

# Wodginite

# Mn<sup>2+</sup>(Sn<sup>4+</sup>, Ta)Ta<sub>2</sub>O<sub>8</sub>

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**Crystal Data:** Monoclinic. *Point Group:* 2/m. Crystals commonly flattened, dipyrarnidal {111}, may be prismatic, to 15 cm; in radiating groups; granular, massive. *Twinning:* Very common, as penetration twins with {001} or {100} as composition plane.

**Physical Properties:** *Fracture:* [Irregular] (by analogy to the wodginite group). *Tenacity:* [Brittle.] *Hardness =* [5.5] *D(meas.) =* 7.19–7.36 *D(calc.) =* 7.69–7.81

**Optical Properties:** Opaque, translucent in thin fragments. *Color:* Reddish brown, dark brown to black; light yellow to reddish brown in transmitted light; grayish white in reflected light.

*Optical Class:* Biaxial. *Anisotropism:* Weak.  
R<sub>1</sub>–R<sub>2</sub>: n.d.

**Cell Data:** *Space Group:* C2/c. *a =* 9.417–9.533 *b =* 11.394–11.504 *c =* 5.082–5.142  
*β =* 90.00°–91.21° *Z =* 4

**X-ray Powder Pattern:** Wodgina, Western Australia; may be confused with columbite. 3.00 (100), 3.67 (70), 2.95 (70), 2.50 (29), 1.774 (27), 2.87 (25), 2.55 (21)

<b>Chemistry:</b>	(1)	(2)	(3)		(1)	(2)	(3)
Nb <sub>2</sub> O <sub>5</sub>	7.63	3.96		FeO	1.34	0.00	
Ta <sub>2</sub> O <sub>5</sub>	70.49	68.64	66.60	MnO	10.87	10.74	10.69
TiO <sub>2</sub>		1.44		MgO	0.37		
SnO <sub>2</sub>	8.92	13.00	22.71	CaO	0.42		
Fe <sub>2</sub> O <sub>3</sub>		0.79		LOI	0.18		
				<b>Total</b>	<b>100.22</b>	<b>98.57</b>	<b>100.00</b>

(1) Wodgina, Western Australia; corresponds to Mn<sub>1.00</sub>(Ta<sub>0.44</sub>Sn<sub>0.38</sub>Fe<sub>0.12</sub>)<sub>Σ=0.94</sub>(Ta<sub>1.63</sub>Nb<sub>0.37</sub>)<sub>Σ=2.00</sub>O<sub>8</sub>. (2) Tanco pegmatite, Canada; by electron microprobe, total Fe as Fe<sub>2</sub>O<sub>3</sub>; corresponds to Mn<sub>0.99</sub>(Sn<sub>0.56</sub>Ta<sub>0.23</sub>Ti<sub>0.12</sub>Fe<sub>0.06</sub>)<sub>Σ=0.97</sub>(Ta<sub>1.80</sub>Nb<sub>0.20</sub>)<sub>Σ=2.00</sub>O<sub>8</sub>. (3) MnSnTa<sub>2</sub>O<sub>8</sub>.

**Mineral Group:** Wodginite group: Li<sub>A</sub> ≤ 0.5; Fe<sub>A</sub><sup>2+</sup> ≤ 0.5; Ti<sub>B</sub> ≤ 0.5; Fe<sub>B</sub><sup>3+</sup> ≤ 0.25.

**Occurrence:** In a complex zoned pegmatite in amphibolite (Tanco pegmatite, Canada).

**Association:** Tantalite, albite, quartz, muscovite (Wodgina, Western Australia); tapiolite, microlite, microcline, albite, mica (Tanco pegmatite, Canada).

**Distribution:** A few localities for well-studied material include: from Wodgina, Marble Bar, and Greenbushes, Western Australia. An ore in the Tanco pegmatite, Bernic Lake, and elsewhere in Manitoba, Canada. In the USA, at the Strickland quarry, Portland, Middlesex Co., Connecticut; in the Herbb #2 pegmatite, six km northeast of Flat Rock, Powhatan Co., Virginia; from the McAllister mine, Rockford, Coosa Co., Alabama; in the Peerless mine, near Keystone, Pennington Co., South Dakota. In Brazil, from the Jabuti mine, Baixio, Galiléia, and large crystals from Araçuaia and Sapucaia do Norte, Galilea, Minas Gerais; in the Seridozinho mine, Joazeiro, Paraíba; at the Alto do Giz pegmatite, near Parelhas, Rio Grande do Norte. From Krasonice, Czech Republic. In the Eräjärvi area, Orivesi, Finland. From Kalba, eastern Kazakhstan. From Ankole, Uganda. In the Benson pegmatite, Miami district, Zimbabwe. From Karibib and Kohero, Namibia.

**Name:** For its occurrence at Wodgina, Western Australia.

**Type Material:** Geological Survey, Perth, 8492; Western Australian Museum, Perth, Australia, S388B; Canadian Geological Survey, Ottawa, 12200; Royal Ontario Museum, Toronto, Canada, M25655.

**References:** (1) Nickel, E.H., J.F. Rowland, and R.C. McAdam (1963) Wodginite – a new tin-manganese tantalate from Wodgina, Australia and Bernic Lake, Manitoba. *Can. Mineral.*, 7, 390–402. (2) (1963) *Amer. Mineral.*, 48, 1417–1418 (abs. ref. 1). (3) Ercit, T.S., P. Černý, F.C. Hawthorne, and C.A. McCammon (1992) The wodginite group. II. Crystal chemistry. *Can. Mineral.*, 30, 613–631. (4) Ercit, T.S., P. Černý, and F.C. Hawthorne (1992) The wodginite group. III. Classification and new species. *Can. Mineral.*, 30, 633–638.

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