

Crystal Data: Cubic. *Point Group:* $2/m\bar{3}$. As small rounded grains, to 120 μm .

Physical Properties: Hardness = n.d. VHN = 488–540, 519 average (25 g load).
D(meas.) = n.d. D(calc.) = 12.8

Optical Properties: Opaque. *Color:* In polished section, white. *Luster:* Metallic.

R: (400) 55.7, (420) 56.4, (440) 57.2, (460) 57.8, (480) 58.4, (500) 58.8, (520) 59.2, (540) 59.5, (560) 59.8, (580) 60.1, (600) 60.3, (620) 60.4, (640) 60.4, (660) 60.3, (680) 60.3, (700) 60.3

Cell Data: *Space Group:* $Pa\bar{3}$. $a = 6.691$ $Z = 4$

X-ray Powder Pattern: Synthetic PtBi₂.

2.996 (100), 2.017 (90), 2.732 (80), 1.788 (60), 3.343 (50), 1.459 (50), 0.772 (50)

Chemistry:

| | (1) | (2) |
|-------|-------|-------|
| Pt | 36.1 | 31.2 |
| Pd | | 1.4 |
| Ni | | 0.17 |
| Sn | | 1.3 |
| Bi | 52.0 | 55.2 |
| Sb | 12.9 | 2.4 |
| Te | | 7.7 |
| Total | 101.0 | 100.5 |

(1) Insizwa deposit, South Africa; by electron microprobe, average of five analyses; corresponding to Pt_{1.00}(Bi_{1.35}Sb_{0.57})_{Σ=1.92}. (2) Sudbury, Canada; by electron microprobe; corresponding to (Pt_{0.90}Pd_{0.08}Ni_{0.02})_{Σ=1.00}(Bi_{1.49}Te_{0.34}Sb_{0.11}Sn_{0.06})_{Σ=2.00}.

Mineral Group: Pyrite group.

Occurrence: Of hydrothermal origin, in a vein cutting massive pyrrhotite ore (Insizwa deposit, South Africa); in Cu–Ni sulfide ore (Sudbury, Canada).

Association: Pentlandite, cubanite, hessite, altaite, argentopentlandite, chalcopyrite, mackinawite, niggliite, froodite, parkerite, galena, sphalerite, magnetite, pyrrhotite.

Distribution: From the Insizwa Cu–Ni deposit, Waterfall Gorge, East Cape, South Africa [TL]. In the Coleman mine, Sudbury, and the Strathcona mine, Falconbridge, Ontario, Canada. At Fox Gulch, Goodnews Bay, Alaska, USA. From the Noril'sk region, western Siberia, Russia.

Name: For the Insizwa deposit, South Africa, where it was discovered.

Type Material: Geological Survey of Canada, Ottawa, 10400; Canadian Museum of Nature, Ottawa, Canada.

References: (1) Cabri, L.J. and D.C. Harris (1972) The new mineral insizwaite (PtBi₂) and new data on niggliite (PtSn). *Mineral. Mag.*, 38, 794–800. (2) (1973) *Amer. Mineral.*, 58, 805 (abs. ref. 1). (3) Brese, N.A. and H.G. von Schnering (1994) Bonding trends in pyrites and a reinvestigation of the structures of PdAs₂, PdSb₂, PtSb₂ and PtBi₂. *Z. Anorg. Allg. Chem.*, 620, 393–404. (4) Cabri, L.J., Ed. (1981) *Platinum group elements: mineralogy, geology, recovery*. *Can. Inst. Min. & Met.*, 109–110, 162. (5) Criddle, A.J. and C.J. Stanley, Eds. (1993) *Quantitative data file for ore minerals*, 3rd ed. Chapman & Hall, London, 251.