

**Crystal Data:** Monoclinic *Point Group:*  $2/m$ . Crystals are pinacoidal, prismatic, and flattened on [100], striated || [001] on {100}, other faces dull or tarnished, to 1 mm; as subhedral flattened and prismatic grains.

**Physical Properties:** *Cleavage:* Imperfect on {100}. *Fracture:* Conchoidal. *Tenacity:* Very brittle. Hardness = 1.5 VHN = 69 (20 g load).  $D(\text{meas.}) = 3.43(3)$   $D(\text{calc.}) = 3.503$

**Optical Properties:** Transparent to translucent. *Color:* Orange to pale gray with rose-yellow internal reflections; yellow-orange in transmitted light. *Streak:* Yellow-orange.

*Luster:* Adamantine, vitreous, resinous, greasy.

*Optical Class:* Biaxial (+).  $\alpha = 2.39(1)$   $\gamma = 2.52(2)$

$R_1$ – $R_2$ : (400) 13.0–14.0, (425) 13.2–14.6, (450) 13.3–14.8, (475) 13.4–14.8, (500) 13.3–14.5, (525) 13.1–14.3, (550) 13.2–14.5, (575) 13.4–14.7, (600) 13.5–14.8, (625) 13.6–14.9, (650) 13.7–15.0, (675) 13.8–15.0, (700) 13.9–15.1

**Cell Data:** *Space Group:*  $C2/c$ .  $a = 9.943(1)$   $b = 9.366(1)$   $c = 8.908(1)$   $\beta = 102.007^\circ$   
 $Z = 16$

**X-ray Powder Pattern:** Uzon caldera, Russia.

3.064 (100), 5.91 (90), 2.950 (90), 5.11 (80), 4.05 (70), 3.291 (50)

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

3.01 (100), 2.89 (100), 5.78 (80), 3.20 (80), 3.93 (70), 3.08 (70), 2.82 (60)

**Chemistry:**

	(1)	(2)
As	67.35	70.03
S	32.61	29.97
Total	99.96	100.00

(1) Uzon caldera, Russia; by electron microprobe, average of four analyses; corresponding to  $\text{As}_{0.88}\text{S}_{1.00}$ . (2) AsS.

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

**Occurrence:** In hydrothermal As–S veins (Alacrán mine, Chile); in the condensation zone of a hydrothermal Hg–Sb–As system as cement in a sandy gravel (Uzon caldera, Russia); formed at low temperatures in a polymetallic hydrothermal deposit on a submarine seamount (Conical Seamount, Papua New Guinea).

**Association:** Realgar, orpiment, arsenic, sulfur, stibnite, pyrite, greigite, arsenopyrite, arsenolamprite, sphalerite, acanthite, barite, quartz, calcite (Alacrán mine, Chile); realgar, orpiment, uzonite, stibnite, cinnabar, pyrite, sulfur (Uzon caldera, Russia); realgar, pyrite, sphalerite, galena, chalcopyrite, amorphous silica (Conical Seamount, Papua New Guinea).

**Distribution:** From the Alacrán Ag–As–Sb mine, Pampa Larga district, Copiapó, Chile [TL]. In the Uzon caldera, Kamchatka, Russia. At Tiefengraben, Reinerzau, Black Forest, Germany. On Conical Seamount, ten km south-southeast of Lihir Island, Papua New Guinea.

**Name:** For the occurrence in the Alacrán deposit, Chile.

**Type Material:** Il'menskii Preserve Museum, Miass; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia.

**References:** (1) Popova, V.I., V.A. Popov, A. Clark, V.O. Polyakov, and S.E. Borisovskii (1986) Alacránite – a new mineral. *Zap. Vses. Mineral. Obshch.*, 115, 360–368 (in Russian). (2) (1988) *Amer. Mineral.*, 73, 189 (abs. ref. 1). (3) Migdisov, A.A. and A.Y. Bychkov (1998) The behavior of metals and sulphur during the formation of hydrothermal mercury–antimony–arsenic mineralization, Uzon caldera, Kamchatka, Russia. *J. Volcan. and Geothermal Res.*, 84, 153–171. (4) Burns, P.C. and J.B. Percival (2001) Alacránite,  $\text{As}_4\text{S}_4$ : a new occurrence, new formula, and determination of the crystal structure. *Can. Mineral.*, 39, 809–818. (5) Roland, G. (1972) ??title. [Xray??copy??ck] *Can. Mineral.*, 11, 520–??. (6) Bonazzi, P., L. Bindi, F. Olmi, and S. Menchetti (2003) How many alacránites exist? A structural study of non-stoichiometric  $\text{As}_8\text{S}_{9-x}$  crystals. *Eur. J. Mineral.*, 15, 283–288. [must see - MFG accepts??]

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