

Vincentite

(Pd, Pt)₃(As, Sb, Te)(?)

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Crystal Data: Tetragonal, pseudocubic. *Point Group:* $4/m\ 2/m\ 2/m$, $4mm$, or 422. As grains, to 2 mm, and inclusions in tetrahedrite. *Twinning:* Simple and poor polysynthetic twins.

Physical Properties: *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = n.d. VHN = 280 (25 g load). D(meas.) = n.d. D(calc.) = 4.29

Optical Properties: Opaque. *Color:* Orange. *Luster:* Metallic. *Anisotropism:* Weak; purplish blue to greenish brown-yellow.

R_1 – R_2 : (420) 19.4–19.4, (440) 19.4–20.5, (460) 20.6–21.8, (480) 21.3–22.4, (500) 22.8–23.9, (520) 24.5–25.7, (540) 26.5–27.7, (560) 28.0–29.2, (580) 29.5–30.7, (600) 30.8–32.1, (620) 32.1–33.6, (640) 33.2–34.7, (660) 34.3–35.9, (680) 35.2–36.9, (700) 36.0–37.8

Cell Data: *Space Group:* $P4/mmm$, $P4mm$, $P422$, or $P4_122$. $a = 10.697(6)$
 $c = 10.697(6)$ $Z = 2$

X-ray Powder Pattern: Chizeuil, France.

3.088 (100), 1.895 (90), 1.614 (70), 2.676 (50), 1.227 (40), 1.091 (40), 4.37 (30)

Chemistry:

	(1)	(2)
Cu	40.90	42.6
Fe	14.63	13.2
Zn		0.7
Sn	7.33	8.3
As	3.43	4.5
Sb	1.60	
S	31.85	31.3
Total	99.74	100.6

(1) Chizeuil, France; by electron microprobe, average of six analyses; corresponds to $\text{Cu}_{10.19}\text{Fe}_{4.15}\text{Sn}_{0.98}(\text{As}_{0.73}\text{Sb}_{0.21})_{\Sigma=0.94}\text{S}_{15.74}$. (2) Maggie deposit, Canada; by electron microprobe, corresponding to $\text{Cu}_{10.60}(\text{Fe}_{3.00}^{3+}\text{Fe}_{0.74}^{2+}\text{Zn}_{0.17})_{\Sigma=3.91}\text{Sn}_{1.11}\text{As}_{0.95}\text{S}_{15.44}$.

Occurrence: In a pyrite deposit (Chizeuil, France); in a porphyry copper deposit with other tin-bearing sulfides (Maggie deposit, Canada); in a polymetallic epothermal deposit (Layo deposit, Peru).

Association: Pyrite, chalcopyrite, colusite, stannite, stannoidite, mawsonite, bornite, enargite, famatinite, tetrahedrite–tennantite, quartz, barite.

Distribution: From Chizeuil, Saône-et-Loire, France [TL]. At Neves-Corvo, Portugal. In the Maggie porphyry copper deposit, 15 km north of Ashcroft, British Columbia, Canada. The principal tin mineral in the Layo Cu–Sn–As–Au deposit, Arequipa, and at Huaron, Peru. At an undisclosed deposit in Russia.

Name: To honor Professor Henri Vincienne (1898–1965), French mineralogist, National School of Mines, Paris, France, who first called attention to the mineral.

Type Material: National School of Mines, Paris, France.

References: (1) Cesbron, F., R. Girault, P. Picot, and F. Pillard (1985) La vincienite $\text{Cu}_{10}\text{Fe}_4\text{Sn}(\text{As}, \text{Sb})\text{S}_{16}$, une nouvelle espèce minérale. Etude paragenétique du gîte type de Chizeuil, Saône-et-Loire. Bull. Minéral., 108, 447–456 (in French with English abs.). (2) (1986) Amer. Mineral., 71, 1280–1281 (abs. ref. 1). (3) Jambor, J. and D.R. Owens (1987) Vincienite in the Maggie porphyry copper deposit, British Columbia. Can. Mineral., 25, 227–228.

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