

Uranotungstite **$\text{Fe}(\text{UO}_2)_2(\text{WO}_4)(\text{OH})_4 \cdot 12\text{H}_2\text{O}$**

Crystal Data: Monoclinic. *Point Group:* 2/m. Lathlike crystals, flattened on {010} in spherulitic aggregates, to 0.3 mm; as crusts.

Physical Properties: *Cleavage:* {010}, perfect. *Fracture:* Irregular. Hardness = ~2
D(meas.) = >4.03 D(calc.) = 4.27 Radioactive.

Optical Properties: Translucent. *Color:* Yellow, orange, pale brown. *Streak:* Yellow. *Luster:* Dull.
Optical Class: Biaxial (-). *Pleochroism:* X = nearly colorless, Y = Z = yellow. *Orientation:* X = b.
Dispersion: $r > v$. $\alpha = 1.682(5)$ $\beta = 1.845(5)$ $\gamma = 1.855(5)$ $2V(\text{meas.}) = 42^\circ$

Cell Data: *Space Group:* $P2_1/m$. $a = 6.318(5)$ $b = 7.388(9)$ $c = 13.71(4)$ $\beta = 99.04(13)^\circ$ $Z = 2$

X-ray Powder Pattern: Clara mine, Germany.

6.96 (10), 3.21 (7), 4.60 (6), 3.46 (5), 2.77 (4), 1.970 (4), 3.01 (3)

Chemistry:	(1)
UO ₃	51.35
WO ₃	20.65
FeO	1.67
PbO	5.49
<u>BaO</u>	<u>4.76</u>
Total	83.96

(1) Menzenschwand, Germany; average electron microprobe analysis, H₂O and O:OH calculated from structure; corresponds to $(\text{Ba}_{0.35}\text{Pb}_{0.27})_{\Sigma=0.62}[(\text{U}^{6+}\text{O}_2)_2(\text{W}^{6+}_{0.98}\text{Fe}^{3+}_{0.26}\square_{0.75})\text{O}_{4.7}(\text{OH})_{2.5}(\text{H}_2\text{O})_{1.75}](\text{H}_2\text{O})_{1.67}$.

Occurrence: A rare secondary mineral formed in polymetallic base metal deposits.

Association: Metauranocircite, metaheinrichite, bergenite, metatorbernite, metazeunerite, schoepite, quartz.

Distribution: From Menzenschwand and the Clara mine, near Oberwolfach, Black Forest, Germany.

Name: For its content of URANium and TUNGsten.

Type Material: University of Stuttgart, Stuttgart, Germany.

References: (1) Walenta, K. (1985) Uranotungstit, ein neues sekundäres Uranmineral aus dem Schwarzwald. *Tschermaks Mineral. Petrog. Mitt.*, 34, 25-34 (in German with English abs.).
(2) (1986) *Amer. Mineral.*, 71, 1547 (abs. ref. 1). (3) Steciuk, G., U. Kolitsch, V. Goliáš, R. Škoda, J. Plášil, and F.X. Schmidt (2022) Uranotungstite, the only natural uranyl tungstate: Crystal structure revealed from 3D electron diffraction. *Amer. Mineral.*, 107, 1709-1716.