

Dewindtite

$\text{H}_2\text{Pb}_3(\text{UO}_2)_6\text{O}_4(\text{PO}_4)_4 \cdot 12\text{H}_2\text{O}$

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Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Crystals are rectangular tablets, flattened along and striated $\parallel$ [001], to 3 mm; more usually pulverulent, fine-grained to compact massive.

Physical Properties: *Cleavage:* {100}, perfect. *Tenacity:* Brittle. Hardness = n.d. D(meas.) = 5.03 D(calc.) = 5.12 Radioactive. Fluoresces green under UV.

Optical Properties: Semitransparent. *Color:* Canary-yellow, may exhibit a greenish tint.

Streak: Pale yellow.

Optical Class: Biaxial (+). *Pleochroism:* X = colorless; $Y = Z$ = golden yellow. *Orientation:* $X = b$; $Y = c$; $Z = a$. *Dispersion:* $r < v$. $\alpha = 1.760\text{--}1.762$ $\beta = 1.767\text{--}1.768$ $\gamma = 1.768\text{--}1.770$ 2V(meas.) = Moderate to large.

Cell Data: *Space Group:* $Bmmb$. $a = 16.031(6)$ $b = 17.264(6)$ $c = 13.605(2)$ $Z = 4$

X-ray Powder Pattern: Shinkolobwe, Congo; nearly identical to phosphuranylite.

8.01 (10), 5.89 (10), 2.88 (9), 4.00 (7), 3.14 (7), 3.40 (5), 3.07 (5)

Chemistry:

	(1)	(2)	(3)
UO_3	55.77	54.80	59.10
P_2O_5	10.62	10.14	9.78
PbO	26.20	24.85	23.06
H_2O	6.71	7.93	8.06
insol.	0.40		
Total	99.70	97.72	100.00

(1) Shinkolobwe, Congo; loss on ignition taken as H_2O . (2) Do.; corresponding to $\text{Pb}_{3.31}(\text{UO}_2)_{5.69}(\text{PO}_4)_{4.24}\text{O}_4 \cdot 13.07\text{H}_2\text{O}$. (3) $\text{H}_2\text{Pb}_3(\text{UO}_2)_6\text{O}_4(\text{PO}_4)_4 \cdot 12\text{H}_2\text{O}$.

Occurrence: A rare secondary mineral formed by alteration of uraninite or earlier-formed secondary uranium minerals.

Association: Torbernite, parsonsite, dumontite, uraninite (Shinkolobwe, Congo); bergenite, torbernite, autunite, "uranocircite", barian uranophane (The Streuberg, Germany); uranosphaerite, wölsendorfit, uraninite (Kerségalec-en-Lignol, France).

Distribution: From Shinkolobwe and Swambo, Katanga Province, Congo (Shaba Province, Zaire). At Wölsendorf, Bavaria, and on the Streuberg, near Bergen, and at Schneeberg, Saxony, Germany. From La Faye, near Grury, Saône-et-Loire, and at Kerségalec-en-Lignol, Morbihan, France. From Jáchymov (Jachimsthal), Czech Republic. At Urgeirica, Portugal. In the Takwa and Lac Indicateur areas, Quebec, Canada. From the Ranger mine, Jabiru, Northern Territory, Australia.

Name: Honoring Dr. Jean Dewindt, Belgian geologist.

Type Material: Royal Museum of Central Africa, Tervuren, Belgium, RGM6433; Natural History Museum, Paris, France, 122.106.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 875; 928 [renardite = dewindtite]. (2) Frondel, C. (1958) Systematic mineralogy of uranium and thorium. U.S. Geol. Sur. Bull. 1064, 230–232. (3) Piret, P., J. Piret-Meunier, and M. Deliens (1990) Composition chimique et structure cristalline de la dewindtite $\text{Pb}_3[\text{H}(\text{UO}_2)_3\text{O}_2(\text{PO}_4)_2]_2 \cdot 12\text{H}_2\text{O}$. Eur. J. Mineral., 2, 399–405 (in French with English abs.). (4) Hogarth, D.D. and E.W. Nuffield (1954) Studies of radioactive compounds: VII – phosphuranylite and dewindtite. Amer. Mineral., 39, 444–447.

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