

Lemoynite

(Na, K)₂CaZr₂Si₁₀O₂₆•5–6H₂O

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Crystal Data: Monoclinic. *Point Group:* 2/*m*. Crystals bladed prismatic, elongated along [100], to about 0.05 mm. Commonly in subparallel, sheaflike arrangements and in spherules, to about 0.5 cm.

Physical Properties: *Cleavage:* Perfect on {100} and {010}; imperfect or parting on {001}. *Fracture:* Uneven. *Tenacity:* Brittle. *Hardness* = 4 *D*(meas.) = 2.29 *D*(calc.) = 2.38

Optical Properties: Transparent to opaque. *Color:* White to slightly yellowish, colorless. *Luster:* Vitreous.

Optical Class: Biaxial (+). *Orientation:* $Y = b; Z \wedge a = 5^\circ$. $\alpha = 1.540$ $\beta = 1.553$ $\gamma = 1.570$
 $2V(\text{meas.}) = 80^\circ$ $2V(\text{calc.}) = 83^\circ$

Cell Data: *Space Group:* *C*2/*c*. $a = 10.384(3)$ $b = 15.947(7)$ $c = 18.601(6)$
 $\beta = 104.59(3)^\circ$ $Z = 4$

X-ray Powder Pattern: Mont Saint-Hilaire, Canada.

8.01 (100), 3.562 (49), 2.807 (48), 9.0 (37), 3.034 (33), 3.482 (29), 4.39 (27)

Chemistry:	(1)	(2)	(1)	(2)
SiO ₂	47.32	55.40	ZnO	0.19
TiO ₂	0.43	0.49	MgO	0.16
ZrO ₂	23.23	20.30	CaO	5.06
Al ₂ O ₃		0.22	SrO	0.07
RE ₂ O ₃	1.18	< 1.	Na ₂ O	4.75
Fe ₂ O ₃	1.61	0.57	K ₂ O	3.70
Nb ₂ O ₅	2.18	0.87	Rb ₂ O	0.03
MnO	0.10	0.04	H ₂ O	13.33
CuO		0.08	Total	99.19
				99.04

(1) Mont Saint-Hilaire, Canada. (2) Do.; by XRF and AA, corresponding to (Na_{1.05}K_{0.85})_{Σ=1.90} (Ca_{0.85}Fe_{0.08}Mg_{0.04}Zn_{0.02}Cu_{0.01})_{Σ=1.00} (Zr_{1.78}Nb_{0.07}Ti_{0.06})_{Σ=1.91} (Si_{9.95}Al_{0.05})_{Σ=10.00} O₂₆•5.69H₂O.

Occurrence: An uncommon mineral, in pegmatite in an intrusive alkalic gabbro-syenite complex (Mpnt Saint-Hilaire, Canada); in miarolytic cavities in a nepheline syenite sill (near Saint-Amable, Canada).

Association: Sodalite, nepheline, eudialyte, catapleiite, elpidite, zircon, microcline (Mont Saint-Hilaire, Canada); albite, natrolite, zakharovite, aegirine, eudialyte, polythionite (near Saint-Amable, Canada).

Distribution: From Mont Saint-Hilaire and near Saint-Amable, Quebec, Canada.

Name: For Charles Lemoyné (1625–1685), Lord of Longueuil, and his four sons, well-known personalities in French-Canadian history.

Type Material: Royal Ontario Museum, Toronto, Canada, M32124; National School of Mines, Paris, France.

References: (1) Perrault, G., E.I. Semenov, A.V. Bikova, and T.A. Capitonova (1969) La lemoynite, un nouveau silicate hydraté de zirconium et de sodium de St. Hilaire, Québec. *Can. Mineral.*, 9, 585–596 (in French with English abs.). (2) (1972) *Amer. Mineral.*, 57, 1913–1914 (abs. ref. 1). (3) Le Page, Y. and G. Perrault (1976) Structure cristalline de la lemoynite, (Na, K)₂CaZr₂Si₁₀O₂₆•5–6H₂O. *Can. Mineral.*, 14, 132–138 (in French with English abs.). (4) Blinov, V.A., A.A. Voronkov, V.V. Ilyukhin, and N.V. Belov (1974) Crystal structure of lemoynite with a new type of mixed structure. *Doklady Acad. Nauk SSSR*, 217, 326–329 (in Russian). (5) (1974) *Chem. Abs.*, 81, 142505 (abs. ref. 4). (6) Mandarino, J.A. and V. Anderson (1989) *Monteregian Treasures*. Cambridge Univ. Press, 124.

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