

**Crystal Data:** Monoclinic. *Point Group:*  $2/m$ . Crystals prismatic, to 12 cm, and striated || [001]; more commonly massive, coarse to fine granular, or as incrustations. *Twinning:* As contact twins on {100}

**Physical Properties:** *Cleavage:* Good on {010}; less so on  $\{\bar{1}01\}$ , {100}, {120}, and {110}. *Tenacity:* Sectile, also slightly brittle. *Hardness* = 1.5–2 VHN = n.d.  $D(\text{meas.}) = 3.56$   $D(\text{calc.}) = 3.59$  Disintegrates on long exposure to light to a powder composed of pararealgar or arsenolite and orpiment.

**Optical Properties:** Transparent when fresh. *Color:* Red to yellow-orange; in polished section, pale gray, with abundant yellow to red internal reflections. *Streak:* Red-orange to red. *Luster:* Resinous to greasy.

*Optical Class:* Biaxial (-). *Pleochroism:* Nearly colorless to pale golden yellow. *Orientation:*  $X \wedge c = -11^\circ$ . *Dispersion:*  $r > v$ , very strong, inclined.  $\alpha = 2.538$   $\beta = 2.684$   $\gamma = 2.704$   $2V(\text{meas.}) = 40^\circ 34'$  *Anisotropism:* Strong, in polished section.

R: (400) 29.9, (420) 28.6, (440) 27.4, (460) 26.3, (480) 25.2, (500) 24.2, (520) 23.3, (540) 22.4, (560) 21.7, (580) 21.1, (600) 20.6, (620) 20.3, (640) 20.0, (660) 19.7, (680) 19.5, (700) 19.3

**Cell Data:** *Space Group:*  $P2_1/n$ .  $a = 9.325(3)$   $b = 13.571(5)$   $c = 6.587(3)$   
 $\beta = 106^\circ 23(5)'$   $Z = 16$

**X-ray Powder Pattern:** Alšar, Macedonia.

5.40 (100), 3.19 (90), 2.94 (80), 2.73 (80), 1.859 (60), 2.49 (50), 2.14 (50)

**Chemistry:**

|       | (1)   | (2)    |
|-------|-------|--------|
| As    | 69.54 | 70.03  |
| S     | 30.29 | 29.97  |
| rem.  | 0.11  |        |
| Total | 99.94 | 100.00 |

(1) Binntal, Switzerland; remainder  $\text{SiO}_2$ . (2) AsS.

**Polymorphism & Series:** Trimorphous with alacránite and pararealgar.

**Occurrence:** Most commonly as a low-temperature hydrothermal vein mineral associated with As–Sb minerals; also as volcanic sublimations and in hot spring deposits; in carbonate and clay sedimentary rocks.

**Association:** Orpiment, arsenolite, other arsenic minerals, calcite, barite.

**Distribution:** Only localities for finely crystallized material are given. In Germany, from Schneeberg, Saxony, and at St. Andreasberg, Harz Mountains. In the Lengenbach quarry, Binntal, Valais, Switzerland. In Romania, from Baia Sprie (Felsőbánya), Cavnic (Kapnikbánya), and at Săcăřimb (Nagyág). In the Czech Republic, from Jáchymov (Joachimsthal). At Alšar (Allchar), near Rošden, Macedonia. From Men-Kyule, Sakha, Russia. At Saimoku, ?? Prefecture, Japan. In the Shimen mine, 33 km southeast of Shimen, Hunan Province, China. In the USA, fine large crystals at the Getchell mine, Potosi district, Humboldt Co., Nevada; in Tooele Co., Utah, at Mercur; in Washington, in the Monte Cristo district, Snohomish Co., and in the Royal Reward mine, in the Green River Gorge, King Co.

**Name:** From the Arabic *rahj al ghar* for *powder of the mine*.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 255–258. (2) Mullen, D.J.E. and W. Nowacki (1972) Refinement of the crystal structures of realgar, AsS and orpiment,  $\text{As}_2\text{S}_3$ . *Zeits. Krist.*, 136, 48–65. (3) Berry, L.G. and R.M. Thompson (1962) X-ray powder data for the ore minerals. *Geol. Soc. Amer. Mem.* 85, 69–70. (4) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 477.

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