

Nabalamprophyllite

Crystal Data: Monoclinic. *Point Group:* 2/m. Crystals lamellar prismatic with dominant {100} and minor {010} and {130}. Forms radial sheaf-like and random aggregates, to 10 cm.

Physical Properties: *Cleavage:* Perfect on (100). *Tenacity:* Brittle. *Fracture:* n.d.
Hardness = 3 D(meas.) = 3.62(2) D(calc.) = 3.58 (for empirical Formula)

Optical Properties: Transparent to translucent. *Color:* Brown to bright yellow. *Streak:* n.d.
Luster: Vitreous.

Optical Class: Biaxial (+). $\alpha = 1.750(12)$ $\gamma = 1.799(15)$ $2V(\text{meas.}) = 40.5^\circ$

Dispersion: Strong, $r > v$. *Orientation:* $a \wedge \gamma = 10^\circ$, $Y = a$. *Pleochroism:* Weak, green-brown.

Cell Data: Space Group: *P2/m*. $a = 19.741(5)$ $b = 7.105(4)$ $c = 5.408(2)$ $\beta = 96.67(1)^\circ$ $Z = 2$

X-ray Powder Pattern: Inagli massif, south Yukutsk, Russia.

2.797 (100), 9.87 (96), 3.45 (90), 3.275 (78), 3.75 (65), 2.610 (43), 3.040 (41), 2.143 (40)

Chemistry:	(1)	(2)	(1)	(2)
Na ₂ O	11.14	11.99	Fe ₂ O ₃	0.78
K ₂ O	0.94	1.03	Al ₂ O ₃	0.44
CaO	0.36	0.10	TiO ₂	27.80
SrO	0.65	n.d.	Nb ₂ O ₅	n.d.
BaO	24.12	25.32	SiO ₂	28.75
MgO	0.34	0.83	F	1.18
MnO	1.10	1.09	H ₂ O	1.83
			<u>-O=F₂</u>	<u>[0.50]</u>
			Total	98.93
				99.36

(1) Inagli massif, south Yukutsk, Russia; average of 20 electron microprobe analyses, H₂O by TGA; corresponds to Na_{2.95}K_{0.17}Ca_{0.05}Sr_{0.05}Ba_{1.29}Mn_{0.13}(Ti_{2.86}Fe_{0.08}Mg_{0.07}) $\Sigma=3.01$ [(Si_{3.93}Al_{0.07}) $\Sigma=4.00$ O_{14.00}]O_{1.94}(OH)_{1.67}F_{0.51}. (2) Kovdor massif, Russia; average of 20 electron microprobe analyses, H₂O by TGA.

Occurrence: In peralkaline pegmatite dikes cutting alkaline ultramafic rocks.

Association: Aegirine, albite, ancylite, batisite, diopside, eckermannite, inelinite, leucosphenite, lorenzenite, natrolite, neptunite, strontium apatite (Inagli); apatite, cancrinite, eudialyte-group minerals, lorenzenite, lueshite, nepheline, pectolite, pyrrhotite, thomsonite-Ca, titanite, diopside, hedenbergite, aegirine (Kovdor). In cancrinite-bearing pegmatite (Kovdor), it forms aggregates with pectolite and cancrinite, often intergrown with lorenzenite. In nepheline-bearing pegmatite (Kovdor), it forms radial aggregates of lamellar crystals with lorenzenite, titanite and eudialyte group minerals.

Distribution: From the Inagli massif, south Yukutsk and the Kovdor massif, Kola Peninsula, Russia.

Name: For its composition and relation to other *lamprophyllite*-group minerals.

Type Material: Geological Museum, Institute of Geology and Geophysics, Russian Academy of Science, Novosibirsk, Russia (XIII-274/1) and the A.E. Fersman Mineralogical Museum, Russian Academy of Science, Moscow, Russia (90837 and 90843).

References: (1) 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){Na₃Ti[Ti₂O₂Si₄O₁₄](OH,F)₂}, a new layer titanosilicate of the lamprophyllite group from the Inagli and Kovdor alkaline-ultrabasic massifs, Russia. *Zapiski Vseross. Mineral. Obshch.*, 133(1), 59-72 (in Russian, English abstract). (2) (2005) *Amer. Mineral.*, 90, 1230 (abs. ref. 1).