

Montroyalite

$\text{Sr}_4\text{Al}_8(\text{CO}_3)_3(\text{OH}, \text{F})_{26} \cdot 10-11\text{H}_2\text{O}$

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Crystal Data: Triclinic (probable). *Point Group:* n.d. As flattened or elongated polycrystalline hemispheres, composed of a waxy interior and radial fibers forming a rough exterior, to 1 mm; as aggregates of hemispheres. *Twining:* Complex, polysynthetic, with multiple crystallites.

Physical Properties: *Fracture:* Uneven to splintery. *Tenacity:* Brittle. Hardness = 3.5 D(meas.) = 2.677(3) D(calc.) = n.d. Fluoresces white under SW and LW UV.

Optical Properties: Translucent. *Color:* White, pale blue or gray from inclusions.

Streak: White. *Luster:* Dull.

Optical Class: Biaxial (-). *Orientation:* $Y \simeq$ elongation; X and Z at about 45° to plane of flattening of laths. $\alpha = 1.515(5)$ $\beta = 1.530(5)$ $\gamma = 1.545(5)$ $2V(\text{meas.}) = 80(10)^\circ$ $2V(\text{calc.}) = 89^\circ$

Cell Data: *Space Group:* n.d. $a = 7.14$ $b = 6.55$ $c = \text{n.d.}$ $\alpha = \sim 77.5^\circ$ $\beta = \text{n.d.}$ $\gamma = \text{n.d.}$ $Z = \text{n.d.}$

X-ray Powder Pattern: n.d.

6.57 (100), 3.283 (55), 4.00 (50), 3.190 (50), 2.365 (45b), 2.862 (40), 2.551 (40b)

Chemistry:

	(1)
CO ₂	9.2
Al ₂ O ₃	28.8
CaO	1.1
SrO	27.7
F	11.5
H ₂ O	24.6
-O = F ₂	4.8
Total	98.1

(1) Francon quarry, Canada; by electron microprobe, CO₂ and H₂O by TGA-EGA, (CO₃)²⁻, (OH)¹⁻, and H₂O confirmed by IR; corresponds to (Sr_{3.78}Ca_{0.28})_{Σ=4.06}Al₈(CO₃)_{2.96} [(OH)_{17.63}F_{8.57}]_{Σ=26.20} • 10.52H₂O.

Occurrence: In cavities in a silicocarbonate sill.

Association: Albite, strontiodresserite, calcite, quartz, dawsonite, ankerite, fluorite, barite, strontianite, smythite, marcasite, pyrite, halloysite, doyleite.

Distribution: From the Francon quarry, Montreal Island, Montreal, Quebec, Canada.

Name: For the Monteregian Hill, Mont Royal, prominent landmark in Montreal, Canada, from which the city's name was derived.

Type Material: Canadian Geological Survey, Ottawa, Canada, 64261-64265.

References: (1) Roberts, A.C., A.P. Sabina, M. Bonardi, J.L. Jambor, R.A. Ramik, B.D. Sturman, and M.J. Carr (1986) Montroyalite, a new hydrated Sr-Al hydroxylcarbonate from the Francon quarry, Montreal, Quebec. *Can. Mineral.*, 24, 455-459. (2) (1987) *Amer. Mineral.*, 72, 1025 (abs. ref. 1).