

**Yttrotantalite-(Y)****(Y, U, Fe<sup>2+</sup>)(Ta, Nb)O<sub>4</sub>**

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**Crystal Data:** Orthorhombic; metamict. *Point Group:* n.d. Crystals rough, prismatic || [001], {110} and {010} prominent, several other forms; may be tabular on {010}.

**Physical Properties:** *Cleavage:* {010}, indistinct. *Fracture:* Small conchoidal. Hardness = 5–5.5 D(meas.) = 5.7(2) D(calc.) = n.d. Weakly magnetic.

**Optical Properties:** Opaque, transparent in thin fragments. *Color:* Black, brownish black, brown; red-brown to dark brown in transmitted light, may show zonation; light grayish brown in reflected light, with brown or yellowish gray internal reflections. *Streak:* Gray. *Luster:* Submetallic to vitreous, greasy. *Optical Class:* Isotropic.  $n = 2.15(2)$  *Anisotropism:* Discernible.

**Cell Data:** *Space Group:* n.d.  $Z =$  n.d.

**X-ray Powder Pattern:** Ytterby, Sweden; after heating at 1000 °C for one hour. 2.95 (10), 1.81 (9), 1.55 (9), 2.56 (6), 1.183 (6), 1.152 (6), 1.053 (5)

<b>Chemistry:</b>	(1)	(2)		(1)	(2)
WO <sub>3</sub>	0.66	2.02	Ce <sub>2</sub> O <sub>3</sub>	0.42	0.51
Nb <sub>2</sub> O <sub>5</sub>	20.38	17.75	Er <sub>2</sub> O <sub>3</sub>	3.58	3.54
Ta <sub>2</sub> O <sub>5</sub>	39.53	37.26	FeO	7.48	7.61
SiO <sub>2</sub>	0.96	0.61	MnO	1.85	1.01
TiO <sub>2</sub>	1.67	2.63	PbO		0.30
ZrO <sub>2</sub>	0.57	0.46	BeO	0.35	0.58
SnO <sub>2</sub>	1.20	2.96	MgO	0.15	0.15
ThO <sub>2</sub>	0.67	0.81	CaO	1.28	2.42
UO <sub>2</sub>	3.85	4.48	Na <sub>2</sub> O	0.57	0.81
Y <sub>2</sub> O <sub>3</sub>	12.48	12.52	K <sub>2</sub> O		0.10
La <sub>2</sub> O <sub>3</sub>	1.71	0.41	H <sub>2</sub> O	0.51	1.16
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			Total	99.87	100.10

(1) Berg, Norway. (2) Hattevik, Norway.

**Polymorphism & Series:** Dimorphous with formanite-(Y).

**Occurrence:** A rare accessory mineral in granite pegmatites.

**Association:** Albite, garnet, topaz, fergusonite (Ytterby, Sweden); monazite, columbite, allanite, samarskite, xenotime, gadolinite, mica (Norway).

**Distribution:** In Sweden, from Ytterby, on Resarö Island, near Vaxholm, near Falun, at Finbo and Broddbo; and in the Skuleboda pegmatite, near Väne Ryr, Västergötland. In Norway, at Hattevik, east of Dillingö, and near Berg. In the Rare Metals mine, Aquarius Mountains, Mohave Co., Arizona, USA. From the Tanokamiyama district, Shiga Prefecture, Japan.

**Name:** For YTTRium in its composition and relation to *tantalite*.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 763–764. (2) Vlasov, K.A., Ed. (1966) Mineralogy of rare elements, v. II, 534–538.