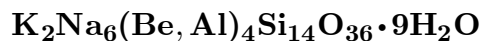


# Lovdarite



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**Crystal Data:** Orthorhombic. *Point Group:*  $mm2$ . Crystals prismatic, to 2 mm; radial fibrous; compact, porcelaneous massive.

**Physical Properties:** *Cleavage:* Distinct on {100}, {010}, {001}; poor on {110}. *Tenacity:* Brittle. Hardness = 5–6 in aggregate.  $D(\text{meas.}) = 2.33(1)$   $D(\text{calc.}) = 2.32$  May fluoresce brilliant green under SW UV.

**Optical Properties:** Transparent to translucent. *Color:* Colorless to yellowish.

*Luster:* Vitreous.

*Optical Class:* Biaxial (–) or (+). *Orientation:*  $X = a$ ;  $Y = b$ ;  $Z = c$ . *Dispersion:*  $r < v$ .  $\alpha = 1.513(2)$   $\beta = 1.516(2)$   $\gamma = 1.518(2)$   $2V(\text{meas.}) = 70^\circ\text{--}90^\circ$

**Cell Data:** *Space Group:*  $Pma2$ .  $a = 39.576(1)$   $b = 6.9308(2)$   $c = 7.1526(3)$   $Z = 4$

**X-ray Powder Pattern:** Mt. Karnasurt, Russia.

3.29 (100), 3.14 (100), 4.96 (90), 6.56 (60), 2.447 (60b), 2.288 (60), 1.785 (50)

Chemistry:	(1)	(2)		(1)	(2)
SiO <sub>2</sub>	56.13	57.00	Na <sub>2</sub> O	14.95	14.51
TiO <sub>2</sub>	0.15	0.02	K <sub>2</sub> O	6.28	6.50
Al <sub>2</sub> O <sub>3</sub>	1.77	2.30	F	0.07	
Fe <sub>2</sub> O <sub>3</sub>	0.18	0.07	Cl	0.00	
MnO	0.003		H <sub>2</sub> O <sup>+</sup>	10.85	
BeO	6.90	6.70	H <sub>2</sub> O <sup>–</sup>	1.44	
MgO	0.06		H <sub>2</sub> O		12.45
CaO	0.49		P <sub>2</sub> O <sub>5</sub>	0.05	
BaO	0.20		–O = (F, Cl) <sub>2</sub>	0.02	
			Total	99.50	[99.55]

(1) Mt. Karnasurt, Russia; corresponds to  $\text{K}_{1.98}(\text{Na}_{7.19}\text{Ca}_{0.13}\text{Ba}_{0.02})_{\Sigma=7.34}(\text{Be}_{4.11}\text{Al}_{0.47}\text{Ti}_{0.02}\text{Fe}_{0.02}\text{Mg}_{0.02})_{\Sigma=4.64}(\text{Si}_{13.93}\text{Al}_{0.05}\text{P}_{0.02})_{\Sigma=14.00}\text{O}_{37.66} \cdot 9.33\text{H}_2\text{O}$ . (2) Do.; original total given as 99.75%, corresponds to  $\text{K}_{2.0}\text{Na}_{6.9}(\text{Be}_{4.0}\text{Al}_{0.7})_{\Sigma=4.7}\text{Si}_{14}\text{O}_{37.4} \cdot 10\text{H}_2\text{O}$ .

**Occurrence:** A late hydrothermal mineral in alkalic pegmatites in a differentiated alkalic massif.

**Association:** Chkalovite.

**Distribution:** From the Jubilee pegmatite, Mt. Karnasurt, Lovozero massif, Kola Peninsula, Russia.

**Name:** From the Russian phrase *dar Lovozera*, for a gift of Lovozero.

**Type Material:** National School of Mines, Paris, France; Geology Museum, Kola Branch, Academy of Sciences, Apatity, 3208; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia.

**References:** (1) Men'shikov, Y.P., A.P. Denisov, Y.I. Uspenskaya, and E.A. Lipatova (1973) Lovdarite, a new hydrous beryllsilicate of alkalis. *Doklady Acad. Nauk SSSR*, 213, 429–432 (in Russian). (2) (1974) *Amer. Mineral.*, 59, 874 (abs. ref. 1). (3) Khomyakov, A.P., E.I. Semenov, A.V. Bikova, A.A. Voronkov, and N.N. Smol'yaninova (1975) New data on lovdarite. *Doklady Acad. Nauk SSSR*, 221, 699–702 (in Russian). (4) (1983) *Amer. Mineral.*, 68, 474 (abs. ref. 3). (5) Merlino, S. (1990) Lovdarite,  $\text{K}_4\text{Na}_{12}(\text{Be}_8\text{Si}_{28}\text{O}_{72}) \cdot 18\text{H}_2\text{O}$ , a zeolite-like mineral: structural features and OD character. *Eur. J. Mineral.*, 2, 809–817.

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