

Crystal Data: Cubic. *Point Group:* $4/m\bar{3}2/m$. Crystals cubic or octahedral, to 1 cm. Commonly massive, granular. *Twinning:* Lamellar || {111}.

Physical Properties: *Cleavage:* Perfect on {001}. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 3.5–4 VHN = 164–174, 167 average (100 g load). D(meas.) = 3.95–4.04 D(calc.) = 4.053

Optical Properties: Opaque, but translucent in very thin fragments. *Color:* Iron-black, tarnishing brown; in polished section, gray-white; deep green to brown and red in thin slivers. *Luster:* Submetallic.

Optical Class: Isotropic. $n = 2.70$ (Li).

R: (400) 26.1, (420) 25.9, (440) 25.5, (460) 24.8, (480) 24.2, (500) 23.7, (520) 23.2, (540) 22.9, (560) 22.7, (580) 22.5, (600) 22.3, (620) 22.1, (640) 22.0, (660) 21.9, (680) 21.8, (700) 21.8

Cell Data: *Space Group:* $Fm\bar{3}m$. $a = 5.2236$ $Z = 4$

X-ray Powder Pattern: Synthetic.

2.612 (100), 1.847 (50), 1.509 (20), 1.1682 (16), 1.0662 (16), 3.015 (14), 1.306 (8)

Chemistry:	(1)	(2)	(3)
Mn	63.03	57.09	63.15
Fe		6.86	
Co		0.03	
S	36.91	36.83	36.85
Total	99.94	100.81	100.00

(1) Arizona, USA. (2) Sotkamo, Finland. (3) MnS.

Polymorphism & Series: Dimorphous with rambergite.

Occurrence: May be in large quantities in epithermal polymetallic sulfide vein and especially in low-temperature manganese deposits. An uncommon constituent of a number of meteorites.

Association: Galena, chalcopyrite, sphalerite, pyrite, acanthite, tellurium, rhodochrosite, calcite, rhodonite, quartz.

Distribution: Selected localities include: from Alabanda, 30 km south-southeast of Aydın, Aydın Province, Turkey [TL]. At Baia-de-Arieş (Offenbánya), Săcăřimb (Nagyág), and Cavnic (Kapnikbánya), Romania. From Adervielle, Hautes-Pyrénées, France. At Gersdorf, Saxony, Germany. From manganese mines in Val Graveglia, Liguria, Italy. At Nsuta, Ghana. In the Yakumo and Inakuraishi mines, Hokkaido; the Taisei mine, Akita Prefecture; and many other localities in Japan. From Broken Hill, New South Wales, Australia. In Peru, at Morococha, Junin. In the Preciosa mine, Tlalchichuca, Puebla, and at Onovas, Sonora, Mexico. In the USA, in the Lucky Cuss mine, Tombstone, Cochise Co., Arizona; the Queen of the West mine, Summit Co., Colorado; at Schellbourne, White Pine Co., Nevada; and from Butte, Silver Bow Co., Montana.

Name: For the originally reported locality at Alabanda in Turkey.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 207–208. (2) Törnroos, R. (1982) Properties of alabandite; alabandite from Finland. Neues Jahrb. Mineral., Abh., 144, 107–123. (3) (1955) NBS Circ. 539, 4, 11. (4) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 4.