

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 ∧ a = 5°. α = 1.540 β = 1.553 γ = 1.570 2V(meas.) = 80° 2V(calc.) = 83°

Cell Data: *Space Group:* C2/*c*. a = 10.384(3) b = 15.947(7) c = 18.601(6) β = 104.59(3)° 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		9.50
			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 Lemoyne (1625–1685), Lord of Longuevil, 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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