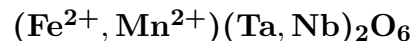


Ferrotapiolite



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Crystal Data: Tetragonal. *Point Group:* $4/m2/m2/m$. Crystals usually well developed, short prismatic or equant, with several forms. *Twinning:* Common on $\{013\}$, then distorted along $[0\bar{3}1]$; rarely on $\{101\}$.

Physical Properties: *Fracture:* Uneven to subconchoidal. Hardness = n.d. VHN = 885–974 (100 g load). $D(\text{meas.}) = 7.90(5)$ $D(\text{calc.}) = 8.17\text{--}8.21$

Optical Properties: Opaque, transparent on thin edges. *Color:* Black, may be brownish black on the surface; yellowish to reddish brown in transmitted light. *Streak:* Brown to brownish black. *Luster:* Subadamantine to submetallic, brilliant.

Optical Class: Uniaxial (+). *Pleochroism:* Strong; O = pale yellowish or reddish brown.

$\omega = 2.27(1)$ $\epsilon = 2.42(1)$

$R_1\text{--}R_2$: (400) 17.9–17.1, (420) 17.4–17.0, (440) 16.9–17.2, (460) 16.5–17.5, (480) 16.2–17.6, (500) 15.9–17.6, (520) 15.6–17.5, (540) 15.5–17.4, (560) 15.3–17.2, (580) 15.2–17.1, (600) 15.1–17.0

Cell Data: *Space Group:* $P4/mnm$. $a = 4.75\text{--}4.76$ $c = 9.21\text{--}9.29$ $Z = 2$

X-ray Powder Pattern: Synthetic FeTa_2O_6 . (ICDD 23–1124).

3.36 (100), 2.576 (90), 1.746 (70), 4.22 (30), 2.375 (30), 1.680 (25), 1.407 (25)

Chemistry:

	(1)
Nb_2O_5	1.32
Ta_2O_5	85.21
TiO_2	0.46
SnO_2	0.02
FeO	9.67
MnO	4.17
Total	100.85

(1) Skogböle, Finland; by electron microprobe, total Fe as FeO, total Mn as MnO; corresponds to $(\text{Fe}_{0.68}\text{Mn}_{0.30})_{\Sigma=0.98}(\text{Ta}_{1.94}\text{Nb}_{0.05}\text{Ti}_{0.02})_{\Sigma=2.01}\text{O}_6$.

Polymorphism & Series: Forms a series with manganotapiolite.

Mineral Group: Ferrotapiolite group.

Occurrence: An accessory mineral in zoned granite pegmatites; detrital in placers.

Association: Albite, muscovite, tourmaline, beryl, spodumene, columbite–tantalite, wodginite, cassiterite, triplite, triphylite.

Distribution: Well-characterized material from: in Finland, in the Eräjärvi area, Orivesi; at Sukula and Härkäsaari, Tammela; at Skogböle and the Rosendal pegmatite, Kemiö (Kimito) Island. From Maršik, Czech Republic. At Olgiasca, Lombardy, Italy. In France, from Chanteloube, Haute-Vienne. Occurs at Angarf-Nord and elsewhere in the Anti-Atlas Mountains, Morocco. From Greenbushes, Strelley, and Tabba Tabba, Pilbara, Western Australia. In the USA, from Topsham, Sagadahoc Co. and Paris, Oxford Co., Maine; in the Old Mike mine, six km north-northwest of Custer, Custer Co., South Dakota; at Rockford, Coosa Co., Alabama.

Name: For its dominant FERROus iron content and for *Tapio*, ancient Finnish god of the forest, as the mineral was first found in Finland.

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