

**Jahnsite-(CaMnFe)****CaMn<sup>2+</sup>Fe<sub>2</sub><sup>2+</sup>Fe<sub>2</sub><sup>3+</sup>(PO<sub>4</sub>)<sub>4</sub>(OH)<sub>2</sub>·8H<sub>2</sub>O**

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**Crystal Data:** Monoclinic. *Point Group:* 2/m. As bladed crystals and warty crystal aggregates, to 3 mm; in “splinters” intergrown with rockbridgeite.

**Physical Properties:** *Cleavage:* [Good on {001}] [by analogy to jahnsite-(CaMnMg)].  
*Fracture:* Splintery. *Tenacity:* [Brittle.] *Hardness* = [4] *D(meas.)* = 2.86 *D(calc.)* = [2.88]

**Optical Properties:** Translucent. *Color:* Yellow-brown. *Luster:* [Vitreous to subadamantine.]

*Optical Class:* Biaxial (-). *Pleochroism:* X = pale yellow-brown; Y = yellow-brown; Z = dark yellow-brown. *Dispersion:* r > v, strong. α = 1.682 β = 1.695 γ = 1.707  
2V(meas.) = Large.

**Cell Data:** *Space Group:* P2/a. a = 15.01(3) b = 7.15(2) c = 9.87(2) β = 111°14(10)  
Z = 2

**X-ray Powder Pattern:** Fletcher mine, New Hampshire, USA.  
9.150 (100), 2.808 (55), 4.602 (40), 3.483 (30), 3.451 (30), 4.961 (25), 1.874 (20)

<b>Chemistry:</b>	(1)
	P <sub>2</sub> O <sub>5</sub> 29.6
	Fe <sub>2</sub> O <sub>3</sub> 22.8
	MnO 10.2
	MgO 2.7
	CaO 2.6
	Na <sub>2</sub> O 0.4
	<hr/> Total

(1) Fletcher mine, New Hampshire, USA; partial electron microprobe analysis, total Fe as Fe<sub>2</sub>O<sub>3</sub>, total Mn as MnO; which approximates (Ca<sub>0.50</sub>Mn<sub>0.36</sub>Na<sub>0.14</sub>)<sub>Σ=1.00</sub>Mn<sub>1.00</sub><sup>2+</sup>(Fe<sub>0.96</sub>Mg<sub>0.72</sub>Mn<sub>0.20</sub><sup>2+</sup>Fe<sub>0.12</sub><sup>3+</sup>)<sub>Σ=2.00</sub>Fe<sub>2.00</sub><sup>3+</sup>(PO<sub>4</sub>)<sub>4</sub>(OH)<sub>2</sub>·8H<sub>2</sub>O.

**Mineral Group:** Whiteite group; Fe<sup>3+</sup> > Al in the M(3) structural site.

**Occurrence:** A late-stage hydrothermal decomposition product of primary phosphate minerals in complex granite pegmatites.

**Association:** Rockbridgeite (Fletcher mine, New Hampshire, USA); frondelite, bermanite, huréaulite, strunzite, johnsomervilleite (Sapucaia mine, Brazil).

**Distribution:** In the USA, from the Fletcher and Palermo # 1 mines, near North Groton, Grafton Co., New Hampshire; in the Dunton quarry and the Bell pit, Newry, Oxford Co., Maine. At Hagendorf, Bavaria, Germany. From the Sapucaia pegmatite mine, about 50 km east-southeast of Governador Valadares, Minas Gerais, Brazil.

**Name:** By analogy to jahnsite-(CaMnMg); the suffix indicates sequentially the dominant atom in the X, M(1), and M(2) structural positions.

**Type Material:** National Museum of Natural History, Washington, D.C., USA, 127153.

**References:** (1) Moore, P.B. and J. Ito (1978) I. Whiteite, a new species, and a proposed nomenclature for the jahnsite-whiteite complex series. *Mineral. Mag.*, 42, 309–316.  
(2) Moore, P.B. (1974) I. Jahnsite, segelerite, and robertsite, three new transition metal phosphate species. *Amer. Mineral.*, 59, 48–53. (3) Moore, P.B. and T. Araki (1974) Jahnsite, CaMn<sup>2+</sup>Mg<sub>2</sub>(H<sub>2</sub>O)<sub>8</sub>Fe<sub>2</sub><sup>3+</sup>(OH)<sub>2</sub>[PO<sub>4</sub>]<sub>4</sub>; a novel stereoisomerism of ligands about octahedral corner-chains. *Amer. Mineral.*, 59, 964–973.

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