

Nabalamprophyllite-2O**(Ba, Na)Ti₂Na₃Ti(Si₂O₇)₂O₂(OH, F)₂**

Crystal Data: Orthorhombic. Point Group: $2/m\ 2/m\ 2/m$. [Crystals lamellar prismatic with dominant {100} and minor {010} and {130}. Forms radial sheaf-like and random aggregates, to 10 cm.] (by analogy to nabalamprophyllite-2M)

Physical Properties: *Cleavage:* [Perfect on (100).] *Tenacity:* [Brittle.] *Fracture:* n.d. [Hardness = 3] D(meas.) = n.d. D(calc.) = 3.410

Optical Properties: [Transparent to translucent.] *Color:* n.d. *Streak:* n.d. *Luster:* [Vitreous.] *Optical Class:* n.d.

Cell Data: *Space Group:* $Pn\bar{m}n$. $a = 19.564(2)$ $b = 7.1173(5)$ $c = 5.4144(4)$ $Z = 2$

X-ray Powder Pattern: n.d.

Chemistry:	(1)		(1)
SiO ₂	29.79	SrO	6.09
Al ₂ O ₃	0.16	BaO	16.55
Nb ₂ O ₅	0.71	K ₂ O	1.14
TiO ₂	27.85	Na ₂ O	10.89
Fe ₂ O ₃	1.05	F	1.53
MnO	3.52	H ₂ O	[0.99]
MgO	0.20	- O = F ₂	0.64
CaO	0.15	Total	99.98

(1) Yubileinaya vein, Karnasurt Mountain, Lovozero alkaline massif, Kola Peninsula, Russia; average of 10 electron microprobe analyses, H₂O calculated from structure refinement; corresponds to $(Ba_{0.87}Sr_{0.47}Na_{0.28}K_{0.20}Ca_{0.02}\square_{0.16})_{\Sigma=2}(Na_{2.56}Mn^{2+}_{0.40}Mg_{0.04})_{\Sigma=3}(Ti_{2.81}Fe^{3+}_{0.11}Nb_{0.04}Al_{0.03})_{\Sigma=3}(Si_2O_7)_2[(OH)_{0.89}F_{0.65}O_{0.46}]_{\Sigma=2}$.

Polymorphism & Series: Orthorhombic and monoclinic polytypes.

Occurrence: In an alkaline ultramafic massif.

Association: Bornemanite.

Distribution: From the Yubileinaya vein, Karnasurt Mountain, Lovozero alkaline massif, Kola Peninsula, Russia.

Name: For its composition (*Na* and *Ba*) and relation to other *lamprophyllite*-group minerals; a suffix indicates the orthorhombic polytype.

Type Material: n.d.

References: (1) Sokolova, E. and F.C. Hawthorne (2008) From structure topology to chemical composition. IV. Titanium silicates: the orthorhombic polytype of Nabalamprophyllite from the Lovozero Massif, Kola Peninsula, Russia. *Can. Mineral.*, 46, 1322-1331. (2) (2009) *Amer. Mineral.*, 94(7), 1083 (abs. ref. 1). (3) Chukanov, N.V., M.M. Moiseev, I.V. Pekov, K.A. Lazebnik, R.K. Rastsvetaeva, N.V. Zayakina, G. Ferraris, and G. Ivaldi (2004) Nabalamprophyllite $Ba(Na,Ba)\{Na_3Ti[Ti_2O_2Si_4O_{14}](OH,F)_2\}$, a new layer titanosilicate of the lamprophyllite group from the Inagli and Kovdor alkaline-ultrabasic massifs, Russia. *Zapiski Vseross. Mineral. Obsch.*, 133(1), 59-72 (in Russian, English abstract). (4) (2005) *Amer. Mineral.*, 90(7), 1230 (abs. ref. 3).