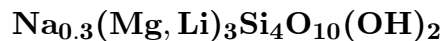


## Hectorite



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**Crystal Data:** Monoclinic. *Point Group:*  $2/m$ . As thin laths, to 2  $\mu\text{m}$ , and as aggregates of such laths.

**Physical Properties:** *Cleavage:* {001}, perfect. *Fracture:* Uneven. Hardness = 1–2  
D(meas.) =  $\sim 2.3$  D(calc.) = n.d. Swells on addition of  $\text{H}_2\text{O}$ . Positive identification of minerals in the smectite group may need data from DTA curves, dehydration curves, and X-ray powder patterns before and after treatment by heating and with organic liquids.

**Optical Properties:** Translucent, transparent in thin section. *Color:* White, cream, pale brown, mottled. *Luster:* Earthy to waxy, dull.

*Optical Class:* Biaxial (-).  $\alpha = \sim 1.49$   $\beta = 1.50$   $\gamma = 1.52$   $2V(\text{meas.}) = \text{Small}$ .

**Cell Data:** *Space Group:*  $C2/m$ .  $a = 5.2$   $b = 9.16$   $c = 16.0$   $\beta = \sim 99^\circ$   $Z = \text{n.d.}$

**X-ray Powder Pattern:** Hector, California, USA; spacings variable by humidity, intensities variable by orientation.

4.58 (100), 1.53 (100), 15.8 (80), 2.66 (80), 1.32 (80), 1.30 (80), 2.48 (60)

### Chemistry:

	(1)	(2)
SiO <sub>2</sub>	53.68	53.95
TiO <sub>2</sub>		trace
Al <sub>2</sub> O <sub>3</sub>	0.60	0.14
Fe <sub>2</sub> O <sub>3</sub>		0.03
MgO	25.34	25.89
CaO	0.52	0.16
Li <sub>2</sub> O	1.12	1.22
Na <sub>2</sub> O	3.00	3.04
K <sub>2</sub> O	0.07	0.23
Cl	0.31	
H <sub>2</sub> O <sup>+</sup>	8.24	5.61
H <sub>2</sub> O <sup>-</sup>	7.28	9.29
Total	100.16	99.56

(1) Hector, California, USA; corresponds to  $(\text{Na}_{0.42}\text{Ca}_{0.04}\text{K}_{0.01})_{\Sigma=0.47}(\text{Mg}_{2.73}\text{Li}_{0.33})_{\Sigma=3.06}(\text{Si}_{3.89}\text{Al}_{0.05})_{\Sigma=3.94}\text{O}_{10}(\text{OH})_2$ . (2) Do.; corresponds to  $(\text{Na}_{0.42}\text{K}_{0.02}\text{Ca}_{0.01})_{\Sigma=0.45}(\text{Mg}_{2.78}\text{Li}_{0.36})_{\Sigma=3.14}(\text{Si}_{3.89}\text{Al}_{0.01})_{\Sigma=3.90}\text{O}_{10}(\text{OH})_2 \cdot 0.35\text{H}_2\text{O}$ .

**Mineral Group:** Smectite group.

**Occurrence:** In a bentonite deposit, altered from clinoptilolite derived from volcanic tuff and ash with a high glass content, related to hot spring activity (Hector, California, USA).

**Association:** Calcite, clinoptilolite (Hector, California, USA).

**Distribution:** In the USA, five km south of Hector, San Bernardino Co., California; in the Lyles deposit, 38 km northeast of Hillside, Yavapai Co., Arizona; and at Disaster Peak, in the Montana Mountains, near McDermitt, Disaster district, Humboldt Co., Nevada. From around Puy Chalard, Puy-de-Dôme, France. In the Balıkesir colemanite deposit, Balıkesir Province, Turkey.

**Name:** For the locality at Hector, California, USA.

**Type Material:** n.d.

**References:** (1) Foshag, W.F. and A.O. Woodford (1936) Bentonitic magnesian clay-mineral from California. *Amer. Mineral.*, 21, 238–244. (2) Strese, H. and U. Hofmann (1941) Synthesis of magnesium silicate gels with two-dimensional regular structure. *Zeit. anorginsche allgemeine Chemie*, 247, 65–95. (3) (1944) *Amer. Mineral.*, 29, 73 (abs. ref. 2). (4) Nagelschmidt, G. (1938) On the atomic arrangement and variability of the members of the montmorillonite group. *Mineral. Mag.*, 25, 140–155. (5) Deer, W.A., R.A. Howie, and J. Zussman (1963) *Rock-forming minerals*, v. 3, sheet silicates, 226–245.

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