

Tiberiobardiite**Cu₉Al(SiO₃OH)₂(OH)₁₂(H₂O)₆(SO₄)_{1.5}•10H₂O**

Crystal Data: Hexagonal. *Point Group:* $\bar{3}$. As thin crystals, tabular on {001}, to 200 μm , with a pseudo-hexagonal outline.

Physical Properties: *Cleavage:* Perfect on {001}. *Fracture:* Irregular. *Tenacity:* Brittle. Hardness = n.d. D(calc.) = 2.528

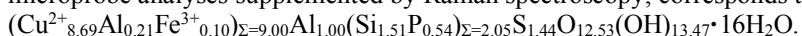
Optical Properties: Transparent. *Color:* Green. *Streak:* Pale green. *Luster:* Vitreous. *Optical Class:* n.d. n(calc.) = 1.568

Cell Data: Space Group: $R\bar{3}$. $a = 10.6860(4)$ $c = 28.3239(10)$ $Z = 3$

X-ray Powder Pattern: Cretaio Cu prospect, Massa Marittima, Grosseto, Tuscany, Italy. 9.4 (s), 4.67 (s), 2.576 (m), 2.330 (m), 2.041 (mw), 2.68(w), 1.548 (w)

Chemistry:	(1)	(2)
SO ₃	10.37	8.45
P ₂ O ₅	3.41	
As ₂ O ₅	0.05	
SiO ₂	8.13	8.45
Al ₂ O ₃	5.54	3.59
Fe ₂ O ₃	0.74	
CuO	62.05	50.36
ZnO	0.03	
H ₂ O		29.15
Total	90.32	100.00

(1) Cretaio Cu prospect, Massa Marittima, Grosseto, Tuscany, Italy; average of 5 electron microprobe analyses supplemented by Raman spectroscopy; corresponds to



(2) Cu₉Al(SiO₃OH)₂(OH)₁₂(H₂O)₆(SO₄)_{1.5}•10H₂O.

Occurrence: The product of supergene alteration of Cu sulfide minerals (bornite, chalcocite, and covellite) in stockwork veins in deformed gabbro, in an oxidizing and hydrous low-temperature environment.

Association: Brochantite.

Distribution: From the Cretaio Cu prospect, near Prata, Massa Marittima, Grosseto, Tuscany, Italy.

Name: Honors mineral collector *Tiberio Bardi* (b.1960), for his contributions to the study of Tuscan mineralogy and for collecting the first specimens of this new mineral.

Type Material: Natural History Museum, University of Pisa, Italy (19900).

References: (1) Biagioni, C., M. Pasero, and F. Zaccarini (2018) Tiberiobardiite, Cu₉Al(SiO₃OH)₂(OH)₁₂(H₂O)₆(SO₄)_{1.5}•10H₂O, a new mineral related to chalcophyllite from the Cretaio Cu prospect, Massa Marittima, Grosseto (Tuscany, Italy): occurrence and crystal structure. Minerals, 8(4), 152. (2) (2020) Amer. Mineral., 105(8), 1284 (abs. ref. 1).