

# Iquiqueite

# $\text{K}_3\text{Na}_4\text{Mg}(\text{CrO}_4)\text{B}_{24}\text{O}_{39}(\text{OH}) \cdot 12\text{H}_2\text{O}$

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**Crystal Data:** Hexagonal. *Point Group:*  $3m$ . As hexagonal platelets, composed of  $\{10\bar{1}0\}$  and  $\{0001\}$ , to  $100\ \mu\text{m}$ ; typically stacked in compound groups or columnar to vermiform aggregates.

**Physical Properties:** *Cleavage:*  $\{0001\}$ , perfect;  $\{10\bar{1}0\}$ , imperfect. *Tenacity:* Brittle. Hardness = 1.5–2  $D(\text{meas.}) = 2.05(9)$   $D(\text{calc.}) = 2.05$  Slightly hygroscopic; slowly soluble in  $\text{H}_2\text{O}$ .

**Optical Properties:** Translucent. *Color:* Bright yellow. *Streak:* Yellow. *Luster:* Vitreous. *Optical Class:* Uniaxial (–); may be anomalously biaxial, thought due to misaligned stacking.  $\omega = 1.496\text{--}1.502$   $\epsilon = 1.447\text{--}1.448$

**Cell Data:** *Space Group:*  $P31c$ .  $a = 11.6369(14)$   $c = 30.158(7)$   $Z = 3$

**X-ray Powder Pattern:** Tarapacá Province, Chile.

3.02 (100), 2.856 (100), 10.11 (85), 6.04 (85), 3.28 (85), 3.22 (85), 2.910 (80)

## Chemistry:

	(1)	(2)
$\text{B}_2\text{O}_3$	57.0	56.98
$\text{CrO}_3$	6.8	6.82
$\text{MgO}$	2.9	2.75
$\text{Na}_2\text{O}$	8.2	8.45
$\text{K}_2\text{O}$	10.5	9.64
$\text{H}_2\text{O}$	14.6	15.36
Total	100.0	100.00

(1) Tarapacá Province, Chile; recalculated after removal of a variety of likely impurities, corresponds to  $\text{K}_{3.2}\text{Na}_{3.8}\text{Mg}_{1.1}(\text{CrO}_4)\text{B}_{24}\text{O}_{39.6} \cdot 11.9\text{H}_2\text{O}$ . (2)  $\text{K}_3\text{Na}_4\text{Mg}(\text{CrO}_4)\text{B}_{24}\text{O}_{39}(\text{OH}) \cdot 12\text{H}_2\text{O}$ .

**Occurrence:** A widespread but very minor constituent of nitrate deposits in saline cemented alluvium and fractured bedrock.

**Association:** Nitratine, halite, niter, darapskite, blödite, glauberite, dietzeite, brüggenite, lopezite, ulexite, gypsum (Tarapacá Province, Chile); nitratine, halite, sylvite, darapskite, lopezite, tarapacáite (Salar del Miraje, Chile).

**Distribution:** In Chile, the first samples appear to have originated from the vicinity of Zapiga, Tarapacá; later found at Salar del Miraje, María Elena, Tamarugal Pampa, Antofagasta.

**Name:** For Iquique, a major historic port for nitrate exports from Tarapacá, Chile.

**Type Material:** National Museum of Natural History, Washington, D.C., USA, 163774.

**References:** (1) Ericksen, G.E., M.R. Mrose, J.W. Marinenko, and J.J. McGee (1986) Mineralogical studies of the nitrate deposits of Chile. V. Iquiqueite,  $\text{Na}_4\text{K}_3\text{Mg}(\text{CrO}_4)\text{B}_{24}\text{O}_{39}(\text{OH}) \cdot 12\text{H}_2\text{O}$ , a new saline mineral. *Amer. Mineral.*, 71, 830–836. (2) Färber, G., T. Witzke, G. Neumeier, and S. Weiss (1998) Iquiqueit aus der Atacama-Wüste in Chile. *LAPIS*, 23(10), 51 (in German).