

Stibiocolusite**Cu₁₃V₄(Sb, Sn, As)₃S₁₆**

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Crystal Data: Hexagonal. *Point Group:* $6/m\ 2/m\ 2/m$, $6mm$, or $\bar{6}m2$. As hexagonal thin to thick tabular crystals, to 200 μm ; as inclusions in chromite, massive sulfides, and silicates; as inclusions in Pt–Fe alloys. *Twining:* Ubiquitous.

Physical Properties: Hardness = n.d. VHN = 610(7) (100 g load). D(meas.) = n.d. D(calc.) = 10.8

Optical Properties: Opaque. *Color:* In polished section, yellowish white. *Pleochroism:* Weak; pale yellow to yellowish white, also faint greenish, pinkish, or lavender. *Anisotropism:* Distinct; colors may be lacking but some grains are purplish gray to greenish gray.

R₁–R₂: (400) 41.8–42.3, (420) 43.3–44.7, (440) 44.9–46.8, (460) 46.8–49.0, (480) 48.6–50.7, (500) 50.2–52.3, (520) 51.7–53.6, (540) 53.0–54.8, (560) 54.1–55.6, (580) 55.2–56.4, (600) 56.3–57.0, (620) 57.3–57.6, (640) 58.3–58.0, (660) 59.1–58.3, (680) 60.1–58.6, (700) 61.0–59.0

Cell Data: *Space Group:* $P6_3/mmc$, $P6_3mc$, or $P\bar{6}2c$. $a = 7.598(2)$ $c = 28.112(9)$
Z = 12

X-ray Powder Pattern: Tweefontein Farm, South Africa.

2.236 (100), 2.194 (100), 1.279 (50), 1.228 (50), 1.183 (50), 1.576 (40), 1.267 (30)

Chemistry:	(1)	(2)	(3)		(1)	(2)	(3)
Pd	68.0	67.8	68.60	Sb	30.5	31.2	31.40
Cu	1.6	1.9		As	0.2		
Sn	0.2						
				Total	100.5	100.9	100.00

(1) Tweefontein Farm, South Africa; by electron microprobe, corresponding to (Pd_{4.87}Cu_{0.19}Sn_{0.01})_{Σ=5.07}(Sb_{1.91}As_{0.02})_{Σ=1.93}. (2) Goodnews Bay, Alaska, USA; by electron microprobe, average of analyses of seven grains; corresponding to (Pd_{4.83}Cu_{0.23})_{Σ=5.06}Sb_{1.94}. (3) Pd₅Sb₂.

Occurrence: An uncommon constituent of PGE deposits in layered intrusives and ophiolites, nevertheless a major carrier of palladium; in placers.

Association: Braggite, cooperite, mertieite-II, sperrylite, Pt–Fe–Cu–Ni alloys, genkinite, platarsite, chromite, chalcopyrite, pentlandite, pyrrhotite, geversite, gold, violarite.

Distribution: In Transvaal, South Africa, from Tweefontein Farm, Potgietersrus district [TL], and from the Elephant Winze, near Rietfontein; at the Onverwacht and Driekop mines, all on the Merensky Reef, Bushveld complex. In Russia, from the Morozova mine, Noril'sk region, western Siberia; at Zlatoust, Ural Mountains; from the Pustaya River placers, Kamchatka. At Tilkerode, Harz Mountains, Germany. In the Pirogues River, New Caledonia. In the USA, at Goodnews Bay, Alaska. From the Lac des Iles complex, Ontario, Canada. In the Department of Chocó, Cauca, Colombia. At Kambalda, 56 km south of Kalgoorlie, Western Australia. From the Santo Tomas II porphyry copper deposit, Benguet, Philippines. A number of other localities are known.

Name: For the composition.

Type Material: The Natural History Museum, London, England, 1930,950–952; Royal Ontario Museum, Toronto, Canada, M34229; National Museum of Natural History, Washington, D.C., USA, 135408.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 175. (2) Cabri, L.J. and T.T. Chen (1976) Stibiopalladinite from the type
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locality. *Amer. Mineral.*, 61, 1249–1254. (3) Desborough, G.A., J.J. Finney, and B.F. Leonard (1973) Mertieite, a new palladium mineral from Goodnews Bay, Alaska. *Amer. Mineral.*, 58, 1–10. (4) El-Boragy, M., S. Bhan, and K. Schubert (1970) Kristallstruktur von Pd_5Sb_2 und Ni_5As_2 und einigen Varianten. *J. Less-Common Metals*, 22, 445–458 (in German with English abs.). (5) Ramdohr, P. (1969) *The ore minerals and their intergrowths*, (3rd edition), 413–416. (6) Cabri, L.J., Ed. (1981) *Platinum group elements: mineralogy, geology, recovery*. *Can. Inst. Min. & Met.*, 139–140. (7) Criddle, A.J. and C.J. Stanley, Eds. (1993) *Quantitative data file for ore minerals*, 3rd ed. Chapman & Hall, London, 537.