

Crystal Data: Orthorhombic. *Point Group:* $mm2$. Crystals prismatic \parallel [010], flattened \parallel to [001], may be equant, to 12 cm; {001} and {101} striated \parallel [010]. *Twinning:* About [010] with composition plane {001}; polysynthetic.

Physical Properties: *Cleavage:* {001}, distinct; {100} indistinct. *Fracture:* Subconchoidal. *Tenacity:* Brittle. Hardness = 5.5 D(meas.) = 7.53 (synthetic SbTaO₄). D(calc.) = [7.58] Strongly pyroelectric.

Optical Properties: Semitransparent. *Color:* Dark brown to light yellowish brown; reddish yellow, reddish brown, greenish yellow; in transmitted light, pale yellow-brown to brown, may be zoned. *Streak:* Pale yellow to yellow-brown. *Luster:* Resinous to adamantine. *Optical Class:* Biaxial (+). *Orientation:* $X = a$; $Y = b$; $Z = c$. *Dispersion:* $r < v$, strong. $\alpha = 2.374$ $\beta = 2.404$ $\gamma = 2.457$ $2V(\text{meas.}) = \text{n.d.}$ $2V(\text{calc.}) = 75^\circ 5'$

Cell Data: *Space Group:* $Pc2_1n$ (synthetic SbTaO₄). $a = 4.911$ $b = 11.814$ $c = 5.535$
 $Z = 4$

X-ray Powder Pattern: Synthetic SbTaO₄; nearly identical to stibiotantalite. 3.121 (100), 3.506 (38), 2.950 (34), 2.687 (22), 2.692 (21), 1.735 (19), 1.888 (17)

Chemistry:	(1)	(2)	(3)
Nb ₂ O ₅	1.79	11.3	
Ta ₂ O ₅	57.29	43.3	60.25
SiO ₂		0.1	
Sb ₂ O ₃	40.64	40.3	39.75
Bi ₂ O ₃	0.30	3.8	
CaO		0.1	
Total	100.02	98.9	100.00

(1) Greenbushes, Western Australia. (2) Mesa Grande district, California, USA; by electron microprobe, corresponding to $\text{Sb}_{1.00}(\text{Ta}_{0.71}\text{Nb}_{0.30})_{\Sigma=1.01}\text{O}_4$. (3) SbTaO₄.

Mineral Group: Forms a series with stibiocolumbite.

Occurrence: An uncommon accessory mineral in complex granite pegmatites.

Association: Tantalite (Greenbushes, Western Australia); antimony, allemontite, microlite, stibiomicrolite, lithiophilite, alkalic beryl, cassiterite, columbite–tantalite (Varuträsk, Sweden).

Distribution: From the Greenbushes tin placers, Wodgina district, Western Australia. Large crystals at the Muiâne and other mines, Alto Ligonha, Mozambique. From the Benson mine, Mtoko, Zimbabwe. In the USA, from Topsham, Sagadahoc Co., Maine; in California, in San Diego Co., fine crystals from the Himalaya mine, Mesa Grande district; at the Katerina, Stewart, and Vandenburg mines, Pala district; and in the Little Three mine, Ramona district; in the Brown Derby pegmatite, Gunnison Co., Colorado. In the Varuträsk pegmatite, 15 km northwest of Skellefteå, Västerbotten, Sweden. From the Voronya massif, Kola Peninsula, Russia. Found near Stak Nala, Gilgit district, Pakistan.

Name: From the Latin for antimony, STIBIum, in the composition, and relation to *tantalite*.

Type Material: Western Australian Museum, Perth, Australia, MDC550; Harvard University, Cambridge, Massachusetts, USA, 111954.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 767–769. (2) Roth, R.S. and J.L. Waring (1963) Synthesis and stability of bismutotantalite, stibiotantalite and chemically similar ABO₄ compounds. *Amer. Mineral.*, 48, 1348–1356. (3) Foord, E.E. and M.E. Mrose (1978) Rynersonite, Ca(Ta, Nb)₂O₆, a new mineral from San Diego County, California. *Amer. Mineral.*, 63, 709–714.

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