

Belovite-(La)**NaSr₃(La, Ce)(PO₄)₃(F, OH)**

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Crystal Data: Hexagonal. *Point Group:* $\bar{3}$. Prismatic crystals, to 3 cm, with large $\{10\bar{1}0\}$, $\{10\bar{1}1\}$, $\{10\bar{1}\bar{1}\}$, $\{0001\}$, modified by $\{11\bar{2}0\}$, $\{11\bar{2}1\}$, $\{11\bar{2}\bar{1}\}$; may be granular.

Physical Properties: *Fracture:* Conchoidal. *Tenacity:* Very brittle. *Hardness* = ~ 5
VHN = 450 (30 g load). D(meas.) = 4.19 D(calc.) = 4.05

Optical Properties: Transparent. *Color:* Greenish yellow to bright yellow. *Luster:* Vitreous.
Optical Class: Uniaxial (-). $\omega = 1.653$ $\epsilon = 1.635\text{--}1.636$

Cell Data: *Space Group:* $P\bar{3}$. $a = 9.647(1)$ $c = 7.170(1)$ $Z = 2$

X-ray Powder Pattern: Mt. Kukisvumchorr, Kola Peninsula, Russia; close to belovite-(Ce).
2.897 (100), 2.884 (100), 3.59 (87), 3.30 (65), 2.790 (54), 1.910 (36), 1.796 (36)

Chemistry:

	(1)		(1)
SO ₃	0.03	Gd ₂ O ₃	0.01
P ₂ O ₅	28.30	Y ₂ O ₃	0.01
SiO ₂	0.24	CaO	0.50
ThO ₂	0.43	SrO	40.09
La ₂ O ₃	13.08	BaO	2.35
Ce ₂ O ₃	8.15	Na ₂ O	4.09
Pr ₂ O ₃	0.30	F	2.04
Nd ₂ O ₃	0.30	H ₂ O	0.22
Sm ₂ O ₃	0.03	-O = F ₂	0.86
		<u>Total</u>	<u>99.31</u>

(1) Mt. Kukisvumchorr, Kola Peninsula, Russia; by electron microprobe, H₂O by the Penfield method; corresponds to Na_{0.98}(Sr_{2.86}Ba_{0.12}Ca_{0.06}) $_{\Sigma=3.04}$ (La_{0.59}Ce_{0.37}Pr_{0.01}Nd_{0.01}Th_{0.01}) $_{\Sigma=0.99}$ [(P_{2.95}Si_{0.03}) $_{\Sigma=2.98}$ O_{3.99}]₃[F_{0.80}(OH)_{0.18}] $_{\Sigma=0.98}$.

Mineral Group: Apatite group.

Occurrence: In natrolite veinlets in pegmatites in a differentiated alkalic massif.

Association: Gaidonnayite, gerasimovskite, lamprophyllite, murmanite, aegirine, pectolite, microcline, natrolite.

Distribution: Found in the Kirov apatite mine, Mt. Kukisvumchorr, and on Mt. Eveslogchorr, Khibiny massif, Kola Peninsula, Russia.

Name: For *lanthanum* dominant over cerium and its relation to *belovite*-(Ce).

Type Material: Mining Institute, St. Petersburg, 3026/24; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, p1523.

References: (1) Pekov, I.V., I.M. Kulikova, Y.K. Kabalov, O.V. Yeletskaia, N.V. Chukanov, Y.P. Men'shikov, and A.P. Khomyakov (1996) Belovite-(La) Sr₃Na(La, Ce)[PO₄]₃(F, OH) – a new rare earth mineral in the apatite group. Zap. Vses. Mineral. Obshch., 125(3), 101–109 (in Russian with English abs.). (2) (1997) Amer. Mineral., 82, 620 (abs. ref. 1).