

Guilleminite

Ba(UO₂)₃O₂(Se⁴⁺O₃)₂•3H₂O

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Crystal Data: Orthorhombic. *Point Group:* $mm2$. As rectangular crystals, tabular on {010}, to 0.4 mm, bounded by {001}, {010}, {001}, modified by {101}; as coatings and silky masses.

Physical Properties: *Cleavage:* Perfect on {100}; good on {010}. *Tenacity:* Brittle. Hardness = n.d. D(meas.) = 4.88(2) D(calc.) = [4.90] Radioactive.

Optical Properties: Transparent to translucent. *Color:* Canary-yellow. *Luster:* [Vitreous.] *Optical Class:* Biaxial (-). *Pleochroism:* Strong; X = bright yellow; Y = yellow; Z = colorless. *Orientation:* X = c; Y = b; Z = a. *Dispersion:* $r > v$, strong. $\alpha = 1.720(2)$ $\beta = 1.798(2)$ $\gamma = 1.805(5)$ $2V(\text{meas.}) = 35^\circ$ $2V(\text{calc.}) = 32^\circ$

Cell Data: *Space Group:* $P2_1nm$. $a = 7.293(1)$ $b = 16.881(4)$ $c = 7.084(1)$ $Z = 2$

X-ray Powder Pattern: Musonoi mine, Congo.
8.39 (F), 7.29 (F), 3.55 (mF), 6.68 (m), 3.04 (m), 2.80 (m), 3.17 (mf)

Chemistry:

	(1)	(2)	(3)
SeO ₂	16.8	19.5	17.24
UO ₃	64.5	65.5	66.65
BaO	10.8	8.0	11.91
H ₂ O	7.1	n.d.	4.20
Total	99.2		100.00

(1) Musonoi mine, Congo; H₂O by the Penfield method. (2) Do.; by electron microprobe.

(3) Ba(UO₂)₃O₂(SeO₃)₂•3H₂O, determined from crystal-structure analysis.

Occurrence: In the oxidized portions of a Cu-Co sulfide deposit (Musonoi mine, Congo).

Association: Malachite, cuprosklodowskite, kasolite, marthozite, derriksite, uranophane, wulfenite (Musonoi mine, Congo).

Distribution: From the Musonoi Cu-Co mine, near Kolwezi, and at Shinkolobwe, Katanga Province, Congo (Shaba Province, Zaire).

Name: Honors Dr. Claude Guillemin (1923–1994), eminent French mineralogist, Bureau de Recherches Géologiques et Minières, Paris, France.

Type Material: National School of Mines, Paris, France; National Museum of Natural History, Washington, D.C., USA, 119360.

References: (1) Pierrot, R., J. Toussaint, and T. Verbeek (1965) La guilleminite, une nouvelle espèce minérale. Bull. Soc. fr. Minéral., 88, 132–135 (in French). (2) (1965) Amer. Mineral., 50, 2103 (abs. ref. 1). (3) Cooper, M.A. and F.C. Hawthorne (1995) The crystal structure of guilleminite, a hydrated Ba-U-Se sheet structure. Can. Mineral., 33, 1103–1109.