

Bityite**CaLiAl₂(AlBeSi₂)O₁₀(OH)₂**

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Crystal Data: Monoclinic. *Point Group:* 2/m. Crystals thin and pseudo-hexagonal, to 1 cm; as lamellae which may form rosettes and as dense, micaceous aggregates.

Physical Properties: *Cleavage:* Perfect micaceous on {001}. *Fracture:* Uneven. Hardness = 4–4.5 VHN = 277–304 D(meas.) = 3.02–3.05 D(calc.) = 3.14

Optical Properties: Transparent to translucent. *Color:* Pearly white, grayish blue, greenish blue, light brown; colorless in thin section, prominently zoned into six sectors. *Luster:* Vitreous, pearly on cleavages.

Optical Class: Biaxial (–). *Orientation:* $X \simeq c$; $Y \simeq a$; $Z = b$. $\alpha = 1.651$ $\beta = 1.659$ $\gamma = 1.661$ $2V(\text{meas.}) = 35^\circ\text{--}52^\circ$

Cell Data: *Space Group:* C2/c. $a = 4.98$ $b = 8.67$ $c = 18.74$ $\beta = \sim 90^\circ$ $Z = 4$

X-ray Powder Pattern: Mt. Bity, Madagascar.

2.480 (100), 1.45 (100), 2.043 (90), 3.136 (80), 1.878 (70), 4.29 (60), 2.355 (60)

Chemistry:

	(1)	(2)	(3)
SiO ₂	31.95	33.37	31.04
Al ₂ O ₃	41.75	36.24	39.51
FeO		0.17	
BeO	2.27	7.30	6.46
MgO	0.13	0.04	
CaO	14.30	14.42	14.48
Li ₂ O	2.73	2.39	3.86
Na ₂ O	0.40	0.29	
K ₂ O	0.16	0.04	
H ₂ O	6.50	5.72	4.65
Total	100.19	99.98	100.00

(1) Mt. Bity, Madagascar; BeO apparently partially determined as Al₂O₃. (2) Londonderry, Australia. (3) CaLiAl₂(AlBeSi₂)O₁₀(OH)₂.

Polymorphism & Series: 2M₁ polytype.

Mineral Group: Mica group.

Occurrence: A late-stage mineral in lithium-bearing pegmatites.

Association: Tourmaline, albite, lepidolite (Mt. Bity, Madagascar); bavenite, beryl, albite, cassiterite, columbite, tourmaline (Londonderry, Australia); calcite, albite (Strickland quarry, Connecticut, USA).

Distribution: In Madagascar, from Maharitra, on Mt. Bity. In the Namherere mine, Aukole, Uganda. In the USA, from the Strickland quarry, Portland, Middlesex Co., Connecticut, and the Harding pegmatite, Dixon, Taos Co., New Mexico. On the Huron claims, 16 km north of Point du Bois, Manitoba, Canada. At Pizzo Marcio, Val Vigizzo, Piedmont, Italy. From the Maantienvarsi pegmatite dike, Eräjärvi pegmatite area, Orivesi, Finland. At Tittling, near Passau, Bavaria, Germany. At Londonderry, Western Australia.

Name: For the locality, Mt. Bity, Madagascar.

Type Material: Natural History Museum, Paris, France; Harvard University, Cambridge, Massachusetts, USA, 87680.

References: (1) Lacroix, A. (1908) Les minéraux des filons de pegmatite à tourmaline lithique de Madagascar. Bull. Soc. fr. Minéral., 31, 218–247 (in French). (2) (1950) Amer. Mineral., 35, 1091 (discussion of analysis in ref. 1). (3) Strunz, H. (1956) Bityit, ein berylliumglimmer. Zeits. Krist., 107, 325–330 (in German). (4) Vlasov, K.A., Ed. (1966) Mineralogy of rare elements, v. II, 114–116. (5) Lin, J.-C. and S. Guggenheim (1983) The crystal structure of a Li,Be-rich brittle mica: a dioctahedral-trioctahedral intermediate. Amer. Mineral., 68, 130–142.

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