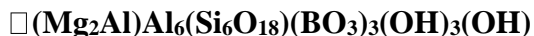


Magnesio-foitite

Crystal Data: Hexagonal. *Point Group:* $3m$. As felted masses of fibrous crystals with a matte surface; individual crystals to 1 mm.

Physical Properties: Cleavage: None. *Tenacity:* Brittle. *Fracture:* n.d. Hardness = ~7
D(meas.) = n.d. D(calc.) = 2.995

Optical Properties: Transparent to translucent. *Color:* Pale bluish gray. *Streak:* n.d. *Luster:* n.d.
Optical Class: Uniaxial (-). $\omega = 1.624$ $\varepsilon = 1.650$ *Pleochroism:* $O = \text{gray-blue}$, $E = \text{pale lavender}$.
Absorption: Moderate, $\omega > \varepsilon$.

Cell Data: Space Group: $R3m$. $a = 15.884(4)$ $c = 7.118(3)$ $Z = 3$

X-ray Powder Pattern: Kyonosawa, Japan.

3.969 (100), 2.567 (100), 4.211 (90), 2.949 (70), 6.366 (60), 3.470 (60), 2.037 (50)

| Chemistry: | (1) | (2) |
|--------------------------------|---------|---------|
| SiO ₂ | 38.27 | 34.53 |
| Al ₂ O ₃ | 40.17 | 38.42 |
| FeO | 0.97 | |
| Fe ₂ O ₃ | | 0.88 |
| MgO | 6.15 | 7.63 |
| CaO | | 0.20 |
| MnO | | 0.04 |
| Na ₂ O | 0.70 | 0.62 |
| K ₂ O | | 0.01 |
| B ₂ O ₃ | [11.09] | [10.66] |
| H ₂ O | [3.82] | [3.68] |
| Total | 101.17 | 96.67 |

(1) Kyonosawa, Japan; average electron microprobe analysis, H₂O and B₂O₃ calculated; corresponds to $X(\square_{0.79}\text{Na}_{0.21})^Y(\text{Mg}_{1.44}\text{Fe}_{0.13}\text{Al}_{1.42})^Z\text{Al}_6(\text{Si}_6\text{O}_{18})(\text{BO}_3)_3(\text{OH})_4$. (2) Key Lake, Canada; average electron microprobe analysis, H₂O and B₂O₃ calculated; corresponds to $\square_{0.76}\text{Na}_{0.20}\text{Ca}_{0.04}(\text{Mg}_{1.86}\text{Fe}^{3+}_{0.11}\text{Mn}_{0.01}\text{Al}_{1.03})\text{Al}_{6.00}(\text{Si}_{5.64}\text{Al}_{0.36})\text{O}_{18}(\text{BO}_3)_3(\text{OH})_{4.01}$.

Mineral Group: Tourmaline group.

Occurrence: From an alteration zone in a silicified porphyry developed in completely altered andesitic to dacitic volcanic rocks (Japan); in unconformity-type uranium deposits (Canada).

Association: Hematite, pyrite, rutile, quartz (Japan); epidote, hematite, quartz, dravitic tourmaline (Canada).

Distribution: At Kyonosawa, Mitomi-mura, Higashi-Yamanashi-gun, Yamanashi-ken Prefecture, Honshu, ~100 km west of Tokyo, Japan. From Rabbit Lake and Second Link Lake, eastern edge of the Athabasca Basin, Saskatchewan, Canada.

Name: The prefix, *magnesio*, indicates the magnesium analogue of *foitite*.

Type Material: Canadian Museum of Nature, Ottawa (CMNMN 81566) and Royal Ontario Museum, Toronto (M47672), Ontario, Canada.

References: (1) Hawthorne, F.C., J.B. Selway, A. Kato, S. Matsubara, M. Shimizu, J.D. Grice, and J. Vajdak (1999) Magnesiofoitite, $\square(\text{Mg}_2\text{Al})\text{Al}_6(\text{Si}_6\text{O}_{18})(\text{BO}_3)_3(\text{OH})_4$, a new alkali-deficient tourmaline. *Can. Mineral.* 37, 1439-1443. (2) (2000) *Amer. Mineral.*, 85, 1562 (abs. ref. 1). (3) Rosenberg, P.E. and F.F. Foit, Jr. (2006), Magnesiofoitite from the uranium deposits of the Athabasca Basin, Saskatchewan, Canada. *Can. Mineral.* 44 959-965.