

**Crystal Data:** Hexagonal. *Point Group:* 6. Fills the interstices between nepheline and aegirine crystals as semi-faced or irregularly shaped prismatic or equant crystals to 5 mm, as aggregates to 7 mm, and veinlets to 0.5 mm thick.

**Physical Properties:** *Cleavage:* Perfect on {100}. *Tenacity:* Brittle. *Hardness:* = 5-5.5  
D(meas.) = 2.285(15)-2.30(1) D(calc.) = 2.327 Nonfluorescent.

**Optical Properties:** Transparent. *Color:* Bright light blue (darkens on exposure to sun light), greenish light blue, grayish light blue, colorless. *Streak:* White. *Luster:* Vitreous.  
*Optical Class:* Uniaxial (-).  $\omega = 1.494(1)$   $\varepsilon = 1.491(1)$  *Pleochroism:* Distinct, *E* = colorless, *O* = light blue.

**Cell Data:** *Space Group:* P6<sub>3</sub>.  $a = 12.744(8)$   $c = 5.213(6)$   $Z = 1$

**X-ray Powder Pattern:** Mt. Karnasurt, Lovozero massif, Kola Peninsula, Russia.  
3.264 (100), 4.73 (92), 3.679 (72), 6.39 (44), 2.618 (36), 2.760 (29), 2.216 (29)

<b>Chemistry:</b>	(1)
Na <sub>2</sub> O	19.70
K <sub>2</sub> O	1.92
CaO	0.17
Al <sub>2</sub> O <sub>3</sub>	27.41
SiO <sub>2</sub>	38.68
P <sub>2</sub> O <sub>5</sub>	0.64
SO <sub>3</sub>	1.05
C <sub>2</sub> O <sub>3</sub>	3.23
<u>H<sub>2</sub>O</u>	<u>8.42</u>
Total	101.18

(1) Mt. Karnasurt, Lovozero massif, Kola Peninsula, Russia; average electron microprobe analysis supplemented by anion chromatography and IR spectroscopy, H<sub>2</sub>O by modified Penfield method, C by selective sorption of pyrolysis products; corresponds to  
(Na<sub>6.45</sub>K<sub>0.41</sub>Ca<sub>0.03</sub>) $\Sigma=6.89$ (Si<sub>6.53</sub>Al<sub>5.46</sub>O<sub>24</sub>)[(C<sub>2</sub>O<sub>4</sub>)<sub>0.455</sub>(SO<sub>4</sub>)<sub>0.13</sub>(PO<sub>4</sub>)<sub>0.09</sub>(OH)<sub>0.01</sub>] $\Sigma=0.68$ ·4.74H<sub>2</sub>O.

**Mineral Group:** Cancrinite group, cancrinite solid solution subgroup.

**Occurrence:** A rock-forming mineral in hydrothermally altered peralkaline rocks and pegmatites of an alkaline massif.

**Association:** Nepheline, aegirine, sodalite, nosean, albite, lomonosovite, murmanite, fluorapatite, loparite, natrolite.

**Distribution:** At Mt. Karnasurt and Mt. Alluaiv, Lovozero massif, Kola Peninsula, Russia.

**Name:** For its color, *kyanos* (Greek for *blue*), and presence of species-defining *oxalate* anion.

**Type Material:** A.E. Fersman Mineralogical Museum, RAS, Moscow, Russia (3735/1).

**References:** (1) Chukanov, N.V., I.V. Pekov, L.V. Olysysh, W. Massa, O.V. Yakubovich, A.E. Zadov, R.K. Rastsvetaeva, and M.F. Vigasina (2010) Kyanoxalite - a new cancrinite-group mineral with extra-framework oxalate anion, from Lovozero alkaline massif, Kola Peninsula. *Geology of Ore Deposits*, 52(8), 778-790. (2) Chukanov, N.V., I.V. Pekov, I.V. Olysysh, N.V. Zubkova, and M.F. Vigasina (2011) Crystal chemistry of cancrinite-group minerals with an AB-type framework: A review and new data. II. IR spectroscopy and its crystal-chemical implications. *Can. Mineral.*, 49, 1151-1164. (3) Pekov, I.V., L.V. Olysysh, N.V. Chukanov, N.V. Zubkova, D.Y. Pushcharovsky, K. Van, G. Giester, and E. Tillmanns (2011) Crystal chemistry of cancrinite-group minerals with an AB-type framework: A review and new data. I. Chemical and structural variations. *Can. Mineral.*, 49, 1129-1150.