

**Crystal Data:** Monoclinic. *Point Group:* 2/*m*. Crystals are pseudo-hexagonal, tabular on {001}, to 6 cm; triangular patterns formed by striae on {001}; also massive. *Twinning:* {110} as twin plane, repeated.

**Physical Properties:** *Cleavage:* Imperfect on {001}. *Fracture:* Uneven. Hardness = 2–3 VHN = n.d. D(meas.) = 6.1 D(calc.) = 6.36

**Optical Properties:** Nearly opaque; in thin fragments, translucent and dark red in transmitted light. *Color:* Iron-black; in polished section, very pale gray with rare red internal reflections.

*Streak:* Black. *Luster:* Metallic.

*Optical Class:* Biaxial (–). *Pleochroism:* Weak. *Orientation:*  $X = c$ ;  $Y = a$ .  $n = > 2.72$  (Li).  $2V(\text{meas.}) = 22^\circ$  *Anisotropism:* Moderate.

$R_1$ – $R_2$ : (400) 33.9–32.5, (420) 33.6–32.8, (440) 33.4–33.0, (460) 33.0–33.9, (480) 32.4–34.0, (500) 31.9–33.8, (520) 31.3–33.4, (540) 30.8–32.8, (560) 30.5–32.2, (580) 30.2–31.7, (600) 29.8–31.1, (620) 29.3–30.5, (640) 29.1–29.3, (660) 27.3–29.1, (680) 27.2–28.4, (700) 26.7–27.8

**Cell Data:** *Space Group:*  $C2/m$ .  $a = 26.17$   $b = 15.11$   $c = 23.89$   $\beta = 90^\circ 00'$   $Z = 16$

**X-ray Powder Pattern:** Keeley mine, South Lorrain Township, Ontario, Canada. 3.00 (100), 3.19 (90), 2.88 (80), 2.53 (60), 1.892 (60), 2.70 (50), 2.42 (40)

#### Chemistry:

	(1)	(2)
Ag	67.95	68.90
Cu	6.07	5.21
Fe	0.76	0.09
Sb	5.15	8.85
As	3.88	1.07
S	16.37	15.33
Total	100.18	99.45

(1) Beaverdell, British Columbia, Canada; corresponds to  $(\text{Ag}_{14.58}\text{Cu}_{1.31})_{\Sigma=15.89}(\text{Sb}_{1.88}\text{As}_{0.19})_{\Sigma=2.07}\text{S}_{11.03}$ . (2) Arizpe, Mexico; corresponds to  $(\text{Ag}_{14.39}\text{Cu}_{1.85}\text{Fe}_{0.04})_{\Sigma=16.28}(\text{Sb}_{1.64}\text{As}_{0.32})_{\Sigma=1.96}\text{S}_{10.77}$ .

**Polymorphism & Series:** Forms a series with pearceite.

**Occurrence:** In silver veins of low to medium temperature of formation.

**Association:** Pyrargyrite, tetrahedrite, stephanite, other silver sulfosalts, acanthite, gold, quartz, calcite, dolomite, barite.

**Distribution:** Common in small amounts, may be a major ore mineral; only rarely as fine specimens. In Germany, from the Neuer Morgenstern [TL] and other mines, Freiberg, Saxony, and at St. Andreasberg, Harz Mountains. From Banská Hodruša, near Banská Štiavnica (Schemnitz), Slovakia. At Příbram, Czech Republic. In the USA, in Colorado, from the Ouray district, Ouray Co.; the Gilman district, Eagle Co.; and the Red Mountain district, San Juan Co.; in Nevada, at Tonopah, Nye Co., Goldfield, Esmeralda Co., and in the Comstock Lode, Virginia City, Storey Co. Fine crystals from the Husky mine, Elsa, Yukon Territory, Canada. At Tres Puntas, near Copiapó, Atacama, Chile. In Mexico, at many localities, with especially fine examples from the Las Chiapas mine, Arizpe, Sonora; Fresnillo, Chihuahua; and at Guanajuato. From Sabana Grande, Honduras.

**Name:** From the Greek for *many* and *base*, in allusion to the many metallic bases present.

**Type Material:** Mining Academy, Freiberg, Germany, 6867.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior written permission of Mineral Data Publishing.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 351–353. (2) Frondel, C. (1963) Isodimorphism of the polybasite and pearceite series. *Amer. Mineral.*, 48, 565–572. (3) Hall, H.T. (1967) The pearceite and polybasite series. *Amer. Mineral.*, 52, 1311–1321. (4) Peacock, M.A. and L.G. Berry (1947) Studies of the mineral sulpho-salts: XIII – Polybasite and pearceite. *Mineral. Mag.*, 28, 1–13. (5) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 447.