

Crystal Data: Monoclinic. *Point Group:* 2/m. Prismatic crystals to 0.2 mm are elongated along [100], slightly flattened on (010). *Twinning:* By reflection on (001).

Physical Properties: *Cleavage:* Perfect on {001}. *Tenacity:* Brittle. *Fracture:* Irregular. Hardness = ~4 D(calc.) = 2.654

Optical Properties: Translucent. *Color:* Dark orange-brown. *Streak:* Pale greenish brown. *Luster:* Vitreous.

Optical Class: Biaxial (-). $\alpha = 1.673(3)$ $\beta = 1.685$ $\gamma = 1.689$ $2V(\text{calc.}) = 60^\circ$ *Orientation:* $X = b$, $Y \sim c$, $Z = a$. *Dispersion:* Moderate, $r < v$. *Pleochroism:* $X = \text{dark brown}$, $Y = \text{brownish orange}$, $Z = \text{yellow}$.

Cell Data: *Space Group:* P2/a. $a = 15.1559(6)$ $b = 7.1478(2)$ $c = 10.0209(4)$ $\beta = 112.059(4)^\circ$ $Z = 2$

X-ray Powder Pattern: Malpensata pegmatite mine, near Olgiasca, Lecco province, Italy. 2.590 (100), 9.221 (89), 2.840 (82), 4.932 (78), 4.651 (78), 3.971 (71), 3.504 (64)

Chemistry:	(1)	(2)
Na ₂ O	0.17	
CaO	1.69	
MgO	0.68	
MnO	15.40	15.92
ZnO	0.33	
Fe ₂ O ₃	[18.88]	17.92
FeO	[11.88]	16.12
Al ₂ O ₃	0.04	
P ₂ O ₅	33.68	31.85
H ₂ O	[18.54]	18.19
Total	101.30	100.00

(1) Malpensata pegmatite mine, near Olgiasca, Lecco province, Italy; average electron microprobe analysis, H₂O by stoichiometry and charge balance, total iron apportioned from structure analysis; corresponds to (Mn_{0.40}Ca_{0.25}Na_{0.05}) $\Sigma=0.70$ Mn(Fe²⁺_{1.39}Mn_{0.43}Mg_{0.14}Zn_{0.03}) $\Sigma=2.00$ (Fe³⁺_{1.99}Al_{0.01}) $\Sigma=2.00$ (PO₄)₄(OH)_{1.35}·8H₂O. (2) Mn²⁺Mn²⁺Fe²⁺Fe³⁺₂(PO₄)₄(OH)₂·8H₂O.

Mineral Group: Jahnsite group, jahnsite subgroup; Fe³⁺ > Al in the M(3) structural site.

Occurrence: A low temperature, secondary mineral formed by alteration of primary phosphates in zoned granitic pegmatite.

Association: Rockbridgeite, mitridatite.

Distribution: In the dumps of the Malpensata pegmatite mine, near Olgiasca, Colico municipality, Lecco province, Italy.

Name: Root name, *Jahnsite*, indicates a member of the group with M(3) = Fe³⁺; the suffix indicates sequentially the dominant atom in the X, M(1), and M(2) structural positions.

Type Material: Mineralogical Collection, Laboratory of Mineralogy, University of Liège, Belgium (21168).

References: (1) Vignola, P., F. Hatert, N. Rotiroti, F. Nestola, A. Risplendente, and F. Vanini (2019) Jahnsite-(MnMnFe), Mn²⁺Mn²⁺Fe²⁺Fe³⁺₂(PO₄)₄(OH)₂·8H₂O, a new phosphate mineral from the Malpensata Pegmatite, Olgiasca, Colico Municipality, Lecco Province, Italy. *Can. Mineral.*, 57(2), 225-233. (2) (2021) *Amer. Mineral.*, 106, 1363 (abs. ref. 1).