

Smamite**Ca₂Sb(OH)₄[H(AsO₄)₂]·6H₂O**

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. As lenticular crystals, in aggregates to ~0.5 mm.

Physical Properties: *Cleavage:* None. *Fracture:* Curved. *Tenacity:* Brittle. *Hardness* = ~3.5
D(meas.) = 2.72(3) *D(calc.)* = 2.709 Quickly soluble in dilute (10%) HCl.

Optical Properties: Transparent. *Color:* White to colorless. *Streak:* White. *Luster:* Vitreous.
Optical Class: Biaxial (-). $\alpha = 1.556(1)$ $\beta = 1.581(1)$ $\gamma = 1.588(1)$ $2V(\text{meas.}) = 54(1)^\circ$
 $2V(\text{calc.}) = 55.1^\circ$ *Dispersion:* Weak, $r > v$. *Pleochroism:* None.

Cell Data: Space Group: $P\bar{1}$. $a = 5.8207(4)$ $b = 8.0959(6)$ $c = 8.21296(6)$ $\alpha = 95.8343(7)^\circ$
 $\beta = 110.762(8)^\circ$ $\gamma = 104.012(7)^\circ$ $Z = 1$

X-ray Powder Pattern: Giftgrube mine, Rauenthal, Sainte-Marie-Aux-Mines district, France.
 5.07 (100), 6.03 (60), 2.858 (51), 5.66 (47), 3.992 (43), 7.56 (41), 3.783 (36)

Chemistry:	(1)	(2)
CaO	17.34	17.07
Sb ₂ O ₅	23.92	24.63
SiO ₂	0.12	
As ₂ O ₅	34.93	34.99
<u>H₂O</u>	<u>[23.50]</u>	<u>23.31</u>
Total	99.81	100.00

(1) Giftgrube mine, Rauenthal, Sainte-Marie-Aux-Mines district, France; average electron microprobe analysis supplemented by Raman spectroscopy, H₂O calculated from structure; corresponds to Ca_{2.03}Sb_{0.97}(OH)₄[H_{1.10}(As_{1.99}Si_{0.01}O₄)₂]·6H₂O. (2) Ca₂Sb(OH)₄[H(AsO₄)₂]·6H₂O.

Occurrence: A supergene mineral from the oxidative weathering of primary As-mineralization [native arsenic, tennantite-tetrahedrite (fahlore), arsenides of Co and Ni, löllingite and chalcopyrite].

Association: Picroparmacolite, fluckite, pharmacolite, quartz, calcite, dolomite.

Distribution: From the Giftgrube mine, Rauenthal, Sainte-Marie-Aux-Mines district, Haut-Rhin department, Grand Est, France.

Name: From the acronym (*SMAM*) for the Sainte-Marie-aux-Mines district, where the mineral was found.

Type Material: Mineralogical Collection, Musée cantonal de géologie, University of Lausanne, Switzerland (MGL 093481, 093482, and 093483) and the Natural History Museum of Los Angeles County, Los Angeles, California, USA (67169).

References: (1) Plášil, J., A.R. Kampf, N. Meisser, C. Lheur, T. Brunzperger, and R. Škoda (2020) Smamite, Ca₂Sb(OH)₄[H(AsO₄)₂]·6H₂O, a new mineral and a possible sink for Sb during weathering of fahlore. *Amer. Mineral.*, 105(4), 555-560.