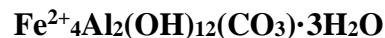


# Caresite



**Crystal Data:** Hexagonal. *Point Group:* 32. As tabular crystals to 0.5 mm in irregular aggregates.

**Physical Properties:** *Cleavage:* Perfect on {0001}. *Tenacity:* Brittle. *Fracture:* Uneven.  
Hardness = ~2 D(meas.) = 2.59(1) D(calc.) = 2.59 Nonfluorescent.

**Optical Properties:** Transparent. *Color:* Green-black. *Streak:* White. *Luster:* Vitreous.  
*Optical Class:* Uniaxial (-).  $\omega = 1.599(1)$   $\epsilon = 1.570(1)$

**Cell Data:** *Space Group:*  $P3_112$  or  $P3_212$  (3T).  $a = 10.805(3)$   $c = 22.48(3)$   $Z = 6$

**X-Ray Diffraction Pattern:** Monteregian Hills, Quebec, Canada.  
7.49 (100), 3.746 (50), 2.314 (50), 2.625 (40), 1.948 (40), 1.526 (20), 1.558 (15)

Chemistry:	(1)	(2)
MgO	0.85	1.42
FeO	44.92	43.13
MnO	1.00	1.71
Al <sub>2</sub> O <sub>3</sub>	17.05	17.68
CO <sub>2</sub>	[7.31]	[7.42]
H <sub>2</sub> O	[26.84]	[28.33]
F	0.17	
-O=F	0.07	
Total	98.07	98.69

(1) Mont Saint-Hilaire, Quebec, Canada; average electron microprobe analysis supplemented by IR spectroscopy, calculated stoichiometric CO<sub>2</sub>, H<sub>2</sub>O and OH; corresponds to  $\text{Fe}^{2+}_{3.78}\text{Mg}_{0.13}\text{Mn}_{0.09}\text{Al}_{2.02}(\text{OH})_{12}(\text{CO}_3) \cdot 3\text{H}_2\text{O}$ . (2) Mont Royal, Montreal, Canada; average electron microprobe analysis supplemented by IR spectroscopy, stoichiometric CO<sub>2</sub>, H<sub>2</sub>O and OH; corresponds to  $\text{Fe}^{2+}_{3.56}\text{Mg}_{0.21}\text{Mn}_{0.14}\text{Al}_{2.06}(\text{OH})_{11.95}(\text{CO}_3) \cdot 3\text{H}_2\text{O}$ .

**Polymorphism & Series:** 2H and 3T polytypes.

**Mineral Group:** Hydrotalcite supergroup, quintinite group.

**Occurrence:** A late-stage hydrothermal mineral in an alkaline complex.

**Association:** Microcline, analcime, natrolite, calcite, a vermiculite- or smectite-group mineral, chamosite, aegirine (Poudrette quarry); analcime, microcline, natrolite, tetanatrolite, aegirine, siderite, biotite, anatase, hematite, nordstrandite, dawsonite, berthierine, lovozerite, zircon, fluorite, pyrite (Mont Royal).

**Distribution:** From Poudrette quarry, Mont Saint-Hilaire, and the old Corporation quarry, Mont Royal, Montreal, Monteregian Hills, Quebec, Canada.

**Name:** Honors Stephen (b. 1909) and Janet (b. 1921) *Cares*, amateur mineralogists from Sudbury, Massachusetts, USA, co-finders of the mineral, who have contributed significantly to the mineralogy of Mont Saint-Hilaire. Suffixes 2H and 3T denote the hexagonal and trigonal forms, respectively.

**Type Material:** Canadian Museum of Nature, Ottawa, Ontario (CMNMI 81550, CMNM 81551, and CMNI 81552 caresite-3T) and the Royal Ontario Museum, Toronto, Canada (M46772, M46773 and M46774 caresite-3T).

**References:** (1) Chao, G.Y. and R.A. Gault (1997) Quintinite-2H, quintinite-3T, charmarite-2H, charmarite-3T and caresite-3T, a new group of carbonate minerals related to the hydrotalcite - manasseite group. *Can. Mineral.*, 35, 1541-1549. (2) Mills, S.J., A.G. Christy, J.-M.R. Génin, T. Kameda, and F. Colombo (2012) Nomenclature of the hydrotalcite supergroup: natural layered double hydroxides. *Mineral. Mag.*, 76, 1289-1336.