
Pd	9.0	7.01
Rh	6.6	8.23
Ni	2.0	3.41
Cu	0.25	
Sb	35.8	38.96
Bi	1.7	
As	0.89	
Total	100.64	99.47

(1) Onverwacht mine, South Africa; by electron microprobe, corresponds to $(\text{Pt}_{2.17}\text{Pd}_{0.81}\text{Rh}_{0.61}\text{Ni}_{0.32}\text{Cu}_{0.04})_{\Sigma=3.95}(\text{Sb}_{2.81}\text{As}_{0.11}\text{Bi}_{0.08})_{\Sigma=3.00}$. (2) Shetland Islands, Scotland; by electron microprobe, corresponds to $(\text{Pt}_{2.04}\text{Rh}_{0.76}\text{Pd}_{0.62}\text{Ni}_{0.55})_{\Sigma=3.97}\text{Sb}_{3.03}$.

Occurrence: In ultramafics or ophiolites mineralized with Pt–Fe–Cu–Ni, and placers derived from them.

Association: Sperrylite, platarsite, ruthenarsenite, stibiopalladinite, mertieite-II, Pt–Fe alloy, chromite (Onverwacht mine, South Africa); osmium, Pt–Pd–Cu alloy, hollingworthite, irarsite, laurite, ruthenian pentlandite, chromite (Shetland Islands, Scotland).

Distribution: In South Africa, in the Merensky Reef, Bushveld complex, Transvaal, at the Onverwacht [TL] and Driekop mines. From the Joubdo stream, Birbir River, Ethiopia. On Unst and Fetlar, Shetland Islands, Scotland. From Fox Gulch, Goodnews Bay, Alaska, USA.

Name: For Dr. Alexandr D. Genkin (1919–), Russian mineralogist specializing in platinum group elements.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, N79000; Canadian Museum of Nature, Ottawa; Royal Ontario Museum, Toronto, Canada, M34861; National Museum of Natural History, Washington, D.C., USA, 136485.

References: (1) Cabri, L.J., J.M. Stewart, J.H.G. Laflamme, and J.T. Szymański (1977) Platinum group minerals from Onverwacht. III. Genkinite, $(\text{Pt, Pd})_4\text{Sb}_3$, a new mineral. *Can. Mineral.*, 15, 389–392. (2) (1979) *Amer. Mineral.*, 64, 654 (abs. ref. 1). (3) Cabri, L.J., Ed. (1981) Platinum group elements: mineralogy, geology, recovery. *Can. Inst. Min. & Met.*, 105–107. (4) Prichard, H.M. and M. Tarkian (1988) Platinum and palladium minerals from two PGE-rich localities in the Shetland ophiolite complex. *Can. Mineral.*, 26, 979–990. (5) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 191.

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