

Cupropolybasite



Crystal Data: Hexagonal. *Point Group:* $\bar{3} 2/m$. As grains to 350 μm .

Physical Properties: *Cleavage:* None. *Fracture:* n.d. *Tenacity:* Brittle.
Hardness = 3-3.5 VHN = 121-137, 129 average (100 g load). D(meas.) = n.d. D(calc.) = 6.310

Optical Properties: Opaque. *Color:* n.d. *Streak:* Black. *Luster:* Metallic.
Optical Class: Anisotropic. *Bireflectance:* Moderate. *Pleochroism:* Weak, light gray to blue-gray.
R₁-R₂: (471.1) 32.4-33.3, (548.3) 31.2-32.7, (586.6) 30.8-31.9, (652.3) 29.6-30.5

Cell Data: *Space Group:* $P \bar{3} m1$. $a = 7.3277(3)$ $c = 11.7752(6)$ $Z = 1$

X-ray Powder Pattern: Calculated pattern.
2.9438 (100), 2.7932 (56), 3.0637 (45), 11.7752 (43), 2.2948 (41), 2.4676 (39), 2.1581 (38)

Chemistry:	(1)
Cu	14.63
Ag	58.86
Pb	0.10
Zn	0.06
Se	0.01
Fe	0.01
Sb	6.95
As	2.62
<u>S</u>	<u>16.51</u>
Total	99.75

(1) Premier mine, British Columbia, Canada; average electron microprobe analysis; corresponds to $[(\text{Cu}_{3.82}\text{Ag}_{2.42}\text{Zn}_{0.02}\text{Pb}_{0.01})_{\Sigma=6.27}(\text{Sb}_{1.19}\text{As}_{0.73})_{\Sigma=1.92}\text{S}_7][\text{Ag}_9\text{CuS}_4]$.

Polymorphism & Series: *Tac* polytype.

Mineral Group: Pearceite-polybasite group.

Occurrence: Supergene, in a hydrothermal epithermal silver-gold deposit.

Association: Silver, quartz.

Distribution: Premier mine, British Columbia, Canada.

Name: The prefix, *cupro*, identifies the Cu-dominant analogue of *polybasite*.

Type Material: Mineralogical Collection, Royal Ontario Museum, Department of Natural History, Toronto, Ontario, Canada (M12128).

References: (1) Bindi, L., M. Evain, P.G. Spry, K.T. Tait, and S. Menchetti (2007) Structural role of copper in the minerals of the pearceite-polybasite group: the case of the new minerals cupropearceite and cupropolybasite. *Mineral. Mag.*, 71, 641-650. (2) Bindi, L., A.K. Schaper, H. Kurata, and S. Menchetti (2013) The composite modulated structure of cupropearceite and cupropolybasite and its behavior toward low temperature. *Amer. Mineral.*, 98, 1279-1284.