

Molybdofofnacite

$\text{Pb}_2\text{Cu}(\text{AsO}_4, \text{PO}_4)(\text{MoO}_4, \text{CrO}_4)(\text{OH})$

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Crystal Data: Monoclinic. *Point Group:* $2/m$. Prismatic to lathlike crystals, elongated along [010], to 1 mm. *Twining:* Rare “butterfly” contact twins, at 120° .

Physical Properties: *Fracture:* Conchoidal. Hardness = 3–4 D(meas.) = n.d.
D(calc.) = 6.6

Optical Properties: Transparent. *Color:* Light green to olive-green. *Streak:* Pale yellow. *Luster:* Adamantine.

Optical Class: Biaxial. *Pleochroism:* Distinct; $X = Y$ = pale yellow; Z = yellow-green.

Orientation: $Z = b$. $\alpha = 2.05(2)$ $\beta = \text{n.d.}$ $\gamma = 2.15(2)$ $2V(\text{meas.}) = \text{n.d.}$

Cell Data: *Space Group:* $P2_1/c$. $a = 8.100(5)$ $b = 5.946(3)$ $c = 17.65(1)$
 $\beta = 109.17(5)^\circ$ $Z = 4$

X-ray Powder Pattern: Tsumeb, Namibia.

3.32 (100), 2.979 (60), 2.845 (60), 2.753 (60), 4.84 (50), 2.353 (50), 3.41 (40)

Chemistry:

| | |
|--------------------------------|---------|
| | (1) |
| MoO ₃ | 14.29 |
| CrO ₃ | 2.15 |
| P ₂ O ₅ | 2.13 |
| As ₂ O ₅ | 12.68 |
| CuO | 9.97 |
| PbO | 56.45 |
| H ₂ O | [1.16] |
| Total | [98.83] |

(1) Tsumeb, Namibia; by electron microprobe, original total given as 98.84%, H₂O calculated from stoichiometry; corresponds to $\text{Pb}_{1.97}\text{Cu}_{0.98}(\text{As}_{0.86}\text{P}_{0.23})_{\Sigma=1.09}\text{O}_4(\text{Mo}_{0.77}\text{Cr}_{0.17})_{\Sigma=0.94}\text{O}_4(\text{OH})$.

Occurrence: In the deep oxidation zone of a dolostone-hosted hydrothermal polymetallic ore deposit (Tsumeb, Namibia).

Association: Diopside, duftite, wulfenite, quartz, calcite, hematite (Tsumeb, Namibia); wulfenite, pyromorphite (Tonopah-Belmont mine, Arizona, USA); mimetite, desclozite, willemite, chrysocolla, hematite (Bullfrog #2 claim, New Mexico, USA).

Distribution: From Tsumeb, Namibia. In the USA, in Arizona, in the Tonopah-Belmont mine, Big Horn Mountains, Osborne district, Maricopa Co., and the Rawhide mine, Buckskin Mountains, Mohave Co.; at the Bullfrog #2 claim, near Silver Hill, three km northwest of Magdalena, Socorro Co., and in the Tres Hermanas Mountains, Mahoney district, Luna Co., New Mexico; at the Silver Coin mine, near Valmy, Iron Point district, Humboldt Co., Nevada. From La Cibradita, Sonora, Mexico.

Name: For its predominance of *molybdenum* and relation to *fofnacite*.

Type Material: Mineralogical Institute, Ruhr-University, Bochum, Germany.

References: (1) Medenbach, O., K. Abraham, and W. Gebert (1983) Molybdofofnacite, ein neues Blei-Kupfer-Arsenat-Molybdat-Hydroxid von Tsumeb, Namibia. Neues Jahrb. Mineral., Monatsh., 289–295 (in German with English abs.). (2) (1984) Amer. Mineral., 69, 567 (abs. ref. 1).