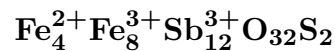


# Versiliaite



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**Crystal Data:** Orthorhombic. *Point Group:*  $2/m\ 2/m\ 2/m$ . Crystals, very rare, platy on {001}; commonly in massive aggregates.

**Physical Properties:** *Cleavage:* Perfect on {110}. Hardness = n.d. VHN = 330 (20 g load). D(meas.) = 5.12 D(calc.) = [5.32]

**Optical Properties:** Opaque. *Color:* Black. *Luster:* Metallic.  
*Optical Class:* Uniaxial.

R<sub>1</sub>–R<sub>2</sub>: (470) 18.5–19.4, (546) 18.5–17.8, (589) 18.3–16.9, (650) 17.7–16.2

**Cell Data:** *Space Group:* *Pbam*.  $a = 8.492(5)$   $b = 8.326(5)$   $c = 11.938(7)$   $Z = 1$

**X-ray Powder Pattern:** Buca della Vena mine, Italy.

3.196 (100), 3.167 (97), 2.972 (81), 2.682 (40), 1.946 (40), 1.652 (33), 5.94 (25)

## Chemistry:

	(1)	(2)
FeO	11.70	10.62
Fe <sub>2</sub> O <sub>3</sub>	14.92	23.59
As <sub>2</sub> O <sub>3</sub>	4.63	
Sb <sub>2</sub> O <sub>3</sub>	60.12	64.60
ZnO	2.96	
S	1.50	2.37
–O = S	0.75	1.18
Total	95.08	100.00

(1) Buca della Vena mine, Italy; by electron microprobe, Fe<sup>2+</sup>:Fe<sup>3+</sup> from crystal-structure analysis; corresponds to Fe<sub>4.65</sub><sup>2+</sup>Zn<sub>1.04</sub>Fe<sub>5.33</sub><sup>3+</sup>(Sb<sub>11.76</sub><sup>3+</sup>As<sub>1.34</sub><sup>3+</sup>)<sub>Σ=13.10</sub>O<sub>32</sub>S<sub>1.33</sub>. (2) Fe<sub>4</sub><sup>2+</sup>Fe<sub>8</sub><sup>3+</sup>Sb<sub>12</sub><sup>3+</sup>O<sub>32</sub>S<sub>2</sub>.

**Occurrence:** In an iron ore deposit in barite formed by metasomatic processes at the contact between phyllites and dolostones.

**Association:** Schafarzikite, apuanite, derbylite, barite, magnetite, hematite, pyrite.

**Distribution:** In the Buca della Vena mine, northeast of Stazzema, Apuan Alps, Tuscany, Italy.

**Name:** For the Versilia Valley, Apuan Alps, Italy, where it was found.

**Type Material:** University of Pisa, Pisa, Italy, 3211.

**References:** (1) Mellini, M., S. Merlino, and P. Orlandi (1979) Versiliaite and apuanite, two new minerals from the Apuan Alps, Italy. *Amer. Mineral.*, 64, 1230–1234. (2) Mellini, M. and S. Merlino (1979) Versiliaite and apuanite: derivative structures related to schafarzikite. *Amer. Mineral.*, 64, 1235–1242. (3) Mellini, M., M. Amouric, A. Baronnet, and G. Mercuriot (1981) Microstructures and nonstoichiometry in schafarzikite-like minerals. *Amer. Mineral.*, 66, 1073–1079.