

Metazeunerite

$\text{Cu}(\text{UO}_2)_2(\text{AsO}_4)_2 \cdot 8\text{H}_2\text{O}$

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Crystal Data: Tetragonal. *Point Group:* $4/m$ (with $4/m\ 2/m\ 2/m$ pseudosymmetry). As rectangular crystals, tabular on {001}, with {010}, to 3.5 cm, or dipyrarnidal, terminated by {001}; generally as foliated or micaceous aggregates.

Physical Properties: *Cleavage:* Perfect on {001}; distinct on {010}. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 2–2.5 $D(\text{meas.}) = 3.64$ $D(\text{calc.}) = [3.87]$ Fluoresces pale yellow-green under LW and SW UV. Radioactive.

Optical Properties: Transparent to translucent. *Color:* Grass-green to emerald-green. *Luster:* Vitreous, pearly on {001}.

Optical Class: Uniaxial (-). *Pleochroism:* $O = \text{green}$; $E = \text{pale green, bluish, colorless}$.
 $\omega = 1.643\text{--}1.651$ $\epsilon = 1.623\text{--}1.635$

Cell Data: *Space Group:* $P4_2/n$. $a = 7.10$ $c = 17.42$ $Z = 2$

X-ray Powder Pattern: Anton mine, Germany.
8.86 (10), 3.73 (10), 5.57 (8), 3.30 (8), 3.57 (7), 5.10 (6), 1.561 (6)

Chemistry:	(1)	(2)
	UO_3	55.86
As_2O_5	20.94	22.41
CuO	7.49	7.76
H_2O	15.68	14.05
Total	99.97	100.00

(1) Schneeberg, Germany. (2) $\text{Cu}(\text{UO}_2)_2(\text{AsO}_4)_2 \cdot 8\text{H}_2\text{O}$.

Mineral Group: Meta-autunite group.

Occurrence: An uncommon secondary mineral in the oxidized zone of arsenic-bearing hydrothermal uranium deposits.

Association: Torbernite, trögerite, walpurgite, uranospinite, erythrite, mimetite, pharmacosiderite, olivenite, chalcophyllite.

Distribution: Many minor localities, but few for good specimens. Well-studied material from: in Germany, at the Weisser Hirsch mine, Neustädtel-Schneeberg, Saxony; in the Anton mine, Heubachtal, near Schiltach, Black Forest. From Wheal Gorland, Gwennap, and at Wheals Owles and Edward and the Geevor mine, St. Just, Cornwall, England. From the Cap Garonne mine, near le Pradet, Var, France. In the USA, in the Centennial Eureka mine, Tintic district, Juab Co., Utah; from the Majuba Hill mine, Antelope district, Pershing Co., Nevada; large crystals at the Grandview mine, Grand Canyon, Coconino Co., Arizona. From Talmessi, Anarak, Iran. In the Bali Lo copper prospect, 11 km west-southwest of Ashburton Downs homestead, Capricorn Range, Western Australia; at the Dome Rock copper mine, about 40 km northwest of Mingary, South Australia; and in the South Alligator Valley, Northern Territory, Australia. Large thick crystals from the Pedra Preta mine, Brumado, Bahia, Brazil.

Name: The prefix *meta* indicates the dehydration product of *zeunerite*.

Type Material: State Museum of Mineralogy and Geology, Dresden; Mining Academy, Freiberg, Germany, 21730.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 993–994. (2) Frondel, C. (1958) Systematic mineralogy of uranium and thorium. U.S. Geol. Sur. Bull. 1064, 215–220. (3) Walenta, K. (1964) Beiträge zur Kenntnis seltener Arsenatminerale unter besonderer Berücksichtigung von Vorkommen des Schwarzwaldes. 2. Folge. Tschermarks Mineral. Petrog. Mitt., 9, 111–174, esp. 115–135 (in German). (4) Ross, M., H.T. Evans, Jr., and D.E. Appleman (1964) Studies of the torbernite minerals (II): the crystal structure of meta-torbernite. Amer. Mineral., 49, 1603–1621. (5) de Abeledo, M.E.J., E.E. Galloni, and M.A.R. de Benyacar (1968) Electron diffraction data for some members of the metatorbernite group. Amer. Mineral., 53, 1028–1033.

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