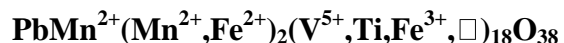


**Paseroite**

**Crystal Data:** Hexagonal. *Point Group:*  $\bar{3}$ . As elongated scalenohedral crystals to 100  $\mu\text{m}$ , typically zoned with V-rich senaite.

**Physical Properties:** *Cleavage:* None. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 6-6.5 VHN = 834-865, 847 average (500 g load). *D(meas.)* = n.d. *D(calc.)* = 4.315

**Optical Properties:** Opaque. *Color:* Dark gray to black; grayish in reflected light. *Streak:* Black. *Luster:* Submetallic.

*Optical Class:* Biaxial (-). [by analogy to senaite]

$R_1$ - $R_2$ : (471.1) 18.4-18.2, (548.3) 17.9-17.7, (586.6) 17.6-17.3, (652.3) 17.0-16.8

**Cell Data:** *Space Group:*  $R\bar{3}$ .  $a = 10.3894(5)$   $c = 20.8709(8)$   $Z = 3$

**X-ray Powder Pattern:** Molinello mine, Val Graveglia, Liguria, Italy.

3.417 (100), 2.260 (85), 2.149 (65), 2.896 (61), 1.809 (57), 2.858 (36), 2.765 (27)

| Chemistry:                     | (1)  |                                   | (1)          |
|--------------------------------|------|-----------------------------------|--------------|
| Na <sub>2</sub> O              | 0.35 | La <sub>2</sub> O <sub>3</sub>    | 0.02         |
| MgO                            | 0.05 | Ce <sub>2</sub> O <sub>3</sub>    | 0.03         |
| MnO                            | 7.70 | TiO <sub>2</sub>                  | 32.78        |
| ZnO                            | 1.15 | ThO <sub>2</sub>                  | 0.05         |
| SrO                            | 2.36 | UO <sub>3</sub>                   | 0.36         |
| PbO                            | 8.01 | <u>V<sub>2</sub>O<sub>5</sub></u> | <u>41.27</u> |
| FeO                            | 2.80 | Total                             | 98.64        |
| Fe <sub>2</sub> O <sub>3</sub> | 1.71 |                                   |              |

(1) Molinello mine, Val Graveglia, Liguria, Italy; average of 11 electron microprobe analyses, Fe<sup>2+</sup>/Fe<sup>3+</sup> calculated from structure analysis; corresponding to (Pb<sub>0.61</sub>Sr<sub>0.39</sub>) $\Sigma=1.00$ (V<sup>5+</sup><sub>7.78</sub>Ti<sup>4+</sup><sub>7.03</sub>Mn<sup>2+</sup><sub>1.86</sub>Fe<sup>2+</sup><sub>0.67</sub>Fe<sup>3+</sup><sub>0.37</sub>Zn<sub>0.24</sub>Na<sub>0.19</sub>U<sub>0.02</sub>Mg<sub>0.02</sub>□<sub>2.82</sub>) $\Sigma=21.00$ O<sub>38</sub>.

**Mineral Group:** Crichtonite group.

**Polymorphism & Series:** Forms a solid solution series with senaite.

**Occurrence:** In micro-cavities and fractures in a piece of fossilized wood, presumably precipitated from oxidized ground water.

**Association:** Quartz, chalcocite, volborthite; more rarely metatyuyamunite, pyrophanite.

**Distribution:** From the upper part of the Molinello mine, Val Graveglia, Ne, Genoa Province, Liguria, Italy.

**Name:** Honors Marco Pasero (b. 1958), Professor of Mineralogy, University of Pisa, Italy, for his contributions to mineralogy and crystallography in general, and especially Italian mineralogy.

**Type Material:** In Italy, at the Museum of Natural History, University of Florence (# 3111/I), and in the mineralogical collections of the Natural History Museum, University of Turin (# 15900).

**References:** (1) Mills, S.J., L. Bindi, M. Cadoni, A.R. Kampf, M.E. Ciriotti, and G. Ferraris (2012) Paseroite, PbMn<sup>2+</sup>(Mn<sup>2+</sup>, Fe<sup>2+</sup>)<sub>2</sub>(V<sup>5+</sup>, Ti, Fe<sup>3+</sup>, □)<sub>18</sub>O<sub>38</sub>, a new member of the crichtonite group. *European Journal of Mineralogy*, 24(6), 1061-1067. (2) (2014) *Amer. Mineral.*, 99, 2156 (abs. ref. 1).