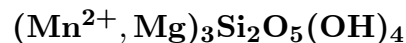


# Caryopilite



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**Crystal Data:** Monoclinic (?). *Point Group:* n.d. As tabular pseudo-hexagonal crystals, commonly in rosettes, to 4 mm. Stalactitic, reniform with concentrically radiating fibrous internal structure, or massive.

**Physical Properties:** *Cleavage:* Perfect on {001}. *Hardness* = 3–3.5 *D*(meas.) = 2.83–2.94 *D*(calc.) = 2.788

**Optical Properties:** Semitransparent. *Color:* Reddish brown, tan; light brown to yellow in thin section.

*Optical Class:* Biaxial (-). *Orientation:*  $X = c$ .  $\alpha = 1.602\text{--}1.624$   $\beta = 1.632\text{--}1.650$   
 $\gamma = 1.632\text{--}1.650$   $2V(\text{meas.}) = \sim 0^\circ$

**Cell Data:** *Space Group:* n.d.  $a = 5.668$   $b = 9.811$   $c = 7.527$   $\beta = 104.52^\circ$   $Z = 2$

**X-ray Powder Pattern:** Långban, Sweden.

2.49 (100), 7.24 (90), 3.64 (80), 2.78 (70), 2.08 (50), 1.954 (30), 1.617 (20)

<b>Chemistry:</b>	(1)	(2)		(1)	(2)
SiO <sub>2</sub>	32.1	36.35	MgO	1.9	8.01
Al <sub>2</sub> O <sub>3</sub>		0.21	CaO		0.03
As <sub>2</sub> O <sub>3</sub>	6.5		F		< 0.05
FeO	1.7	1.09	Cl		0.14
MnO	48.8	42.39	H <sub>2</sub> O	[8.1]	[9.22]
ZnO	0.9	< 0.03	-O = (F, Cl) <sub>2</sub>		[0.08]
			<hr/> Total	[100.0]	[97.44]

(1) Sterling Hill, New Jersey, USA; by electron microprobe, H<sub>2</sub>O by difference. (2) Bald Knob, North Carolina, USA; by electron microprobe, H<sub>2</sub>O calculated from stoichiometry.

**Occurrence:** A product of the metamorphism of manganese-bearing minerals.

**Association:** Gonyerite (Långban, Sweden); calcite, rhodonite, lead, sarkinite, brandtite (Pajsberg, Sweden); manganoan calcite, tirodite, rhodonite, jacobsite (Bald Knob, North Carolina, USA).

**Distribution:** From the Harstigen mine, near Persberg, and at Långban, Värmland, Sweden. In the Molinello and Gambatesa manganese mines, near Chiavari, Val Graveglia, Liguria, Italy. At the Falotta mine, Oberhalbstein, Graubünden, Switzerland. In the Ködnitz Valley, Tirol, Austria. In the USA, at Franklin and Sterling Hill, Ogdensburg, Sussex Co., New Jersey; at Bald Knob, near Sparta, Alleghany Co., North Carolina; in the Hurricane mine, on the Olympic Peninsula, Washington. From the Ichinomata mine, Kumamoto Prefecture, Japan. At Watson's Beach, southeastern Otago, New Zealand. In the N'Chwaning and Wessels mines, near Kuruman, Cape Province, South Africa.

**Name:** From the Greek for *walnut* and *felt*, in allusion to its color and habit.

**References:** (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 704. (2) Kato, T. (1963) New data on the so-called bementite. J. Japan. Assoc. Mineral. Petrol. Econ. Geol., 49, 93–103 (in Japanese). (3) (1964) Amer. Mineral., 49, 446–447 (abs. ref. 2). (4) Peacor, D.R. and E.J. Essene (1980) Caryopilite—a member of the friederite rather than the serpentine group. Amer. Mineral., 65, 335–339. (5) Dunn, P.J., D.R. Peacor, J.A. Nelen, and J.A. Norberg (1981) Crystal-chemical data for schallerite, caryopilite and friederite from Franklin and Sterling Hill, New Jersey. Amer. Mineral., 66, 1054–1062. (6) Bayliss, P. (1981) Unit cell data of serpentine group minerals. Mineral. Mag., 44, 153–156. (7) Phillips, W.R. and D.T. Griffen (1981) Optical mineralogy, 602–603. (8) Guggenheim, S., S.W. Bailey, R.A. Eggleton, and P. Wilkes (1982) Structural aspects of greenalite and related minerals. Can. Mineral., 20, 1–18.

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