Metatamboite $Fe^{3+}_3(OH)(H_2O)_2(SO_4)(Te^{4+}O_3)_3[Te^{4+}O(OH)_2](H_2O)$

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*(calc.) = 1.958

Cell Data: *Space Group*: $P2_1/c$. $a = 14.395(5)$ $b = 7.296(4)$ $c = 16.411(6)$ $\beta = 98.909(10)°$ 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_2O_3	[24.14]	23.05
Al_2O_3	0.75	
SO_3	5.84	7.70
SeO_3	0.63	
H_2O	[7.90]	7.80
Total	103.16	100.00

(1) Tambo mine, Coquimbo Province, Chile; average electron microprobe analysis supplemented by IR spectroscopy, Fe_2O_3 and H_2O calculated from structure; cations correspond to $(Fe^{3+}_{3.10}Al_{0.15})_{\Sigma=3.25}(S^{6+}_{0.75}Se^{6+}_{0.05})_{\Sigma=0.80}Te^{4+}_{4.11}$. (2) $Fe^{3+}_3(OH)(H_2O)_2(SO_4)(Te^{4+}O_3)_3[Te^{4+}O(OH)_2](H_2O)$.

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 $\{H_2O\}_4$ clusters. Can. Mineral., 57, 605-635.