

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$ or $mm2$. Crystals flattened on {001}, pseudo-hexagonal, diamond- or barrel-shaped, to 1.5 mm, showing {001}, {011}, {111}, {010}; composite or in subparallel aggregates, intimately intergrown with metavandendriesscheite; in dense microcrystalline aggregates.

Physical Properties: *Cleavage:* {001}, perfect. Hardness = n.d. D(meas.) = 5.45–5.46 D(calc.) = 5.86 Radioactive.

Optical Properties: Transparent. *Color:* Amber-orange, yellowish orange to orange. *Optical Class:* Biaxial (-). *Pleochroism:* X = nearly colorless; Y = Z = yellow-orange to golden yellow. *Orientation:* X = c; Y = b; Z = a. *Dispersion:* $r > v$, strong. $\alpha = 1.780(5)$ $\beta = 1.850(10)$ $\gamma = 1.860(10)$ 2V(meas.) = 60(2)°

Cell Data: *Space Group:* $Pmma$, $P2_1ma$, or $Pm2a$. $a = 14.07(4)$ $b = 40.85(12)$ $c = 43.33(13)$ $Z = 36$

X-ray Powder Pattern: Shinkolobwe, Congo; cannot be distinguished from metavandendriesscheite.

7.24 (100), 3.61 (100), 3.17 (75), 1.985 (40), 3.53 (25), 2.522 (25), 2.034 (15)

Chemistry:	(1)	(2)	(3)	(4)
UO ₃	82.36	80.48	81.63	82.00
SiO ₂		0.65		
PbO	8.86	11.25	9.64	9.14
H ₂ O	9.26	6.86	8.73	8.86
Total	100.48	99.24	[100.00]	100.00

(1–2) Shinkolobwe, Congo. (3) Great Bear Lake, Canada; original total given as 97.65%; recalculated to 100% after deduction of insoluble 4.10%. (4) PbU₇O₂₂·12H₂O.

Occurrence: In the oxidized zone of uranium-bearing mineral deposits.

Association: Metavandendriesscheite, fourmarierite, becquerelite, metatorbernite, rutherfordine, uraninite (Shinkolobwe, Congo).

Distribution: From Shinkolobwe, Katanga Province, Congo (Shaba Province, Zaire). At Great Bear Lake, Northwest Territories, Canada. From Southwick Cliffs, near Dalbeattie, Kirkcudbrightshire, Scotland. At Les Bois Noirs, Loire, and in the Rabéjac uranium deposit, seven km south-southeast of Lodève, Hérault, France. From Menzenschwand and Wittichen, Black Forest, Germany. In Sweden, at the Stackebö pegmatite, near Holsljunga, Västergötland. From the Monument No. 2 mine, Monument Valley, Apache Co., Arizona; in Leiper's quarry, Avondale, Delaware Co., Pennsylvania; at the Ruggles mine, Grafton, and the Palermo mine, near North Groton, Grafton Co., New Hampshire, USA. In the Palette mine, South Alligator Valley, Northern Territory, Australia.

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Type Material: Harvard University, Cambridge, Massachusetts, USA, 106523.

References: (1) Vaes, J.F. (1947) Six nouveaux minéraux d'urane provenant de Shinkolobwe (Katanga). Ann. Soc. Géol. Belg., 70, B212–B229, esp. B217–B219 (in French). (2) (1948) Amer. Mineral., 33, 384 (abs. ref. 1). (3) Frondel, C. (1958) Systematic mineralogy of uranium and thorium. U.S. Geol. Sur. Bull. 1064, 81–87. (4) Christ, C.L. and J.R. Clark (1960) Crystal chemical studies of some uranyl oxide hydrates. Amer. Mineral., 45, 1026–1061. (5) Deliens, M. (1977) Review of the hydrated oxides of U and Pb, with new X-ray powder data. Mineral. Mag., 41, 51–57.

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