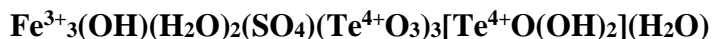


Metatamboite

Crystal Data: Monoclinic. *Point Group:* 2/m. As clusters to 3 mm of radiating fiber bundles to 1 mm. Fiber bundles twist and merge near their ends, forming simple prisms flattened on (100) and elongated along [010] with terminal crystal faces.

Physical Properties: *Cleavage:* n.d. *Tenacity:* Brittle. *Fracture:* Splintery. Hardness = n.d. D(meas.) = n.d. D(calc.) = 4.053 Nonfluorescent. Transforms to tamboite reversibly with changes in ambient humidity. Visually indistinguishable from tamboite.

Optical Properties: Semi-translucent. *Color:* Pale yellow. *Streak:* Very pale yellow to colorless. *Luster:* Greasy to vitreous. *Pleochroism:* Colorless to pale yellow. *Optical Class:* Biaxial. $n(\text{calc.}) = 1.958$

Cell Data: *Space Group:* $P2_1/c$. $a = 14.395(5)$ $b = 7.296(4)$ $c = 16.411(6)$ $\beta = 98.909(10)^\circ$ $Z = 4$

X-Ray Diffraction Pattern: Calculated pattern.

14.221 (100), 2.874 (13), 3.140 (12), 3.423 (11), 3.400 (11), 3.012 (11), 4.054 (9)

Chemistry:	(1)	(2)
TeO ₂	63.90	61.45
Fe ₂ O ₃	[24.14]	23.05
Al ₂ O ₃	0.75	
SO ₃	5.84	7.70
SeO ₃	0.63	
H ₂ O	[7.90]	7.80
Total	103.16	100.00

(1) Tambo mine, Coquimbo Province, Chile; average electron microprobe analysis supplemented by IR spectroscopy, Fe₂O₃ and H₂O calculated from structure; cations correspond to $(\text{Fe}^{3+}_{3.10}\text{Al}_{0.15})_{\Sigma=3.25}(\text{S}^{6+}_{0.75}\text{Se}^{6+}_{0.05})_{\Sigma=0.80}\text{Te}^{4+}_{4.11}$. (2) $\text{Fe}^{3+}_3(\text{OH})(\text{H}_2\text{O})_2(\text{SO}_4)(\text{Te}^{4+}\text{O}_3)_3[\text{Te}^{4+}\text{O}(\text{OH})_2](\text{H}_2\text{O})$.

Occurrence: In the interstices of silicified epithermal hydrothermal breccias of dacitic tuff.

Association: Alunite, rodalquilarite, emmonsite, poughite, mackayite, scorodite, paratellurite, tellurite, baryte, gold, native tellurium.

Distribution From the Tambo mine, Coquimbo Province, Chile.

Name: Prefix, *meta*, indicates the lower hydration state compared to *tamboite*.

Type Material: Royal Ontario Museum, Toronto, Canada (M57171).

References: (1) Cooper, M.A., F.C. Hawthorne, Y.A. Abdu, P.C. Walford, and M.E. Back (2019) Relative humidity as a driver of structural change in three new ferric-sulfate-tellurite hydrates: New minerals tamboite and metatamboite, and a lower-hydrate derivative, possibly involving direct uptake of atmospheric {H₂O}₄ clusters. *Can. Mineral.*, 57, 605-635.