

Fuenzalidaite **$\text{K}_6(\text{Na}, \text{K})_{10}\text{Mg}_{10}(\text{SO}_4)_{12}(\text{IO}_3)_{12} \cdot 12\text{H}_2\text{O}$**

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Crystal Data: Hexagonal. *Point Group:* $\bar{3} 2/m$. As thin pseudorhombohedral platy {0001} crystals with hexagonal outline, modified by {10 $\bar{1}$ 2}, to < 200 μm ; as blebs and flattened micaceous aggregates.

Physical Properties: *Cleavage:* On {11 $\bar{2}$ 0}, likely, visible on SEM images. *Tenacity:* Brittle. Hardness = 2–3 D(meas.) = n.d. D(calc.) = 3.284 Slowly soluble in H_2O .

Optical Properties: Transparent. *Color:* Colorless to bright yellow. *Luster:* Vitreous. *Optical Class:* Uniaxial (–). $\omega = 1.622(5)$ $\epsilon = 1.615(5)$

Cell Data: *Space Group:* $P\bar{3}c1$. $a = 9.4643(4)$ $c = 27.336(6)$ $Z = 1$

X-ray Powder Pattern: Near Oficina Santa Luisa, Chile.

3.927 (100), 13.67 (50), 3.023 (41), 7.05 (40), 2.681 (33), 3.515 (24), 2.327 (21)

Chemistry:

	(1)
SO_3	20.9
SeO_3	0.1
CrO_3	0.2
I_2O_5	49.3
MgO	10.0
Na_2O	5.2
K_2O	5.9
H_2O	n.d.
Total	91.6

(1) Near Oficina Santa Luisa, Chile; by electron microprobe, amounts thought low due to decay in electron beam, H_2O confirmed by crystal-structure analysis; corresponds to $\text{K}_{5.7}\text{Na}_{7.6}\text{Mg}_{11.3}[(\text{SO}_4)_{11.9}(\text{CrO}_4)_{0.1}]_{\Sigma=12.0}(\text{IO}_3)_{13.4} \cdot 12\text{H}_2\text{O}$.

Polymorphism & Series: Forms a series with carlosruizite.

Occurrence: A rare constituent of nitrate ores.

Association: Nitratine, halite, probertite, darapskite.

Distribution: From one km south of Oficina Santa Luisa, Antofagasta, Chile.

Name: Honors Humberto Fuenzalida P. (1904–1966), first Director of the Chilean School of Geology, University of Chile, Santiago, Chile.

Type Material: n.d.

References: (1) Konnert, J.A., H.T. Evans, Jr., J.J. McGee, and G.E. Ericksen (1994) Mineralogical studies of the nitrate deposits of Chile: VII. Two new saline minerals with the composition $\text{K}_6(\text{Na}, \text{K})_4\text{Na}_6\text{Mg}_{10}(\text{XO}_4)_{12}(\text{IO}_3)_{12} \cdot 12\text{H}_2\text{O}$: fuenzalidaite ($\text{X} = \text{S}$) and carlosruizite ($\text{X} = \text{Se}$). Amer. Mineral., 79, 1003–1008.