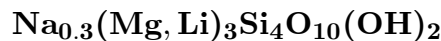


Hectorite



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Crystal Data: Monoclinic. *Point Group:* $2/m$. As thin laths, to 2 μm , and as aggregates of such laths.

Physical Properties: *Cleavage:* {001}, perfect. *Fracture:* Uneven. Hardness = 1–2
D(meas.) = ~ 2.3 D(calc.) = n.d. Swells on addition of H_2O . 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 ₂	53.68	53.95
TiO ₂		trace
Al ₂ O ₃	0.60	0.14
Fe ₂ O ₃		0.03
MgO	25.34	25.89
CaO	0.52	0.16
Li ₂ O	1.12	1.22
Na ₂ O	3.00	3.04
K ₂ O	0.07	0.23
Cl	0.31	
H ₂ O ⁺	8.24	5.61
H ₂ O [–]	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 $(\text{Na}_{0.42}\text{K}_{0.02}\text{Ca}_{0.01})_{\Sigma=0.45}(\text{Mg}_{2.78}\text{Li}_{0.36})_{\Sigma=3.14}(\text{Si}_{3.89}\text{Al}_{0.01})_{\Sigma=3.90}\text{O}_{10}(\text{OH})_2 \bullet 0.35\text{H}_2\text{O}$.

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 coemanite 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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