

Megacyclite

$\text{Na}_8\text{KSi}_9\text{O}_{18}(\text{OH})_9 \cdot 19\text{H}_2\text{O}$

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Crystal Data: Monoclinic. *Point Group:* $2/m$. In irregular grains, to 3 mm.

Physical Properties: *Cleavage:* Perfect {100}; less perfect {001}. *Fracture:* Step-like. Hardness = 2 D(meas.) = 1.82(5) D(calc.) = 1.87 Turns white on exposure to air.

Optical Properties: Transparent. *Color:* Colorless. *Streak:* [White.] *Luster:* Vitreous to subvitreous.

Optical Class: Biaxial (-). *Orientation:* $Y = b$; $X \wedge c = 30^\circ$. *Dispersion:* $r > v$, strong. $\alpha = 1.460(2)$ $\beta = 1.478(2)$ $\gamma = 1.481(2)$ $2V(\text{meas.}) = 43(1)^\circ$ $2V(\text{calc.}) = 44^\circ$

Cell Data: *Space Group:* $P2_1/c$. $a = 24.91(5)$ $b = 11.94(1)$ $c = 14.92(2)$ $\beta = 94.47(9)^\circ$
 $Z = 4$

X-ray Powder Pattern: Khibina massif, Russia.

3.08 (100), 2.938 (70b), 4.26 (60), 2.649 (60b), 2.400 (35), 2.289 (35), 7.42 (20)

Chemistry:

	(1)
SiO ₂	43.42
Na ₂ O	19.75
K ₂ O	3.62
H ₂ O	[33.21]
Total	[100.00]

(1) Khibina massif, Russia; by electron microprobe, average of four analyses, H₂O by difference; corresponds to $\text{Na}_{7.96}\text{K}_{0.96}\text{Si}_{9.02}\text{O}_{18}(\text{OH})_9 \cdot 18.51\text{H}_2\text{O}$.

Occurrence: In unweathered ultra-alkalic pegmatites in an alkalic massif.

Association: Orthoclase, fenaksite, revdite, delhayelite, many other minerals.

Distribution: On Mt. Rasvumchorr, Khibiny massif, Kola Peninsula, Russia.

Name: From the Greek for *large* and *cyclical*, with reference to the large ringlike groups of silica tetrahedra in the structure.

Type Material: Mining Institute, St. Petersburg, 2066/1; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, p733/2.

References: (1) Khomyakov, A.P., G.N. Nechelyustov, N.A. Yamnova, and D.Y. Pushcharovskii (1993) Megacyclite $\text{Na}_8\text{KSi}_9\text{O}_{18}(\text{OH})_9 \cdot 19\text{H}_2\text{O}$ – a new mineral. Zap. Vses. Mineral. Obshch., 122(1), 125–128 (in Russian). (2) (1994) Amer. Mineral., 79, 1011 (abs. ref. 1). (3) Yamnova, N.A., R.K. Rastsvetaeva, D.Y. Pushcharovskii, T. Mernaf, M.G. Mikheeva, and A.P. Khomyakov (1992) Crystal structure of the new annular Na, K silicate $\text{Na}_{16}\text{K}_2[\text{Si}_{18}\text{O}_{36}(\text{OH})_{18}] \cdot 38\text{H}_2\text{O}$. Kristallografiya (Sov. Phys. Crystal.), 32, 167–174 (in Russian).