

Kupletskite



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Crystal Data: Monoclinic, or triclinic, pseudomonoclinic. *Point Group:* n.d. In thin plates and lamellar masses, to 5 cm; as radial masses.

Physical Properties: *Cleavage:* Perfect on {100}. *Hardness* = 3–4 *D*(meas.) = 3.20–3.36 *D*(calc.) = [3.05]

Optical Properties: Semitransparent. *Color:* Bright straw-yellow when fresh, dark brown to black when altered to manganese oxides. *Streak:* Brown. *Luster:* Vitreous.

Optical Class: Biaxial (–). *Pleochroism:* *X* = yellow-orange; *Z* = cinnamon-brown.

Dispersion: $r > v$, strong. $\alpha = [1.656]–1.660$ $\beta = 1.699–1.702$ $\gamma = 1.731–1.734$
2V(meas.) = 79°–85°

Cell Data: *Space Group:* n.d. $a = 13.14$ $b = 12.82$ $c = 5.42$ $\alpha = 93^\circ 94'$ $\beta = 101^\circ 40'$
 $\gamma = 113^\circ 38'$ $Z = 1$

X-ray Powder Pattern: Lovozero massif, Russia; nearly identical with astrophyllite.

3.505 (8), 2.642 (8), 2.573 (4), 2.099 (3), 1.732 (3), 3.249 (1), 2.998 (1)

Chemistry:	(1)	(2)		(1)	(2)
SiO ₂	32.60	33.54	CaO	3.60	1.45
TiO ₂	12.04	10.64	BaO		0.32
ZrO ₂	1.19	0.00	Na ₂ O	2.14	2.14
Al ₂ O ₃	1.68	1.00	K ₂ O	4.38	5.63
Fe ₂ O ₃	5.44	5.35	F	1.22	
Nb ₂ O ₅	0.66	2.48	H ₂ O ⁺	3.83	3.90
FeO		7.80	H ₂ O [–]	1.08	0.80
MnO	27.65	23.60	–O = F ₂	0.51	
MgO	2.98	1.63	Total	99.98	100.28

(1) Mt. Kuivchorr, Lovozero massif, Russia; total Fe as Fe₂O₃. (2) Mt. Lepkhe-Nelm, Lovozero massif, Russia.

Polymorphism & Series: Forms two series, with astrophyllite, and with cesium kupletskite.

Mineral Group: Astrophyllite group.

Occurrence: In the natrolite-rich central part and in the wall rocks of nepheline syenite pegmatites in a differentiated alkalic massif (Lovozero massif, Russia).

Association: Manganoan pectolite, neptunite, microcline, eudialyte, nepheline, aegirine (Lovozero massif, Russia); aegirine, analcime, gonnardite, apophyllite, eggletonite, pyrophanite (Little Rock, Arkansas, USA).

Distribution: In Russia, on Mts. Kuivchorr and Lepkhe-Nelm, Lovozero massif, Kola Peninsula, and some other less-well-defined localities. From the Oktyabr massif, eastern Azov area, Ukraine. In the Ilímaussaq intrusion and the Werner Berge complex, Greenland. At Gjerdingen, north of Oslo, Norway. On Granite Mountain, near Little Rock, Pulaski Co., and the Diamond Jo quarry, Magnet Cove, Hot Spring Co., Arkansas, USA. At Mont Saint-Hilaire, Quebec, Canada.

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Type Material: Geology Museum, Kola Branch, Academy of Sciences, Apatity, 1035; Vernadsky Geological Museum, Moscow, 47963; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 58869.

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