

# Sanmartinite

# (Zn, Fe<sup>2+</sup>)WO<sub>4</sub>

©2001-2005 Mineral Data Publishing, version 1

**Crystal Data:** Monoclinic. *Point Group:* 2/*m*. Rare as crystals, to 60 μm, tabular on {001}, with {001}, {010}, {110}, {112}, {102}; typically in reticulated aggregates and fine-grained massive.

**Physical Properties:** *Cleavage:* On {010}, perfect. Hardness = n.d. D(meas.) = 6.70 D(calc.) = 7.87 (synthetic ZnWO<sub>4</sub>).

**Optical Properties:** Translucent. *Color:* Reddish brown, with dark red internal reflections, dark brown to brownish black if massive. *Luster:* Resinous.

*Optical Class:* Biaxial. α = n.d. β = n.d. γ = n.d. 2V(meas.) = n.d.

**Cell Data:** *Space Group:* P2<sub>1</sub>/c. a = 4.702 b = 5.726 c = 4.948 β = 90°28' Z = 2

**X-ray Powder Pattern:** Synthetic ZnWO<sub>4</sub>.

2.931 (100), 2.908 (90), 3.73 (40), 4.69 (35), 3.62 (35), 2.472 (35), 2.464 (35)

## Chemistry:

	(1)	(2)	(3)
WO <sub>3</sub>	72.62	73.41	74.02
FeO	7.24	4.67	
MnO	1.73	0.22	
ZnO	18.18	23.00	25.98
CaO	1.48		
insol.	0.24		
Total	[101.49]	101.30	100.00

(1) Los Cerrillos, Argentina; original total given as 101.25%; corresponds to (Zn<sub>0.68</sub>Fe<sub>0.31</sub>Ca<sub>0.08</sub>Mn<sub>0.07</sub>)<sub>Σ=1.14</sub>(W<sub>0.95</sub>O<sub>4</sub>). (2) Do.; by electron microprobe, total Fe as FeO, total Mn as MnO; corresponds to (Zn<sub>0.81</sub>Fe<sub>0.18</sub>)<sub>Σ=0.99</sub>WO<sub>4</sub>. (3) ZnWO<sub>4</sub>.

**Occurrence:** A rare alteration product of scheelite in a quartz vein between granite and granite pegmatite intruding Precambrian crystalline schists.

**Association:** Willemite, scheelite, tourmaline, quartz.

**Distribution:** From Los Cerrillos, seven km southwest of San Martín, San Luis Province, Argentina.

**Name:** For its occurrence near San Martín, Argentina.

**Type Material:** The Natural History Museum, London, England, 1978,353; Academy of Natural Sciences, Philadelphia, 25575; Harvard University, Cambridge, Massachusetts, 134566; National Museum of Natural History, Washington, D.C., USA, 105681, 137479.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 1072–1073. (2) Dunn, P.J. (1978) Sanmartinite: new data. Mineral. Mag., 42, 281. (3) Redfern, S.A.T., A.M.T. Bell, C.M.B. Henderson, and P.F. Schofield (1995) Rietveld study of the structural phase transition in the sanmartinite (ZnWO<sub>4</sub>)–cuproscheelite (CuWO<sub>4</sub>) solid solution. Eur. J. Mineral., 7, 1019–1028. (4) (1963) NBS Mono. 25, 2, 40.