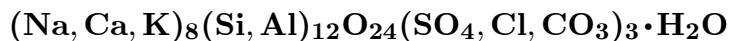


Afghanite



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Crystal Data: Hexagonal. *Point Group:* $6/m\ 2/m\ 2/m$, $6mm$, or $\bar{6}m2$. As stout to slender, thin tabular laths and as rounded grains.

Physical Properties: *Cleavage:* Perfect on $\{10\bar{1}0\}$. *Fracture:* Conchoidal. Hardness = 5.5–6 D(meas.) = 2.55 D(calc.) = 2.65

Optical Properties: Transparent. *Color:* Blue; in thin section, colorless. *Luster:* Vitreous. *Optical Class:* Uniaxial (+). $\omega = 1.523(2)$ $\epsilon = 1.529(2)$

Cell Data: *Space Group:* $P6_3/mmc$, $P6_3mc$, or $\bar{P}6_2c$. $a = 12.77(3)$ $c = 21.35(4)$ $Z = 3$

X-ray Powder Pattern: Sar-e-Sang, Afghanistan. 3.688 (100), 3.298 (100), 4.82 (80), 3.997 (60), 2.865 (60), 2.130 (60), 1.792 (60)

Chemistry:	(1)	(2)
SiO ₂	30.8	32.96
Al ₂ O ₃	25.	25.45
CaO	16.5	11.98
Na ₂ O	12.6	12.52
K ₂ O	2.7	3.07
Cl	4.6	3.98
H ₂ O	0.7	
CO ₂	0.4	
SO ₃	8.5	10.82
–O = Cl ₂	1.0	0.9
Total	100.8	99.88

(1) Sar-e-Sang, Afghanistan; corresponds to $(\text{Na}_{4.86}\text{Ca}_{3.52}\text{K}_{0.69})_{\Sigma=9.07}(\text{Si}_{6.13}\text{Al}_{5.87})_{\Sigma=12.00}\text{O}_{25.21}[\text{Cl}_{1.55}(\text{SO}_4)_{1.27}(\text{CO}_3)_{0.11}]_{\Sigma=2.93} \cdot 0.46\text{H}_2\text{O}$. (2) Edwards, New York, USA; by electron microprobe, corresponds to $(\text{Na}_{4.63}\text{Ca}_{2.45}\text{K}_{0.75})_{\Sigma=7.83}(\text{Si}_{6.28}\text{Al}_{5.72})_{\Sigma=12.00}\text{O}_{24.08}[(\text{SO}_4)_{1.55}\text{Cl}_{1.29}]_{\Sigma=2.84}$.

Mineral Group: Cancrinite group.

Occurrence: In thin veinlets cutting lazurite crystals (Sar-e-Sang, Afghanistan); in silicified limestone xenoliths in pumice (Pitigliano quarry, Italy).

Association: Lazurite, sodalite, nepheline, phlogopite, olivine, diopside, vesuvianite, calcite, pyrite.

Distribution: At Sar-e-Sang, Badakhshan Province, Afghanistan. In Russia, in the Malaya Bystraya and Tultuy lazurite deposits, near Lake Baikal, and in other unspecified deposits in eastern Siberia. From Lyadzhuar-Darinsk, Pamir Mountains, Tajikistan. In Italy, at the Pitigliano quarry, near Grosseto, Tuscany; on Monte Somma, Campania; from Vetralla and Bassano, Latium. In the Edwards mine, Edwards, St. Lawrence Co., New York, USA. At Lake Harbour, Baffin Island, Newfoundland, Canada.

Name: For the country of first occurrence, AFGHANistan.

Type Material: Mineralogy-Crystallography Laboratory, University Pierre and Marie Curie, Paris; National School of Mines, Paris, France; The Natural History Museum, London, England, 1969,72.

References: (1) Bariand, P., F. Cesbron, and R. Giraud (1968) Une nouvelle espèce minérale: l'afghanite de Sar-e-Sang, Badakhshan, Afghanistan. Comparaison avec les minéraux du groupe de la cancrinite. Bull. Soc. fr. Minéral., 91, 34–42 (in French with English abs.). (2) (1968) Amer. Mineral., 53, 2105 (abs. ref. 1). (3) Hogarth, D. (1979) Afghanite: new occurrences and chemical composition. Can. Mineral., 17, 47–52. (4) Parodi, G.C., P. Ballirano, and A. Maras (1996) Afghanite from Mount Vesuvius: a rediscovery. Mineral. Record, 26, 109–114.

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