

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. As thin to thick prismatic crystals, to 1 mm, with blunt chisel-like terminations, and exhibiting {100}, {010}, {001}, {110} and {011}.

Physical Properties: *Cleavage:* Perfect on {001}. *Fracture:* Irregular. *Tenacity:* Brittle. Hardness ~ 6 D(meas.) = 3.09(2) D(calc.) = 3.073

Optical Properties: Transparent. *Color:* Colorless. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Biaxial (-). $\alpha = 1.590(1)$ $\beta = 1.598(1)$ $\gamma = 1.598(1)$ $2V(\text{meas.}) = 24(1)^\circ$ $2V(\text{calc.}) = 25.4^\circ$ *Orientation:* $X = c$, $Y = b$, $Z = a$.

Cell Data: *Space Group:* *Ibam*. $a = 7.5549(3)$ $b = 15.2342(5)$ $c = 19.6418(14)$ $Z = 4$

X-ray Powder Pattern: Água de Pau volcano, São Miguel Island, Azores District, Portugal. 3.544 (100), 9.84 (90), 2.999 (71), 2.478 (67), 2.065 (57), 4.129 (52), 3.977 (48)

Chemistry:	(1)	(2)
Na ₂ O	0.30	
CaO	1.33	
MnO	4.12	6.97
FeO	0.59	
Y ₂ O ₃	12.43	22.19
La ₂ O ₃	1.07	
Ce ₂ O ₃	2.84	
Pr ₂ O ₃	0.34	
Nd ₂ O ₃	1.35	
Sm ₂ O ₃	0.47	
Gd ₂ O ₃	1.12	
Dy ₂ O ₃	1.70	
Er ₂ O ₃	1.39	
Yb ₂ O ₃	1.03	
SiO ₂	68.76	70.84
Total	98.84	100.00

(1) Água de Pau volcano, São Miguel Island, Azores District, Portugal; average of 6 electron microprobe analyses; corresponding to $(\text{Y}_{1.17}\text{Ce}_{0.18}\text{Dy}_{0.10}\text{Na}_{0.10}\text{Nd}_{0.09}\text{Er}_{0.08}\text{La}_{0.07}\text{Gd}_{0.07}\text{Yb}_{0.06}\text{Sm}_{0.03}\text{Pr}_{0.02})_{\Sigma=1.97}(\text{Mn}_{0.61}\text{Ca}_{0.25}\text{Fe}_{0.09})_{\Sigma=0.95}\text{Si}_{12.07}\text{O}_{28}$. (2) $\text{Y}_2\text{Mn}(\text{Si}_3\text{O}_7)_4$.

Occurrence: In vugs in a block of peralkaline syenitic volcanic ejectum.

Association: Astrophyllite, dalyite, elpidite, fluornatropyrochlore, kentbrooksitite, albite, quartz, aegirine.

Distribution: From the Água de Pau volcano, São Miguel Island, Azores District, Portugal.

Name: Honors Luigi Chiappino (b. 1950), a distinguished mineral collector of Milan, Italy, who discovered the first specimen.

Type Material: Natural History Museum of Los Angeles County, Los Angeles, California, USA (64166-64170).

References: (1) Kampf, A.R. and R.M. Housley (2015) Chiappinoite-(Y), $\text{Y}_2\text{Mn}(\text{Si}_3\text{O}_7)_4$, a new layer silicate found in peralkaline syenitic ejecta from the Água de Pau volcano, Azores. *Eur. J. of Mineral.*, 27(1), 91-97. (2) (2015) *Amer. Mineral.*, 100, 2006 (abs. ref. 1).