

**Arsenosulvanite****Cu<sub>3</sub>(As, V)S<sub>4</sub>**

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**Crystal Data:** Cubic. *Point Group:*  $\bar{4}3m$ . As grains, which may be subhedral, to 0.15 mm.**Physical Properties:** *Tenacity:* Brittle. Hardness = 3.5 VHN = 412–488  
D(meas.) = 4.01–4.2 D(calc.) = 4.39**Optical Properties:** Opaque. *Color:* Bronze-yellow to pale brownish yellow.  
*Luster:* Metallic.*Optical Class:* Isotropic. *Pleochroism:* Yellowish brown.R: (400) 23.5, (420) 24.9, (440) 26.3, (460) 27.4, (480) 28.6, (500) 29.8, (520) 30.7, (540) 31.7,  
(560) 32.4, (580) 32.7, (600) 32.4, (620) 31.8, (640) 31.4, (660) 31.1, (680) 30.9, (700) 30.4**Cell Data:** *Space Group:*  $P\bar{4}3m$ .  $a = 5.257(3)$   $Z = 1$ **X-ray Powder Pattern:** Bor, Serbia.

3.054 (10), 1.865 (9), 1.591 (8), 2.638 (6), 1.210 (6), 1.076 (6), 1.318 (5)

<b>Chemistry:</b>	(1)	(2)	(1)	(2)
Cu	48.84	50.6	Ge	0.62
As	12.80	13.2	S	33.14
V	4.16	3.4	insol.	1.01
			<hr/>	
			Total	99.95
				100.04

(1) Mongolia; corresponds to Cu<sub>2.97</sub>(As<sub>0.66</sub>V<sub>0.32</sub>)<sub>Σ=0.98</sub>S<sub>4.00</sub>. (2) Bor, Serbia; by electron microprobe, average of five grains; corresponds to Cu<sub>3.17</sub>(As<sub>0.70</sub>V<sub>0.27</sub>Ge<sub>0.03</sub>)<sub>Σ=1.00</sub>S<sub>4.00</sub>.**Polymorphism & Series:** Forms a series with sulvanite.**Occurrence:** In quartz-calcite veins cutting bituminous limestone (Mongolia); in a porphyry copper deposit (Bor, Serbia; Oyu Togoï deposit, Mongolia).**Association:** Pyrite, enargite, luzonite, tennantite, tetrahedrite, sulvanite, chalcocite, covellite, bornite, chalcopyrite, galena, sphalerite, ankerite, hematite, quartz, calcite.**Distribution:** From the Lebedinoye gold deposit, near Aldan, southern Sakha, Russia [TL]. At an undefined locality in Mongolia, later found in the Oyu Togoï porphyry Cu–Au deposit. In the Tilva Mika deposit, Bor, eastern Serbia. At Baia Borșa, Romania. From the Kafan copper deposit, Armenia. In the Osarizawa mine, Akita Prefecture, and the Hayakawa Cu–Pb–Zn deposit, Hokkaido, Japan. At Bisbee, Cochise Co., Arizona, and in the Geis Au–Ag–Te deposit, Judith Mountains, Fergus Co., Montana, USA.**Name:** For the chemical relation with sulvanite.**Type Material:** n.d.**References:** (1) Betekhtin, A.G. (1941) The new mineral arsenosulvanite. *Zap. Vses. Mineral. Obshch.*, 70, 161–164 (in Russian with English abs.). (2) Mikheev, V.I. (1941) The structure of arsenosulvanite. *Zap. Vses. Mineral. Obshch.*, 70, 165–184 (in Russian with English abs.). (3) (1955) *Amer. Mineral.*, 40, 368–369 (abs. refs. 1 and 2). (4) Khoroshilova, L.A., O.V. Frank-Kamenetskaya, I. Rozhdestvenskaya, and V.A. Frank-Kamenetskaya (1984) The crystalline structure of arsenosulvanite. In: Yushkin, N.P. and A.M. Askhabov, Eds. *Mineralogical, crystallography and the properties of minerals. Trudy Institut Geologii*, 46, 78–83 (in Russian). (5) Cvetković, L. and L. Karanović (1993) Occurrence of arsenosulvanite at the Bor copper deposit, Eastern Serbia, Yugoslavia. *Neues Jahrb. Mineral., Monatsh.*, 289–296. (6) Spry, P.G., S. Merlino, S. Wang, X. Zhang, and P.R. Busek (1994) New occurrences and refined crystal chemistry of colusite, with comparisons to arsenosulvanite. *Amer. Mineral.*, 79, 750–762. (7) Criddle, A.J. and C.J. Stanley, Eds. (1993) *Quantitative data file for ore minerals*, 3rd ed. Chapman & Hall, London, 26.

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