

Jahnsite-(CaMnMn)**CaMn²⁺Mn²⁺Fe³⁺(PO₄)₄(OH)₂·8H₂O**

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Crystal Data: Monoclinic. *Point Group:* 2/m or m. As equant crystals flattened on {001}, to 0.5 mm. *Twinning:* Common on {001}.

Physical Properties: *Cleavage:* Poor on {001}, a parting. *Fracture:* Splintery. *Tenacity:* Brittle. Hardness = ~4 D(meas.) = 2.78(8) D(calc.) = 2.798

Optical Properties: Transparent. *Color:* Brownish yellow. *Luster:* Vitreous. *Optical Class:* Biaxial (-). *Pleochroism:* Slight; X = pale yellow-green; Y = brown-green; Z = yellow-green. *Orientation:* Z = b; X ∧ c = 20°. *Absorption:* Y > Z > X. α = 1.643(1) β = 1.659(1) γ = 1.671(1) 2V(meas.) = 80(2)° 2V(calc.) = 81°

Cell Data: *Space Group:* P2/a or Pa. a = 14.877(8) b = 7.152(7) c = 9.966(6) β = 109.77(5)° Z = 2

X-ray Powder Pattern: Mangualde pegmatite, Portugal. 9.40 (10), 2.870 (8), 4.704 (3), 5.74 (2), 5.02 (2), 4.971 (2), 3.532 (2)

Chemistry:	(1)
P ₂ O ₅	34.3
Al ₂ O ₃	0.7
Fe ₂ O ₃	21.5
MnO	20.2
MgO	0.5
CaO	5.8
H ₂ O	18.5
Total	101.5

(1) Mangualde pegmatite, Portugal; by electron microprobe, total Fe as Fe₂O₃, total Mn as MnO, H₂O by TGA-EGA; corresponding to Ca_{0.86}Mn_{0.80}(Mn_{1.56}²⁺Fe_{0.34}²⁺Mg_{0.10})_{Σ=2.00}(Fe_{1.89}³⁺Al_{0.11})_{Σ=2.00}(PO₄)₄(OH)_{1.66}•7.67H₂O.

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: Phosphosiderite, zodacite, varulite, microcline (Mangualde pegmatite, Portugal).

Distribution: From the Mangualde pegmatite, near Mesquitela, Portugal. In the Bell pit, Newry, and on Mt. Mica, near Paris, Oxford Co., Maine, USA.

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: Canadian Museum of Nature, Ottawa, Canada, 53784; National Museum of Natural History, Washington, D.C., USA, 149953.

References: (1) Grice, J.D., P.J. Dunn, and R.A. Ramik (1990) *Jahnsite*-(CaMnMn), a new member of the whiteite group from Mangualde, Beira, Portugal. *Amer. Mineral.*, 75, 401–404.