

Mendozavilite-KCa

Crystal Data: Monoclinic. *Point Group:* 2/m. As six-sided, pseudohexagonal, tabular crystals to 0.5 mm in compact veinlets and coatings. Forms include {001} (dominant), {110}, {111}, {110}. *Twinning:* Ubiquitous by contact on {001} and penetration, both by rotation of 120° about [102].

Physical Properties: *Cleavage:* Perfect on {001}. *Fracture:* Irregular. *Tenacity:* Brittle. Hardness = ~2.5 D(meas.) = 2.79(2) D(calc.) = 2.790

Optical Properties: Transparent. *Color:* Greenish yellow. *Streak:* Very pale greenish yellow. *Luster:* Vitreous to subadamantine. *Optical Class:* Biaxial (+). $\alpha = 1.780(5)$ $\beta = 1.795(5)$ $\gamma = 1.817(5)$ 2V(meas.) = 81(10)° 2V(calc.) = n.d. *Pleochroism:* None. *Dispersion:* $r < v$, strong. *Orientation:* $Y = b, X \approx c, Z \approx a^*$.

Cell Data: *Space Group:* C2/m. $a = 18.909(5)$ $b = 10.897(2)$ $c = 14.958(4)$ $\beta = 129.780(9)^\circ$ $Z = 2$

X-ray Powder Pattern: Chuquicamata mine, Antofagasta Province, Chile. 8.850 (100), 7.369 (34), 3.125 (26), 2.998 (25), 2.018 (21), 1.774 (18), 11.643 (16)

Chemistry:	(1)		(1)
Na ₂ O	1.75	Al ₂ O ₃	0.04
K ₂ O	3.37	SiO ₂	0.03
CaO	3.03	P ₂ O ₅	6.63
CuO	0.02	MoO ₃	57.86
Fe ₂ O ₃	12.04	<u>H₂O</u>	<u>[21.22]</u>
		Total	100.00

(1) Chuquicamata mine, Antofagasta Province, Chile; normalized electron microprobe analysis, H₂O calculated, corresponds to [(K_{1.43}Na_{1.12}Ca_{0.14}) $\Sigma=2.69$ (H₂O)_{9.02}(Ca_{0.94}Cu²⁺_{0.05}Al_{0.01}) $\Sigma=1.00$ (H₂O)₆][Mo₈(P_{1.86}As_{0.06}Si_{0.01}) $\Sigma=1.93$ Fe³⁺_{3.00}O_{34.48}(OH)_{2.52}].

Mineral Group: Betpakdalite supergroup, mendozavilite group.

Occurrence: In the oxidized zone of a porphyry copper deposit.

Association: Quartz, jarosite.

Distribution: From the Chuquicamata mine, Antofagasta, Chile.

Name: Honors Heriberto *Mendoza Avila* (b. 1924), Phelps Dodge exploration geologist, who found the first specimen. Two suffixes correspond to the dominant cations in the two different types of non-framework cation sites.

Type Material: Natural History Museum of Los Angeles County, Los Angeles, California, USA (63315 and 63572) and the Natural History Museum, London, England (BM 2011,150).

References: (1) Williams, S. A. (1986) Mendozavilite and paramendozavilite, two new minerals from Cumobabi, Sonora. *Boletín de Mineralogía*, 2(1), 13-19. (2) (1988) *Amer. Mineral.*, 73, 193 (abs. ref. 1). (3) Kampf, A.R., S.J. Mills, M.S. Rumsey, M. Dini, W.D. Birch, J. Spratt, J.J. Pluth, I.M. Steele, R.A. Jenkins, and W.W. Pinch (2012) The heteropolymolybdate family: structural relations, nomenclature scheme and new species. *Mineral. Mag.*, 76(5), 1175-1207.