

Adamsite-(Y)**NaY(CO₃)₂•6H₂O**

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Crystal Data: Triclinic, pseudo-orthorhombic if twinned. *Point Group:* $\bar{1}$. Crystals are acicular to fibrous, to 2.5 cm, elongated along [001], flattened on {001}, showing {010} and {001}; in spherical radiating groups, which rarely are reticulated. *Twining:* By reflection on {001}, common.

Physical Properties: *Cleavage:* Perfect on {001}; good on {100}, {010}. *Tenacity:* Brittle. Hardness = 3 D(meas.) = 2.27(2) D(calc.) = 2.27

Optical Properties: Transparent to translucent. *Color:* Colorless, white, may be pale pink or pale purple. *Streak:* White. *Luster:* Vitreous to pearly.

Optical Class: Biaxial (+). *Orientation:* $Y = b$; $Z \wedge a = 14^\circ$. $\alpha = 1.480(4)$ $\beta = 1.498(2)$ $\gamma = 1.571(4)$ $2V(\text{meas.}) = 53(3)^\circ$ $2V(\text{calc.}) = 55^\circ$

Cell Data: *Space Group:* $P\bar{1}$. $a = 6.2592(4)$ $b = 13.0838(7)$ $c = 13.2271(5)$
 $\alpha = 91.130(1)^\circ$ $\beta = 103.554(1)^\circ$ $\gamma = 90.188(1)^\circ$ $Z = 4$

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

12.81 (100), 6.45 (70), 4.456 (60), 4.291 (60), 2.571 (60), 2.050 (50), 2.869 (30)

Chemistry:	(1)	(2)		(1)	(2)
CO ₂	25.10	25.89	Ho ₂ O ₃	0.90	
Y ₂ O ₃	22.88	33.21	Er ₂ O ₃	2.83	
Ce ₂ O ₃	0.37		Tm ₂ O ₃	0.27	
Nd ₂ O ₃	1.41		Yb ₂ O ₃	1.04	
Sm ₂ O ₃	1.02		CaO	0.05	
Gd ₂ O ₃	1.92		Na ₂ O	8.64	9.11
Tb ₂ O ₃	0.56		H ₂ O	29.90	31.79
Dy ₂ O ₃	3.28				
			Total	100.17	100.00

(1) Mont Saint-Hilaire, Canada; by electron microprobe, seven analyses on three crystals, CO₂ and H₂O by TGA, confirmed by IR and crystal-structure analysis; corresponds to Na_{1.00}(Y_{0.72}Dy_{0.06}Er_{0.05}Gd_{0.04}Nd_{0.03}Yb_{0.02}Sm_{0.02}Ho_{0.02}Ce_{0.01}Tb_{0.01}Tm_{0.01})_{Σ=0.99}(CO₃)_{2.04}•5.94H₂O.

(2) NaY(CO₃)₂•6H₂O.

Occurrence: A rare late-stage, low-temperature hydrothermal mineral in an alkalic pegmatite dike associated with an intrusive alkalic gabbro-syenite complex.

Association: Thomasclarkite-(Y), horváthite-(Y), donnayite-(Y), petersenite-(Ce), rhodochrosite.

Distribution: From Mont Saint-Hilaire, Quebec, Canada.

Name: To honor Professor Frank Dawson Adams (1859–1942), McGill University, Montreal, Canada, geologist and petrologist, who studied the Monteregian Hills, of which Mont Saint-Hilaire is one.

Type Material: Canadian Museum of Nature, Ottawa, Canada, 82939, 82940.

References: (1) Grice, J.D., R.A. Gault, A.C. Roberts, and M.A. Cooper (2000) Adamsite-(Y), a new sodium-yttrium carbonate mineral species from Mont Saint-Hilaire, Quebec. *Can. Mineral.*, 38, 1457–1466. (2) (2001) *Amer. Mineral.*, 86, 1112 (abs. ref. 1).