

Sazhinite-(Ce)**Na₂CeSi₆O₁₄(OH)·nH₂O**

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Crystal Data: Orthorhombic. *Point Group:* *mm*2. Crystals tabular to thick tabular, striated along their length, to 1.5 cm. As irregular grains and dense, fine-grained aggregates.

Physical Properties: *Cleavage:* Perfect on {100}, {010}, {001}. *Hardness* = 2–3
VHN = 153–258 (10–30 g load). *D*(meas.) = 2.61 *D*(calc.) = 2.80

Optical Properties: Transparent to opaque. *Color:* White, gray, cream. *Luster:* Vitreous to pearly.

Optical Class: Biaxial (+). *Orientation:* *X* = *c*; *Y* = *b*; *Z* = *a*. $\alpha = 1.525(2)$ $\beta = 1.528(2)$
 $\gamma = 1.544(2)$ *2V*(meas.) = 47°

Cell Data: *Space Group:* *Pmm*2. *a* = 7.50(3) *b* = 15.62(6) *c* = 7.35(3) *Z* = 2

X-ray Powder Pattern: Lovozero massif, Russia.

3.23 (100), 3.37 (75), 5.23 (55), 7.25 (40), 2.003 (40), 3.30 (35), 2.552 (35)

Chemistry:	(1)	(2)	(1)	(2)
SiO ₂	46.28	52.58	CaO	0.50
TiO ₂	1.06		Na ₂ O	11.20
ThO ₂	1.30		K ₂ O	1.21
Al ₂ O ₃	0.80		H ₂ O ⁺	9.58
Fe ₂ O ₃	0.26		H ₂ O ⁻	4.46
RE ₂ O ₃	21.15	23.93	H ₂ O	14.45
Nb ₂ O ₅	0.65		P ₂ O ₅	1.05
MnO	0.06		Total	99.56
				100.00

(1) Lovozero massif, Russia; RE = La 21.1%–22.2%, Ce 54.0%–56.0%, Pr 5.2%–5.5%, Nd 15.7%–16.8%, Sm 1.1%–1.4%, Eu 0.1%–0.2%, Gd 0.4%. (2) Na₂CeSi₆O₁₄(OH)·5.5H₂O.

Occurrence: As disseminations in natrolite and rims around altered steenstrupine in an alkalic pegmatite in a differentiated alkalic massif (Lovozero massif, Russia); in sodalite xenoliths in an intrusive alkalic gabbro-syenite complex (Mont Saint-Hilaire, Canada).

Association: Natrolite, steenstrupine, neptunite (Lovozero massif, Russia); vuonnemite, sérandite, ussingite, sodalite, eudialyte (Mont Saint-Hilaire, Canada).

Distribution: In the Jubilee pegmatite, on Mt. Karnasurt, Lovozero massif, Kola Peninsula, Russia. At Mont Saint-Hilaire, Quebec, Canada.

Name: For Academician Nikolai Petrovich Sazhin (1898–1969), a founder of the Soviet rare-earth industry, Mendeleev Chemical Technology Institute, Moscow, Russia.

Type Material: Geology Museum, Kola Branch, Academy of Sciences, Apatity, 3386; Mining Institute, St. Petersburg, 1082/1; Institute of Mineralogy and Geochemistry of Rare Elements, Moscow; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 75511, 75838, 76105; The Natural History Museum, London, England, 1994,28.

References: (1) Es'kova, E.M., E.I. Semenov, A.P. Khomyakov, M.E. Kazakova, and N.G. Shumyatskaya (1974) Sazhinite, a new silicate of sodium and rare earths. *Zap. Vses. Mineral. Obshch.*, 103, 338–341 (in Russian). (2) (1975) *Amer. Mineral.*, 60, 162 (abs. ref. 1). (3) Shumyatskaya, N.G., A.A. Voronkov, and Y.A. Pyatenko (1980) Sazhinite, Na₂Ce[Si₆O₁₄(OH)]·nH₂O: a new representative of the dalyite family in crystal chemistry. *Kristallografiya* (Sov. Phys. Crystal.), 25, 728–734 (in Russian). (4) Horváth, L. and R.A. Gault (1990) The mineralogy of Mont Saint-Hilaire, Quebec, Canada. *Mineral. Record*, 21, 283–359, esp 334.

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