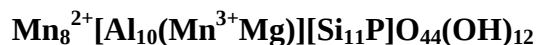


Lavoisierite

Crystal Data: Orthorhombic. *Point Group:* 2/m 2/m 2/m. As acicular to tabular prismatic crystals elongated on [010] and flattened on {001}, to a few millimeters.

Physical Properties: *Cleavage:* None. *Fracture:* Uneven. *Tenacity:* Brittle.
Hardness = n.d. D(meas.) = n.d. D(calc.) = 3.576

Optical Properties: Transparent. *Color:* Yellow-orange. *Streak:* White. *Luster:* Vitreous.
Optical Class: n.d. $n = 1.750$ [calculated] *Pleochroism:* Pale yellow || to [010], yellow-orange ⊥ to [010]. Parallel extinction; positive elongation on [010].

Cell Data: *Space Group:* Pnmm. $a = 8.6891(10)$ $b = 5.7755(3)$ $c = 36.9504(20)$ $Z = 2$

X-ray Powder Pattern: Punta Gensane, Viù Valley, Piedmont, Italy.
2.931 (vs), 2.765 (s), 2.598 (s), 2.448 (ms), 4.62 (m), 4.23 (m), 3.747 (m)

Chemistry:	(1)
P ₂ O ₅	2.08
V ₂ O ₅	0.37
SiO ₂	34.81
TiO ₂	0.13
Al ₂ O ₃	22.92
Cr ₂ O ₃	0.32
Fe ₂ O ₃	0.86
MgO	5.73
MnO	[19.09]
Mn ₂ O ₃	[6.92]
CaO	1.94
Na ₂ O	0.01
H ₂ O	[5.45]
Total	100.63

(1) Punta Gensane, Viù Valley, Piedmont, Italy; average of 3 electron microprobe analyses, H₂O calculated from structure, O/OH ratio adjusted for charge balance, MnO and Mn₂O₃ calculated from structure; corresponding to (Mn²⁺_{5.34}Mg_{1.81}Ca_{0.69}Na_{0.01})_{Σ=7.85}(Al_{8.92}Mn³⁺_{1.74}Mg_{1.01}Fe³⁺_{0.21}Cr_{0.08}Ti_{0.03})_{Σ=11.99}(Si_{11.50}P_{0.58}V_{0.08})_{Σ=12.16}O_{44.00}(OH)_{12.00}.

Occurrence: In piemontite-bearing mica schists related to the Alpine tectono-metamorphism of (Mn, Al)-rich sediments.

Association: Quartz, “mica”, sursassite, piemontite, spessartine, braunite, “tourmaline”.

Distribution: From Punta Gensane, Viù Valley, Piedmont, Western Alps, Italy.

Name: Honors the French chemist and biologist Antoine-Laurent de Lavoisier (1743-1794), one of the fathers of modern chemistry.

Type Material: In Italy, at the Natural History Musuem, University of Pisa (# 19637), and in the mineralogical collections, Regional Museum of Natural Science, Torino (M/U 16359).

References: (1) Orlandi, P., C. Biagioni, M. Pasero, and M. Mellini (2013) Lavoisierite, Mn²⁺₈[Al₁₀(Mn³⁺Mg)][Si₁₁P]O₄₄(OH)₁₂, a new mineral from Piedmont, Italy: the link between “ardennite” and sursassite. *Physics and Chemistry of Minerals*, 40, 239-249. (2) (2014) Amer. Mineral., 99, 2155-2156 (abs. ref. 1).