

Diversilite-(Ce) **$\text{Na}_2(\text{Ba}, \text{K})_6\text{Ce}_2\text{Fe}^{2+}\text{Ti}_3(\text{Si}_6\text{O}_{18})_2(\text{OH})_{10} \cdot n\text{H}_2\text{O}$**

Crystal Data: Hexagonal. *Point Group:* 32. Crystals platy on (001) to 2 mm, as fan-shaped aggregates to 3 mm. *Twinning:* On {001} confirmed by structure analysis.

Physical Properties: *Cleavage:* None. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 5 D(meas.) = 3.68(2) D(calc.) = 3.72

Optical Properties: Transparent to translucent. *Color:* Yellowish orange. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Uniaxial to slightly biaxial (+). $\omega = 1.705(2)$ $\varepsilon = 1.708(2)$ *Pleochroism:* Strong; *O* = pale yellow, *E* = yellowish orange.

Cell Data: *Space Group:* R32. $a = 10.708(2)$ $c = 60.073(11)$ $Z = 3$

X-ray Powder Pattern: Mt. Yukspor, Kola Peninsula, Russia. 3.236 (100), 2.026 (61), 2.642 (44), 2.654 (38), 10.12 (27), 3.094 (21), 2.234 (19)

Chemistry:	(1)		(1)
Na ₂ O	2.76	Pr ₂ O ₃	0.74
K ₂ O	5.81	Nd ₂ O ₃	1.21
CaO	0.10	Sm ₂ O ₃	0.16
SrO	0.42	SiO ₂	32.46
BaO	24.85	TiO ₂	9.17
MnO	1.09	Nb ₂ O ₅	1.62
FeO	3.10	<u>H₂O</u>	<u>6.15</u>
La ₂ O ₃	4.84	Total	101.20
Ce ₂ O ₃	6.72		

(1) Mt. Yukspor, Kola Peninsula, Russia; average of 3 electron microprobe analyses, H₂O by Penfield method; corresponding to $\text{Na}_{1.98}(\text{Ba}_{3.60}\text{K}_{2.74})_{\Sigma=6.34}(\text{Ce}_{0.91}\text{La}_{0.66}\text{Nd}_{0.16}\text{Pr}_{0.10}\text{Sm}_{0.02}\text{Mn}_{0.12}\text{Sr}_{0.09}\text{Ca}_{0.04})_{\Sigma=2.10}(\text{Fe}^{2+}_{0.96}\text{Mn}_{0.04})_{\Sigma=1.00}(\text{Ti}_{2.55}\text{Nb}_{0.27}\text{Mn}_{0.18})_{\Sigma=3.00}(\text{Si}_6\text{O}_{18})_2[(\text{OH})_{7.88}(\text{H}_2\text{O})_{3.74}]_{\Sigma=11.62}$.

Occurrence: In a complex granitic pegmatite.

Association: Nepheline, sodalite, K-feldspar, natrolite, pectolite, aegirine, shcherbakovite, lamprophyllite, magnesium astrophyllite, delindeite, wadeite, umbite, kostylevite.

Distribution: From Mt. Yukspor, Khibiny alkaline massif, Kola Peninsula, Russia.

Name: From the Latin *diversus* for “heterogeneous” and SILicate, alluding to the compositional diversity, structural complexity and dominant anionic and rare earth compositions of the mineral.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia.

References: (1) Khomyakov, A.P., G.N. Nechelyustov, R.K. Rastsvetaeva, and Ma Zhesheng (2003) Diversilite-(Ce), $\text{Na}_2(\text{Ba}, \text{K})_6\text{Ce}_2\text{Fe}^{2+}\text{Ti}_3[\text{Si}_3\text{O}_9]_3[\text{SiO}_3\text{OH}]_3(\text{OH}, \text{H}_2\text{O})_9$ - a new silicate with heterogeneous tetrahedral complexes from the Khibiny alkaline massif, Kola Peninsula, Russia. *Zapiski Vseross. Mineral. Obshch.*, 132(5), 34-39 (in Russian, English abs.). (2) (2005) *Amer. Mineral.*, 90, 271 (abs. ref. 1). (3) Krivovichev, S.V. and Y.N. Yakovenchuk (2005) Crystal structure of diversilite-(Ce). *Zap. Vser. Mineral. Obshch.*, 134(1), 113-117 (in Russian, English abstract). (4) (2006) *Amer. Mineral.*, 91(4), 715 (abs. ref. 3).