

Crystal Data: Monoclinic. *Point Group:* $2/m$. As granules to 2.5 mm.

Physical Properties: *Cleavage:* None. *Tenacity:* Brittle. *Fracture:* n.d. *Hardness* = 6-6.5
D(meas.) = n.d. *D(calc.)* = 4.943

Optical Properties: Translucent. *Color:* Reddish brown. *Streak:* Pale yellow. *Luster:* Vitreous.
Optical Class: Biaxial (+). $n > 1.9$ $2V(\text{meas.}) = 84(2)^\circ$ *Absorption:* $Z > Y > X$.
Pleochroism: Weak, X = brownish yellow, Y = brown, Z = reddish brown.

Cell Data: *Space Group:* $P2_1/m$. $a = 7.8642(4)$ $b = 6.1083(3)$ $c = 9.1670(5)$ $Z = 2$

X-ray Powder Pattern: Valletta mine, Maira Valley, Piedmont, Italy.

3.304 (100), 2.801 (73), 3.047 (59), 3.058 (31), 2.337 (24), 2.158 (24), 3.713 (18)

Chemistry:	(1)	(2)		(1)	(2)
Na ₂ O	0.06		Fe ₂ O ₃	6.95	12.77
MgO	0.43		Sb ₂ O ₃	0.01	
CaO	0.02		SiO ₂	0.03	
NiO	0.02		P ₂ O ₅	0.02	
CuO	0.03		V ₂ O ₅	10.88	
SrO	0.42		As ₂ O ₅	24.64	36.75
BaO	49.36	49.04	SO ₃	0.01	
PbO	1.69		F	0.02	
Al ₂ O ₃	1.25		H ₂ O	[1.61]	1.44
Mn ₂ O ₃	3.89		Total		

(1) Valletta mine, Maira Valley, Piedmont, Italy; average of 4 electron microprobe analyses supplemented by FTIR and Raman spectroscopy, H₂O calculated; corresponds to $(\text{Ba}_{1.92}\text{Pb}_{0.05}\text{Sr}_{0.02}\text{Na}_{0.01})_{\Sigma=2.00}(\text{Fe}^{3+}_{0.52}\text{Mn}^{3+}_{0.29}\text{Al}_{0.15}\text{Mg}_{0.06})_{\Sigma=1.02}[(\text{As}_{0.64}\text{V}_{0.36})_{\Sigma=1.00}\text{O}_4]_2[(\text{OH}_{0.92}\text{F}_{0.01})(\text{H}_2\text{O})_{0.07}]$.

(2) $\text{Ba}_2\text{Fe}^{3+}(\text{AsO}_4)_2(\text{OH})$.

Occurrence: From the dumps of a vein-controlled, polymetallic hydrothermal deposit.

Association: Aegirine, barite, calcite, hematite, Mn-bearing muscovite, unidentified Mn oxides, unidentified Mn arsenates.

Distribution: From the Valletta mine, Vallone della Valletta, Canosio municipality, Maira Valley, Cuneo Province, Piedmont, Italy.

Name: For the small municipality of Canosio, of ~80 inhabitants, near the Valletta mine.

Type Material: Mineral Collection, Natural History Museum, Torino, Italy (M/15941).

References: (1) Cámara, F., E. Bittarello, M.E. Ciriotti, F. Nestola, F. Radica, F. Massimi, C. Balestra, and R. Bracco (2017) As-bearing new mineral species from Valletta mine, Maira Valley, Piedmont, Italy: III. Canosioite, $\text{Ba}_2\text{Fe}^{3+}(\text{AsO}_4)_2(\text{OH})$, description and crystal structure. *Mineral. Mag.*, 81(2), 305-317. (2) (2018) *Amer. Mineral.*, 103, 657-658 (abs. ref. 1).