Caresite

\[
\text{Fe}^{2+}\text{Al}_2(\text{OH})_2(\text{CO}_3)_3\cdot 3\text{H}_2\text{O}
\]

Crystal Data: Hexagonal. \textit{Point Group}: 32. As tabular crystals to 0.5 mm in irregular aggregates.


Cell Data: \textit{Space Group}: \(P\overline{3}12\) or \(P3_2\overline{1}2\) (3T). \(a = 10.805(3)\) \(c = 22.48(3)\) \(Z = 6\)

X-Ray Diffraction Pattern: Montegue 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:

\begin{align*}
\text{MgO} & 0.85 & 1.42 \\
\text{FeO} & 44.92 & 43.13 \\
\text{MnO} & 1.00 & 1.71 \\
\text{Al}_2\text{O}_3 & 17.05 & 17.68 \\
\text{CO}_2 & [7.31] & [7.42] \\
\text{H}_2\text{O} & [26.84] & [28.33] \\
\text{F} & 0.17 & \text{Total} = 98.07 & 98.69
\end{align*}

(1) Mont Saint-Hilaire, Quebec, Canada; average electron microprobe analysis supplemented by IR spectroscopy, calculated stoichiometric \(\text{CO}_2\), \(\text{H}_2\text{O}\) and \(\text{OH}\); corresponds to \(\text{Fe}^{2+}_{3.36}\text{Mg}_{0.13}\text{Mn}_{0.06}\text{Al}_{2.02}(\text{OH})_{12}(\text{CO}_3)_3\cdot 3\text{H}_2\text{O}\). (2) Mont Royal, Montreal, Canada; average electron microprobe analysis supplemented by IR spectroscopy, stoichiometric \(\text{CO}_2\), \(\text{H}_2\text{O}\) and \(\text{OH}\); corresponds to \(\text{Fe}^{2+}_{3.50}\text{Mg}_{0.22}\text{Mn}_{0.14}\text{Al}_{2.06}(\text{OH})_{11.95}(\text{CO}_3)_3\cdot 3\text{H}_2\text{O}\).

Polymorphism & Series: 2\(H\) and 3\(T\) 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, Montegue Hills, Quebec, Canada.

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

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