

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Crystals equant, bladed prismatic, to needlelike, to 6 cm; fibrous, felted, lamellar aggregates.

Physical Properties: *Cleavage:* Distinct on {010}. *Fracture:* Uneven. Hardness = 6 D(meas.) = 3.42–3.45 D(calc.) = 3.44 May fluoresce pale yellow to dull green under SW UV, with green cathodoluminescence.

Optical Properties: Transparent to opaque. *Color:* Pale purple-brown, pale pink to mauve, brown to black. *Luster:* Vitreous, adamantine to submetallic, or silky, dull.

Optical Class: Biaxial (–). *Pleochroism:* Weak; $X = Y$ = pale reddish yellow, yellowish brown to light brown; Z = pale yellow, brownish to dark brown. *Orientation:* $X = b$; $Y = a$; $Z = c$. *Dispersion:* $r > v$, distinct. $\alpha = 1.91$ – 1.95 $\beta = 2.01$ – 2.04 $\gamma = 2.03$ – 2.06 $2V(\text{meas.}) = 38^\circ$ – 41°

Cell Data: *Space Group:* $Pbcn$. $a = 8.7128(10)$ $b = 5.2327(5)$ $c = 14.487(2)$ $Z = 4$

X-ray Powder Pattern: Lovozero massif, Russia. (ICDD 18-1262). 2.74 (100), 3.33 (70), 1.60 (50), 5.56 (40), 2.45 (40), 1.64 (40), 3.12 (30)

Chemistry:	(1)	(2)	(3)		(1)	(2)	(3)
SiO ₂	35.40	35.3	35.15	FeO	0.34		
TiO ₂	43.16	43.7	46.72	MnO	trace	0.12	
ZrO ₂	0.07			CaO	0.19	0.14	
Al ₂ O ₃	0.00	0.11		SrO	0.01		
Y ₂ O ₃	0.02			Na ₂ O	16.23	17.4	18.13
La ₂ O ₃	0.01			F	0.38		
Ce ₂ O ₃	0.04			H ₂ O ⁺	0.42		
Fe ₂ O ₃		0.99		H ₂ O [–]	0.17		
Nb ₂ O ₅	3.89	2.20		–O = F ₂	0.16		
				Total	100.17	99.96	100.00

(1) Narssârssuk, Greenland; traces of V, Sc, Mn. (2) Tenerife, Canary Islands; by electron microprobe. (3) Na₂Ti₂Si₂O₉.

Occurrence: In nepheline syenites and their associated pegmatites.

Association: Aegirine, nepheline, microcline, arfvedsonite, elpidite, loparite, eudialyte, astrophyllite, mangan-neptunite, låvenite, rinkite, apatite, titanite, ilmenite.

Distribution: From Narssârssuk and in the Gardiner complex, beyond the head of Kangerdlugssuaq Fjord, Greenland. Near Mt. Karnasurt, Lovozero massif, in the Khibiny massif, and the Kondor massif, Kola Peninsula; in the Inagli, Konder, and Murun massifs, near Aldan, Yakutia, Russia. At Lågendalen, near Larvik, and on Låven Island, Langesundsfjord, Norway. From Mont Saint-Hilaire and near Saint-Amable, Quebec, Canada. At Point of Rocks, Colfax Co., New Mexico, and in the Diamond Jo quarry, Magnet Cove, Hot Spring Co., Arkansas, USA. On Tenerife, Canary Islands.

Name: After Johannes Theodor Lorenzen (1855–1884), Danish mineralogist interested in Greenland minerals.

Type Material: University of Copenhagen, Copenhagen, Denmark, 1967.382; Harvard University, Cambridge, Massachusetts, USA, 87917.

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