

**Crystal Data:** Orthorhombic. *Point Group:*  $2/m\ 2/m\ 2/m$ . Crystals prismatic || [001], also pyramidal, commonly doubly terminated, to 4 cm; massive. *Twinning:* On {011}, may produce trillings; polysynthetic on {101}.

**Physical Properties:** *Cleavage:* Rarely distinct on {010}, {101}. Hardness = 5–5.5 VHN = 859–920 (100 g load). D(meas.) = 7.40 (synthetic). D(calc.) = 7.47

**Optical Properties:** Opaque. *Color:* Steel-gray to silver-white. *Streak:* Grayish black. *Luster:* Metallic. *Anisotropism:* Strong.

R<sub>1</sub>–R<sub>2</sub>: (400) 51.6–59.7, (420) 52.0–59.9, (440) 52.6–59.8, (460) 53.1–58.8, (480) 53.7–57.6, (500) 54.2–56.2, (520) 54.8–54.9, (540) 55.4–53.7, (560) 55.9–52.7, (580) 56.3–51.8, (600) 56.3–51.1, (620) 55.9–50.4, (640) 55.2–49.8, (660) 54.5–49.3, (680) 53.6–48.7, (700) 53.1–48.4

**Cell Data:** *Space Group:*  $Pn\bar{m}$  (synthetic).  $a = 5.300$   $b = 5.983$   $c = 2.882$   $Z = 2$

**X-ray Powder Pattern:** Synthetic.

2.605 (100), 2.331 (65), 2.599 (60), 2.532 (60), 1.634 (35), 2.421 (30), 1.854 (30)

**Chemistry:**

	(1)	(2)	(3)
Fe	27.93	27.6	27.15
As	70.83	71.7	72.85
Bi			
S	0.77	0.5	
Total	99.53	99.8	100.00

(1) Drum's Farm, Alexander Co., North Carolina, USA. (2) Cligga Head, Cornwall, England; by electron microprobe. (3) FeAs<sub>2</sub>.

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

**Mineral Group:** Löllingite group.

**Occurrence:** In mesothermal deposits associated with other sulfides and with calcite gangue; also in pegmatites.

**Association:** Skutterudite, bismuth, nickeline, nickel-skutterudite, siderite, calcite.

**Distribution:** In Austria, from Lölling, near Hüttenberg, Carinthia [TL]; and at Schladming, Styria. From Reichenstein, Silesia, Poland. At St. Andreasberg, in the Harz Mountains, Germany. From Guadalcanal, in the Sierra Morena, Seville Province, Spain. In Norway, in the Langesundfjord district. In the USA, from Mt. Mica, near Paris, Oxford Co., Maine; from Franklin and Sterling Hill, Ogdensburg, Sussex Co., New Jersey; in Colorado, from several mines in Gunnison Co.; large masses were found in the Ingersoll mine, near Keystone, Pennington Co., South Dakota. In Canada, from a number of mines at Cobalt, Ontario. From Broken Hill, New South Wales, Australia. Also from numerous minor localities.

**Name:** For the Austrian locality at Lölling.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 303–307. (2) Radcliffe, D. and L.G. Berry (1968) The safflorite–loellingite solid solution series. Amer. Mineral., 53, 1856–1881. (3) Pearson, W.B. (1965) Compounds with the marcasite structure. Zeits. Krist., 121, 449–462. (4) (1960) NBS Circ. 539, 10, 34. (5) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 327.