

**Boromuscovite****KAl<sub>2</sub>(Si<sub>3</sub>B)O<sub>10</sub>(OH, F)<sub>2</sub>**

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**Crystal Data:** Monoclinic. *Point Group:* 2/m. Pseudo-hexagonal crystals, to 4 μm, aggregated in coatings on other minerals.

**Physical Properties:** *Cleavage:* Perfect on {001}; poor {010} parting. *Fracture:* Subconchoidal. Hardness = 2.5–3 in aggregate. D(meas.) = 2.81 (on a mixture). D(calc.) = 2.89 (2M<sub>1</sub>); 2.90 (1M).

**Optical Properties:** Nearly opaque. *Color:* White to buff or pale cream. *Streak:* White. *Luster:* Dull, earthy to porcelaneous.

*Optical Class:* Biaxial (-). *Orientation:* X ∧ c = -1°; Y ∧ a = 2°; Z = b. *Dispersion:* r > v, weak. α = 1.557(2) β = 1.587(2) γ = 1.593(2) 2V(meas.) = 44(2)° 2V(calc.) = 47.5°

**Cell Data:** *Space Group:* [C2/c] (2M<sub>1</sub> polytype by analogy to muscovite). a = 5.075(1) b = 8.794(4) c = 19.815(25) β = 95.59(3)° Z = [2], or *Space Group:* [C2/c] (1M polytype by analogy to muscovite). a = 5.077(1) b = 8.775(3) c = 10.061(2) β = 101.31(2)° Z = [4]

**X-ray Powder Pattern:** Little Three mine, California, USA. 3.569 (100), 4.391 (80), 3.008 (80), 2.505 (80), 9.862 (60), 4.239 (40), 4.007 (40)

Chemistry:	(1)		(1)
SiO <sub>2</sub>	48.1	Na <sub>2</sub> O	< 0.05
TiO <sub>2</sub>	< 0.01	K <sub>2</sub> O	11.0
B <sub>2</sub> O <sub>3</sub>	7.0	Rb <sub>2</sub> O	0.52
Al <sub>2</sub> O <sub>3</sub>	28.1	Cs <sub>2</sub> O	0.05
Fe <sub>2</sub> O <sub>3</sub>	0.1	F	0.76
MnO	0.08	H <sub>2</sub> O <sup>+</sup>	4.55
MgO	0.15	H <sub>2</sub> O <sup>-</sup>	0.22
CaO	0.1	P <sub>2</sub> O <sub>5</sub>	< 0.05
Li <sub>2</sub> O	0.05	-O = F <sub>2</sub>	0.32
		Total	100.46

(1) Little Three mine, California, USA; by a combination of electron microprobe, XRF, AA, and ICP-atomic emission spectroscopy; corresponding to (K<sub>0.89</sub>Rb<sub>0.02</sub>Ca<sub>0.01</sub>)<sub>Σ=0.92</sub> (Al<sub>1.93</sub>Li<sub>0.01</sub>Mg<sub>0.01</sub>)<sub>Σ=1.95</sub>(Si<sub>3.06</sub>B<sub>0.77</sub>Al<sub>0.17</sub>)<sub>Σ=4.00</sub>O<sub>9.82</sub>[(OH)<sub>2.02</sub>F<sub>0.16</sub>]<sub>Σ=2.18</sub>.

**Polymorphism & Series:** 2M<sub>1</sub>, 1M polytypes.

**Mineral Group:** Mica group.

**Occurrence:** A coating on other minerals on the floor of a pegmatite pocket, hydrothermally deposited after rupture of the pocket.

**Association:** Lepidolite, quartz, microcline, topaz.

**Distribution:** From the Little Three mine, Ramona district, San Diego Co., California, USA.

**Name:** Presumably for the BOROn content and relation to *muscovite*.

**Type Material:** National Museum of Natural History, Washington, D.C., USA, 166821.

**References:** (1) Foord, E.E., R.F. Martin, J.J. Fitzpatrick, J.E. Taggart, Jr., and J.G. Crock (1991) Boromuscovite, a new member of the mica group, from the Little Three mine pegmatite, Ramona district, San Diego County, California. *Amer. Mineral.*, 76, 1998–2002.

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