

**Adamsite-(Y)****NaY(CO<sub>3</sub>)<sub>2</sub>·6H<sub>2</sub>O**

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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)

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

(1) Mont Saint-Hilaire, Canada; by electron microprobe, seven analyses on three crystals, CO<sub>2</sub> and H<sub>2</sub>O by TGA, confirmed by IR and crystal-structure analysis; corresponds to Na<sub>1.00</sub>(Y<sub>0.72</sub>Dy<sub>0.06</sub>Er<sub>0.05</sub>Gd<sub>0.04</sub>Nd<sub>0.03</sub>Yb<sub>0.02</sub>Sm<sub>0.02</sub>Ho<sub>0.02</sub>Ce<sub>0.01</sub>Tb<sub>0.01</sub>Tm<sub>0.01</sub>)<sub>Σ=0.99</sub>(CO<sub>3</sub>)<sub>2.04</sub>·5.94H<sub>2</sub>O.

(2) NaY(CO<sub>3</sub>)<sub>2</sub>·6H<sub>2</sub>O.

**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).