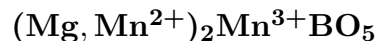


Orthopinakiolite



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Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. As acicular crystals.

Physical Properties: Hardness = 6 D(meas.) = 3.935–4.03 D(calc.) = 4.06

Optical Properties: Opaque. *Color:* Black. *Luster:* Metallic.
Optical Class: Biaxial. $\alpha = \text{n.d.}$ $\beta = \text{n.d.}$ $\gamma = \text{n.d.}$ $2V(\text{meas.}) = \text{n.d.}$
 R_1 – R_2 : n.d.

Cell Data: *Space Group:* $Pn\bar{m}$. $a = 18.357(4)$ $b = 12.591(2)$ $c = 6.068(1)$ $Z = 16$

X-ray Powder Pattern: Långban, Sweden.
2.59 (10), 5.17 (9), 2.52 (9), 2.03 (9), 2.20 (8), 1.523 (8), 3.01 (7)

Chemistry:	(1)
SiO ₂	0.78
B ₂ O ₃	13.92
Fe ₂ O ₃	10.52
Mn ₂ O ₃	34.04
MnO	16.36
PbO	1.22
MgO	22.36
CaO	1.35
Total	100.55

(1) Långban, Sweden. (2) Do.; by electron microprobe, Mg 16.7%, Fe 5.8%, Mn 34.4%, stated to correspond to $(\text{Mg}_{1.42}\text{Mn}_{0.43}^{2+})_{\Sigma=1.85}\text{Mn}_{0.88}^{3+}\text{Fe}_{0.22}^{3+}\text{BO}_5$.

Occurrence: A very rare species formed in veinlets in granular dolomite in a metamorphosed Fe–Mn orebody.

Association: Hausmannite, manganophyllite, dolomite, calcite.

Distribution: From Långban, Värmland, Sweden.

Name: As an ORTHOrhombic mineral related to *pinakiolite*.

Type Material: Swedish Museum of Natural History, Stockholm, Sweden, 420106.

References: (1) Randmets, R. (1960) Orthopinakiolite, a new modification of $\text{Mg}_3\text{Mn}^{2+}\text{Mn}_2^{3+}\text{B}_2\text{O}_{10}$ from Långban, Sweden. *Arkiv Mineral. Geol.*, 2(42), 551–555. (2) (1961) *Amer. Mineral.*, 46, 768 (abs. ref. 1). (3) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 324–325 [pinakiolite]. (3) Takéuchi, Y., N. Haga, T. Kato, and Y. Miura (1978) Orthopinakiolite, $\text{Me}_{2.95}\text{O}_2[\text{BO}_3]$: its crystal structure and relation to pinakiolite, $\text{Me}_{2.90}\text{O}_2[\text{BO}_3]$. *Can. Mineral.*, 16, 475–485.