

Jahnsite-(CaMnFe)**CaMn²⁺Fe₂²⁺Fe₂³⁺(PO₄)₄(OH)₂·8H₂O**

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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)

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

(1) Fletcher mine, New Hampshire, USA; partial electron microprobe analysis, total Fe as Fe₂O₃, total Mn as MnO; which approximates (Ca_{0.50}Mn_{0.36}Na_{0.14})_{Σ=1.00}Mn_{1.00}²⁺(Fe_{0.96}Mg_{0.72}Mn_{0.20}²⁺Fe_{0.12}³⁺)_{Σ=2.00}Fe_{2.00}³⁺(PO₄)₄(OH)₂·8H₂O.

Mineral Group: Whiteite group; Fe³⁺ > 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, CaMn²⁺Mg₂(H₂O)₈Fe₂³⁺(OH)₂[PO₄]₄; a novel stereoisomerism of ligands about octahedral corner-chains. *Amer. Mineral.*, 59, 964–973.

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