Stibiobetafite \((\text{Ca, Sb}^{3+})_2(\text{Ti, Nb, Ta})_2(\text{O, OH})_7\)

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**Crystal Data:** Cubic; may be metamict. **Point Group:** \(4/m \overline{3} \ 2/m\). Rare rounded octahedra with small cube modifications, to 8 mm; commonly anhedral, granular, in veinlets and aggregates.

**Physical Properties:** Fracture: [Conchoidal to uneven] (by analogy to betafite). Tenacity: Brittle. Hardness = \(\sim 5\) \(D\) (meas.) = 5.30 (on impure material). \(D\) (calc.) = 5.19


**Optical Class:** Isotropic. \(n > 1.78\)

**Cell Data:** Space Group: \(Fd\overline{3}m\). \(a = 10.351\) \(Z = 8\)

**X-ray Powder Pattern:** Věžná, Czech Republic; after heating at 700 °C for one hour. 2.988 (10), 1.829 (6), 1.561 (5), 2.581 (4), 5.94 (3), 1.495 (3), 1.187 (3)

**Chemistry:**

\[
\begin{array}{ccc}
\text{Chemistry:} & \text{Total} & 100.65 \\
\text{Nb}_2\text{O}_5 & 21.6 & \text{PbO} & 0.13 \\
\text{Ta}_2\text{O}_5 & 19.3 & \text{SnO} & 2.9 \\
\text{TiO}_2 & 16.5 & \text{CaO} & 14.5 \\
\text{Al}_2\text{O}_3 & 0.49 & \text{Na}_2\text{O} & 0.30 \\
\text{Sb}_2\text{O}_3 & 23.2 & \text{F} & 0.15 \\
\text{FeO} & 0.6 & \text{H}_2\text{O} & 0.44 \\
\text{MnO} & 0.6 & -\text{O} = \text{F}_2 & 0.06 \\
\hline
\text{Total} & 100.65 & \\
\end{array}
\]

(1) Věžná, Czech Republic; by electron and ion microprobe on a selected grain; total Sb as Sb\(_2\text{O}_3\), Fe as FeO, Mn as MnO, Sn as SnO; corresponds to \((\text{Ca}_{1.11}\text{Sb}^{3+}_{0.69}\text{Sn}_{0.09}\text{Fe}_{0.04}
\text{Mn}_{0.04}\text{Na}_{0.04})_\Sigma=2.01(\text{Ti}_{0.89}\text{Nb}_{0.70}\text{Ta}_{0.38}\text{Al}_{0.04})_\Sigma=2.01\text{O}_6(\text{OH})_{0.21}\text{F}_{0.03}\Sigma=1.00\).

**Mineral Group:** Pyrochlore group, betafite subgroup; Sb\(_A\) > 20%; 2Ti\(_B\) ≥(Nb + Ta)\(_B\).

**Occurrence:** As replacement masses and in veinlets, in a granite pegmatite in a serpentinite.

**Association:** Columbite, niobian rutile, antimony, stokesite, cassiterite, zircon, albite.

**Distribution:** From Věžná, Czech Republic.

**Name:** From the Latin for antimony, STIBium, in its composition, and as a member of the betafite subgroup of the pyrochlore group.

**Type Material:** University of Manitoba, Winnipeg, M5233; Royal Ontario Museum, Toronto, Canada, M35630.