

Thornasite**(Na, K)ThSi₁₁(O, F, OH)₂₅·8H₂O**

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Crystal Data: Hexagonal. *Point Group:* 3*m* or 32. As anhedral to parallel prismatic crystals, to 1.5 mm.

Physical Properties: *Fracture:* Subconchoidal to uneven. *Tenacity:* Brittle. Hardness = n.d. D(meas.) = 2.62(2) D(calc.) = 2.627 Pyroelectric; fluoresces bright apple-green or pale bluish under LW and SW UV; radioactive.

Optical Properties: Opaque to transparent. *Color:* Colorless to very pale green, beige. *Streak:* White. *Luster:* Vitreous to waxy or greasy, may be pearly. *Optical Class:* Uniaxial (+). $\omega = 1.510(1)$ $\epsilon = 1.512(1)$

Cell Data: *Space Group:* R3*m* or R32. $a = 29.08(1)$ $c = 17.30(1)$ $Z = 18$

X-ray Powder Pattern: Mont Saint-Hilaire, Canada; slightly metamict. 7.27 (100), 4.17 (70), 8.17 (30), 3.239 (30), 2.890 (25), 14.54 (20), 5.09 (20)

Chemistry:

	(1)
SiO ₂	57.93
ThO ₂	22.45
UO ₂	0.88
Al ₂ O ₃	1.42
CaO	0.17
Na ₂ O	1.55
K ₂ O	1.10
F	0.40
Cl	0.05
H ₂ O ⁺	5.14
H ₂ O ⁻	8.62
-O = (F, Cl) ₂	0.18
Total	99.53

(1) Mont Saint-Hilaire, Canada; by electron microprobe, average of five analyses, H₂O by TGA; corresponds to (Na_{0.56}K_{0.26}Ca_{0.03}) $\Sigma=0.85$ (Th_{0.94}U_{0.04}) $\Sigma=0.98$ (Si_{10.69}Al_{0.31}) $\Sigma=11.00$ O_{24.12}F_{0.23}Cl_{0.02}·8.5H₂O.

Occurrence: In an intrusive alkalic gabbro-syenite complex (Mont Saint-Hilaire, Canada); in a cavity in a nepheline syenite sill (Saint-Amable, Canada).

Association: Brockite, yofortierite, analcime, eudialyte, sérandite, polyolithionite, leifite, natrolite, microcline, albite, mangan-neptunite, steacyite, catapleiite, epididymite, calcite (Mont Saint-Hilaire, Canada); natrolite, nenadkevichite, yofortierite, monazite-(Ce), eudialyte, rhodochrosite (Saint-Amable, Canada).

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

Name: For THORium, sodium or NAtrium, and SILicon in its composition.

Type Material: Royal Ontario Museum, Toronto, M42070; Canadian Museum of Nature, Ottawa, Canada, 50770.

References: (1) Ansell, V.E. and G.Y. Chao (1987) Thornasite, a new hydrous sodium thorium silicate from Mont St-Hilaire, Quebec. *Can. Mineral.*, 25, 181–183. (2) (1988) *Amer. Mineral.*, 73, 931 (abs. ref. 1). (3) Horváth, L., E. Pfenninger-Horváth, R.A. Gault, and P. Tarassoff (1998) Mineralogy of the Saint-Amable Sill, Varennes and Saint-Amable, Québec. *Mineral. Record*, 29, 83–118, esp. 95.

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