Tantalite-(Fe) $Fe^{2+}Ta_2O_6$

Crystal Data: Orthorhombic. *Point Group*: 2/*m* 2/*m* 2/*m*. Commonly as exsolution intergrowths with tapiolite-(Fe).

Physical Properties: *Cleavage*: {100}, distinct; {010}, less distinct. *Fracture*: Subconchoidal to uneven. *Tenacity*: Brittle. Hardness = 6-6.5 D(meas.) = 6.65-7.95 D(calc.) = n.d. Paramagnetic.

Optical Properties: Opaque, translucent in thin edges. *Color*: Iron-black; reddish brown in transmitted light; gray in reflected light with red to reddish brown internal reflections.
Streak: Black. *Luster*: Submetallic to vitreous.
Optical Class: Biaxial (–). *α*, *β*, *γ* and 2V(meas.) = n.d. *Orientation*: *X* = *b*; *Y* = *a*; *Z* = *c*.
Dispersion: *r* < *v*. *Absorption*: Strong; *Z* > *X*.

Cell Data: *Space Group*: [*Pbcn*](by analogy to columbite-(Fe)). *a*, *b*, and *c* = n.d. Z = [4]

X-ray Powder Pattern: n.d.

Chemistry:

	(1)	(2)
Nb_2O_5	26.8	
Ta_2O_5	56.5	86.02
TiO_2	0.6	
FeO	12.9	13.98
MnO	3.3	.
Total	100.1	100.00

(1) Spittal a.d. Drau, Austria; by electron microprobe, total Fe as FeO; corresponds to $(Fe_{0.78}Mn_{0.20})_{\Sigma=0.98}Ti_{0.03}(Ta_{1.11}Nb_{0.87})_{\Sigma=1.98}O_6$. (2) $FeTa_2O_6$.

Polymorphism & Series: Dimorphous with tapiolite-(Fe); forms series with tantalite-(Mg) and tantalite-(Mn), and with columbite-(Fe).

Mineral Group: Columbite group.

Occurrence: As an accessory and primary constituent of granite pegmatites.

Association: Tapiolite-(Fe).

Distribution: Material analyzed by microprobe from: Moss, Norway. At Spittal an der Drau, Austria. From Nyanga, Uganda. At Muhembe, Rwanda. At Upper Bear Gulch, Lawrence Co., South Dakota, USA. In the Yellowknife district, Northwest Territories, Canada.

Name: Suffix for dominant Fe in the composition and relation to *tantalite-(Mg)* and *tantalite-(Mn)*, named for the Greek mythical Tantalus, for the difficulty in bringing the mineral into solution.

Type Material: n.d.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 780-787. (2) Turnock, A.C. (1966) Synthetic wodginite, tapiolite and tantalite. Can. Mineral., 8, 461-470. (3) Černý, P., T.S. Ercit, and M.A. Wise (1992) The tantalite-tapiolite gap: natural assemblages versus experimental data. Can. Mineral., 30, 587-596. (4) Wise, M.A., A.C. Turnock, and P. Černý, (1985) Improved unit cell dimensions for ordered columbite-tantalite endmembers. Neues Jahrb. Mineral., Monatsh., 372-378.