

Crystal Data: Tetragonal. *Point Group:* $4/m\ 2/m\ 2/m$. As rims and irregular grains, to 20 μm , partly replacing millerite and gold.

Physical Properties: *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = n.d. VHN = 718 (20 g load). D(meas.) = n.d. D(calc.) = 6.15

Optical Properties: Opaque. *Color:* Pale brass-yellow; in polished section, brownish yellow. *Luster:* Metallic. *Pleochroism:* Very weak to absent. *Anisotropism:* Very strong to distinct; deep brown to grayish blue.

R₁–R₂: (400) 37.5–38.2, (420) 38.0–39.4, (440) 38.6–41.0, (460) 39.5–42.5, (480) 40.7–44.0, (500) 42.3–45.6, (520) 44.0–47.0, (540) 45.4–48.0, (560) 46.6–48.8, (580) 47.6–49.4, (600) 48.4–50.1, (620) 49.2–50.7, (640) 49.9–51.4, (660) 50.6–52.0, (680) 51.2–52.6, (700) 51.8–53.1

Cell Data: *Space Group:* $P4/mmm$. $a = 7.174(6)$ $c = 5.402(7)$ $Z = 1$

X-ray Powder Pattern: Witwatersrand, South Africa.

2.76 (100), 2.38 (80), 2.28 (80b), 1.850 (80), 4.33 (70), 1.793 (70), 3.21 (60)

Chemistry:

| | (1) | (2) | (3) |
|-------|--------|--------|--------|
| Ni | 47.34 | 47.8 | 51.38 |
| Co | 1.06 | | |
| Fe | 3.61 | 3.75 | |
| As | 0.86 | 1.34 | |
| Sb | 21.62 | 21.87 | 23.68 |
| Bi | 1.84 | 1.02 | |
| Te | 0.30 | | |
| S | 25.19 | 25.13 | 24.94 |
| Total | 101.81 | 100.91 | 100.00 |

(1) Kanowna, Australia; by electron microprobe, selected representative values; corresponding to (Ni_{8.21}Fe_{0.66}Co_{0.18}) $\Sigma=9.05$ (Sb_{1.81}As_{0.12}Bi_{0.09}Te_{0.02}) $\Sigma=2.04$ S_{8.00}. (2) Witwatersrand, South Africa; by electron microprobe, average of a range of measurements, corresponding to (Ni_{8.31}Fe_{0.69}) $\Sigma=9.00$ (Sb_{1.83}As_{0.18}Bi_{0.05}) $\Sigma=2.06$ S_{8.00}. (3) Ni₉Sb₂S₈.

Mineral Group: Hauchecornite group.

Occurrence: In a hydrothermal deposit (Kanowna, Australia); in heavy mineral concentrates (Witwatersrand, South Africa); in serpentinites (Vozhmin massif, Russia).

Association: Millerite, pyrite, chalcopyrite, gersdorffite, pentlandite, magnetite, polydymite (Kanowna, Australia); gold, dyscrasite, michenerite, geversite, tetrahedrite, stibnite, sudburyite, stibiopalladinite (Klerkdorp, South Africa); vozhminite, heazlewoodite, nickeline, maucherite, melonite, cobaltite, gersdorffite, magnetite, geversite, copper, silver (Vozhmin massif, Russia).

Distribution: From Kanowna, north of Kalgoorlie [TL], and in the Whim Creek copper deposit, Pilbara district, Western Australia; at the Central Balstrup lease, Zeehan, Tasmania. In South Africa, from the Witwatersrand, in the Vaal Reefs mine, Klerkdorp. In the Vozhmin massif, Segezha district, central Karelia, Russia. From the Kapitanov chromite deposit, near Zvenyhorodka, Ukraine. At Rocheservières, Vendée, France.

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References: (1) Just, J. and C.E. Feather (1978) Tučekite, a new mineral. *Mineral. Mag.*, 42, M21–M22. (2) (1979) *Amer. Mineral.*, 64, 465 (abs. ref. 1). (3) Criddle, A.J. and C.J. Stanley, Eds. (1993) *Quantitative data file for ore minerals*, 3rd ed. Chapman & Hall, London, 585.