

(Na, K)₃(Ba, Fe²⁺, Ca)₂
(Ti, Fe³⁺)₃O₂(Si₂O₇)₂(F, OH, O)₂

Barytolamprophyllite

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Crystal Data: Monoclinic. *Point Group:* 2/m or 2. As foliated aggregates of cleavable pseudorhombhedra.

Physical Properties: *Cleavage:* Perfect on {100}, less so on {011}, imperfect on {010}.
Tenacity: Brittle. *Hardness* = 2–3 *D*(meas.) = 3.62–3.66 *D*(calc.) = [3.82]

Optical Properties: Semitransparent. *Color:* Dark brown. *Luster:* Vitreous.
Optical Class: Biaxial (+). *Pleochroism:* Strong; X = light yellow; Z = brown. *Orientation:* Z ∧ c = 6°–7°. *Dispersion:* r > v, distinct. *Absorption:* Z > Y > X. α = 1.742–1.743
β = [1.754] γ = 1.776–1.778 2V(meas.) = 29°–30°

Cell Data: *Space Group:* C2/m or C2. a = 19.833 b = 7.089 c = 5.393 β = 96.66°
Z = 2

X-ray Powder Pattern: Kola Peninsula, Russia. (ICDD 34-313).
2.801 (100), 2.153 (90), 1.482 (90), 1.601 (80), 3.447 (70), 1.790 (70), 3.294 (50)

Chemistry:	(1)	(1)	(1)
SiO ₂	28.53	BaO	17.24
TiO ₂	26.60	Na ₂ O	9.52
Al ₂ O ₃	1.12	K ₂ O	3.10
Fe ₂ O ₃	2.72	F	1.60
FeO	2.63	Cl	0.51
MnO	1.75	H ₂ O ⁺	0.70
MgO	1.00	P ₂ O ₅	0.06
CaO	1.70	–O = (F, Cl) ₂	0.78
SrO	1.47	Total	[99.47]

(1) Kola Peninsula, Russia; original total given as 99.34%; corresponds to (Na_{2.47}K_{0.53})_{Σ=3.00}(Ba_{1.05}Fe_{0.28}²⁺Ca_{0.24}Mn_{0.20}Mg_{0.20}Sr_{0.12})_{Σ=2.09}(Ti_{2.68}Fe_{0.28}³⁺)_{Σ=2.96}(Si_{3.82}Al_{0.18})_{Σ=4.00}O₁₄[F_{0.68}(OH)_{0.62}O_{0.57}Cl_{0.14}]_{Σ=2.01}.

Occurrence: In ijolite (Lovozero massif, Russia).

Association: Aegirine, nepheline, potassic feldspar, cancrinite, apatite (Lovozero massif, Russia); amphibole, eudialyte, natrolite, pectolite (Gardiner complex, Greenland).

Distribution: From Mts. Kukisvumchorr, Rasvumchorr, and Koashva, Khibiny massif, Kola Peninsula, and in the Murun massif, southwest of Olekminsk, Yakutia, Russia. At Kahlenberg, Graulai, and Üdersdorf, Eifel district, Germany. From Coyote Peak, near Orick, Humboldt Co., California, USA. In the Gardiner complex, beyond the head of Kangerdlugssuaq Fjord, Greenland.

Name: For the BARIum in its composition and its relation to *lamprophyllite*.

Type Material: Beijing University, Beijing, China.

References: (1) Tze-Chung Peng [Zhizhong Peng] and Chien-hung Chang [Jianhong Zhang] (1965) New varieties of lamprophyllite–barytolamprophyllite and orthorhombic lamprophyllite. *Scientia Sinica*, 14, 1827–1840 (in English). (2) (1966) *Amer. Mineral.*, 51, 1549 (abs. ref. 1). (3) Zhizhong Peng, Jianhong Zhang, and Jinfu Shu (1984) The crystal structure of barytolamprophyllite. *Kexue Tongbao*, 29, 237–241 (in English). (4) (1984) *Chem. Abs.*, 101, 26260 (abs. ref. 3).