

Titanowodginite

Mn²⁺TiTa₂O₈

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Crystal Data: Monoclinic. *Point Group:* 2/m. Diamond-shaped crystals, dipyrnidal {111}, with {101}, {100}, as euhedral individuals, to 1 cm, and in aggregates.

Twinning: Penetration twins, on {001} and {100} as composition planes, typical.

Physical Properties: *Fracture:* Irregular. *Tenacity:* Brittle. Hardness = 5.5
D(meas.) = 6.86(3) D(calc.) = 6.89

Optical Properties: Transparent to translucent. *Color:* Dark brown to black. *Streak:* Dark brown. *Luster:* Vitreous.

Optical Class: Biaxial (+). $n = > 2.0$ 2V(meas.) = n.d.

Cell Data: *Space Group:* C2/c. $a = 9.466(1)$ $b = 11.431(1)$ $c = 5.126(1)$ $\beta = 90.31(2)^\circ$
Z = 4

X-ray Powder Pattern: Tanco pegmatite, Canada.

2.976 (100), 2.966 (95), 3.644 (46), 2.495 (36), 1.715 (23), 1.455 (18), 1.767 (17)

Chemistry:	(1)	(2)	(3)
Nb ₂ O ₅	11.1	11.1	
Ta ₂ O ₅	59.9	60.3	74.55
TiO ₂	9.2	8.0	13.48
SnO ₂	7.4	8.3	
Fe ₂ O ₃	0.1	0.5	
FeO	3.1	2.5	
MnO	9.0	9.6	11.97
Total	[99.8]	100.3	100.00

(1) Tanco pegmatite, Canada; by electron microprobe, core of a grain; original total given as 99.7%. (2) Do.; rim of a grain, Fe²⁺:Fe³⁺ calculated from stoichiometry. The average of (1) and (2) corresponds to (Mn_{0.76}Fe_{0.22}²⁺)_{Σ=0.98}(Ti_{0.62}Sn_{0.30}Ta_{0.06}Fe_{0.02}³⁺)_{Σ=1.00}(Ta_{1.52}Nb_{0.48})_{Σ=2.00}O₈.

(3) Mn²⁺TiTa₂O₈.

Mineral Group: Wodginite group: Li_A ≤ 0.5; Fe_A²⁺ ≤ 0.5; Ti_B > 0.5.

Occurrence: In a complex zoned granite pegmatite (Tanco pegmatite, Canada).

Association: Microlite, manganocolumbite, albite, quartz, muscovite, beryl (Tanco pegmatite, Canada).

Distribution: In the Tanco pegmatite, Bernic Lake, Manitoba, Canada. From San Piero in Campo, Elba, Italy.

Name: For predominant TITANIUM and its relation to *wodginite*.

Type Material: R.B Ferguson Mineralogical Museum, University of Manitoba, Winnipeg, Canada.

References: (1) Ercit, T.S., P. Černý, and F.C. Hawthorne (1992) The wodginite group. III. Classification and new species. *Can. Mineral.*, 30, 633–638. (2) (1993) *Amer. Mineral.*, 78, 848 (abs. ref. 1).