

Crystal Data: Cubic. *Point Group:* $4/m\bar{3}2/m$. Grains, to 0.8 mm, rarely showing crystal outlines.

Physical Properties: Hardness = n.d. VHN = 587–597, 592 average (100 g load).
D(meas.) = n.d. D(calc.) = 10.33

Optical Properties: Opaque. *Color:* In polished section, pale yellow. *Anisotropism:* Weak, in shades of dull brown.

R: (400) 43.2, (420) 44.1, (440) 45.5, (460) 47.2, (480) 49.2, (500) 51.2, (520) 53.1, (540) 54.8, (560) 56.2, (580) 57.4, (600) 58.6, (620) 59.4, (640) 60.1, (660) 60.5, (680) 60.8, (700) 61.1

Cell Data: *Space Group:* $Fd\bar{3}m$. $a = 12.283$ $Z = 8$

X-ray Powder Pattern: Itabira district, Brazil.

2.167 (100), 2.356 (90), 1.533 (70), 1.253 (70), 1.188 (70), 0.996 (70), 1.446 (60)

Chemistry:

| | (1) | (2) | (3) |
|-------|-------|--------|--------|
| Pd | 72.53 | 74.07 | 74.85 |
| Au | 0.37 | 1.05 | |
| Cu | 1.08 | 0.13 | |
| Sb | 14.61 | 15.65 | 15.57 |
| As | 10.42 | 9.53 | 9.58 |
| Total | 99.01 | 100.43 | 100.00 |

(1) Itabira district, Brazil; by electron microprobe, corresponding to $(\text{Pd}_{10.66}\text{Cu}_{0.27}\text{Au}_{0.03})_{\Sigma=10.96}\text{Sb}_{1.88}\text{As}_{2.17}$. (2) Hope's Nose, England; by electron microprobe, average of two grains; corresponding to $(\text{Pd}_{10.89}\text{Au}_{0.08}\text{Cu}_{0.03})_{\Sigma=11.00}\text{Sb}_{2.01}\text{As}_{0.99}$. (3) Pd₁₁Sb₂As₂.

Polymorphism & Series: Dimorphous with mertieite-I.

Occurrence: In heavy-metal concentrates from Precambrian iron-precious metal deposits (Itabira district, Brazil).

Association: Arsenopalladinite, atheneite, palladseite, hematite, gold (Itabira district, Brazil); chalcopyrite, millerite, kotulskite, arsenopalladinite, hematite (Lac des Iles complex, Canada); hongshiite, cooperite, sperrylite, vysotskite, magnetite, bornite, polydymite, diopside, actinolite, epidote ("Yen" district, China).

Distribution: In Brazil, in gold placers from the Itabira district, Minas Gerais [TL] and in the Serra Pelada Au–Pd–Pt deposit, Pará. At the Lac des Iles complex, Ontario, Canada. In the Konttijärvi intrusion, northern Finland. At Hope's Nose, Torquay, Devon, England. In China, in the "Yen" district – a code name. In Russia, from around Zlatoust, Ural Mountains, and in the Lukkulaisvaara layered intrusion, Karelia. Along the Waiiau River, western Southland, New Zealand.

Name: For its structural and compositional relation to mertieite-I.

Type Material: The Natural History Museum, London, England, 1934,72; National Museum of Natural History, Washington, D.C., USA, 142504.

References: (1) Clark, A.M., A.J. Criddle, and E.E. Fejer (1974) Palladium arsenide–antimonides from Itabira, Minas Gerais, Brazil. *Mineral. Mag.*, 39, 528–543. (2) (1974) *Amer. Mineral.*, 59, 1330 (abs. ref. 1). (3) Shi, Ni-Cheng, Zhe-Sheng Ma, Nai-Xian Zhang, and Xui-Shou Ding (1978) Crystal structure of isomertieite (fengluanite). *K'o Hsueh T'ung Pao*, 23, 499–501 (in Chinese). (4) (1978) *Chem. Abs.*, 89, 187292 (abs. ref. 3). (5) Clark, A.M. and A.J. Criddle (1982) Palladium minerals from Hope's Nose, Torquay, Devon. *Mineral. Mag.*, 46, 371–377.

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