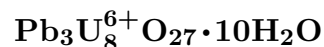


Masuyite



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Crystal Data: Orthorhombic, pseudo-hexagonal. *Point Group:* $2/m\ 2/m\ 2/m$ (probable). Crystals pseudo-hexagonal, tabular on {001}, to 3 mm, with {100}, {010}, {110}, and {150}; scaly, in rosettes. *Twinning:* Very common on {110} or $\bar{1}\bar{3}0$ as twin and composition planes, contact and repeated, individuals with \parallel {001}.

Physical Properties: *Cleavage:* {001}, perfect; {010}, good. Hardness = n.d. $D(\text{meas.}) = 5.08$ $D(\text{calc.}) = \text{n.d.}$ Radioactive. Some properties may be incorrectly ascribed to this species; the chemical formula used here is from J. Protas (1959) using synthetic material, the X-ray pattern of which matched natural material in the Sorbonne collection.

Optical Properties: Transparent. *Color:* Red-orange, orange, brownish orange. *Optical Class:* Biaxial (-). *Pleochroism:* $X = \text{pale yellow}$; $Y = Z = \text{deep golden yellow}$. *Orientation:* $X = c$; $Y = b$; $Z = a$. *Dispersion:* $r > v$, moderate. $\alpha = 1.785$ $\beta = 1.895\text{--}1.906$ $\gamma = 1.915\text{--}1.917$ $2V(\text{meas.}) = 40.5^\circ\text{--}50^\circ$

Cell Data: *Space Group:* $Pcna$, probable, pseudocell. $a = 13.90\text{--}14.09$ $b = 12.04\text{--}12.31$ $c = 14.20\text{--}14.92$ $Z = 2$

X-ray Powder Pattern: Shinkolobwe, Congo.
7.08 (100), 3.52 (70), 3.12 (50), 3.56 (35), 3.48 (21), 2.008 (18), 1.95 (17b)

Chemistry:

	(1)	(2)	(3)
UO ₃	70.61	75.00	72.92
PbO	24.51	18.82	21.34
H ₂ O	[4.88]	[6.18]	5.74
Total	[100.00]	[100.00]	100.00

(1) Shinkolobwe, Congo [type I material]; by electron microprobe, average of 11 determinations on four grains, H₂O by difference; corresponds to $\text{Pb}_{4.01}\text{U}_{9.00}\text{O}_{31}\cdot 9.87\text{H}_2\text{O}$. (2) Do. [type II material]; by electron microprobe, average of five analyses on three grains, H₂O by difference; corresponds to $\text{Pb}_{0.97}\text{U}_{3.01}\text{O}_{10}\cdot 3.94\text{H}_2\text{O}$. (2) $\text{Pb}_3\text{U}_8\text{O}_{27}\cdot 10\text{H}_2\text{O}$.

Occurrence: A secondary mineral formed in the oxidized zone of uranium-bearing deposits.

Association: Uraninite, rutherfordine, becquerelite, fourmarierite, wyartite, wölsendorfit, kasolite, metastudtite.

Distribution: From Shinkolobwe, and the Kamoto mine, near Kolwezi, Katanga Province, Congo (Shaba Province, Zaire). In the El Sharana mine, South Alligator Valley, Northern Territory, Australia. Found at the Rabéjac uranium deposit, seven km south-southwest of Lodève, Hérault, France.

Name: For Gustave Masuy (1905–1945), Belgian geologist, who studied Congolese (Zairian) minerals.

Type Material: Type material is lost; Royal Museum of Central Africa, Tervuren, Belgium has neotype material; Harvard University, Cambridge, Massachusetts, USA, 104455, although supplied as a type by Vaes, does not contain lead, found microchemically in original type material.

References: (1) Vaes, J.F. (1947) Six nouveaux minéraux d'urane provenant de Shinkolobwe (Katanga). *Ann. Soc. Géol. Belg.*, 70, B212–B229, esp. B219 (in French). (2) (1947) *Mineral. Abs.*, 10, 146 (abs. ref. 1). (3) (1948) *Amer. Mineral.*, 33, 384 (abs. ref. 1). (4) Frondel, C. (1958) Systematic mineralogy of uranium and thorium. *U.S. Geol. Sur. Bull.* 1064, 78–81. (5) Christ, C.L. and J.R. Clark (1960) Crystal chemical studies of some uranyl oxide hydrates. *Amer. Mineral.*, 45, 1026–1061. (6) Protas, J. (1959) Contribution à l'étude des oxydes d'uranium hydratés. *Bull. Soc. fr. Minéral.*, 82, 239–272. (7) Deliens, M. and P. Piret (1996) Les masuyites de Shinkolobwe (Shaba, Zaïre) constituent un groupe formé de deux variétés distinctes par leur composition chimique et leurs propriétés radiocristallographiques. *Bull. Institut Royal des Sciences Naturelles de Belgique, Sciences de la Terre*, 66, 297–192 (in French with English abs.).

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