

Metauranocircite

Ba(UO₂)₂(PO₄)₂·8H₂O

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Crystal Data: Tetragonal. *Point Group:* 4/*m*. As rectangular tabular crystals flattened on {001}, and modified by {100} and {101}, to 2 cm; in subparallel growths and fanlike aggregates. *Twinning:* Lamellar twinning || {100} and {010} observed optically.

Physical Properties: *Cleavage:* Perfect on {001}; distinct on {010}. *Tenacity:* Thin plates are flexible. Hardness = 2–2.5 D(meas.) = 3.94 D(calc.) = 3.95 Radioactive. Fluorescent green under SW and LW UV.

Optical Properties: Transparent to translucent. *Color:* Yellow, yellow-green. *Luster:* Waxy, pearly on {001}.

Optical Class: Biaxial (-). *Pleochroism:* X = colorless; Y = Z = pale canary yellow.

Orientation: X = c. *Dispersion:* r > v. α = 1.610 β = 1.621–1.623 γ = 1.622–1.623 2V(meas.) = 0°–45°

Cell Data: *Space Group:* P4₂/n. a = 6.9526(5) c = 17.6342(9) Z = 2

X-ray Powder Pattern: Streuberg, Bergen, Germany. (ICDD 36-407). 8.82 (100), 4.410 (55), 3.723 (50), 2.708 (20), 2.205 (18), 1.4621 (18), 5.46 (15)

Chemistry:

	(1)	(2)
UO ₃	56.86	56.56
P ₂ O ₅	15.06	14.03
BaO	14.57	15.16
H ₂ O	13.99	14.25
Total	100.48	100.00

(1) The Falkenstein, Germany. (2) Ba(UO₂)₂(PO₄)₂·8H₂O.

Mineral Group: Meta-autunite group.

Occurrence: Typically a secondary mineral in the oxidized zone of some uranium deposits; may be primary in low-temperature veins.

Association: Autunite, torbernite.

Distribution: In Germany, from Bergen, near the Falkenstein, Vogtland, and from Schwarzenberg and Aue, Saxony; at Wölsendorf, Bavaria; and from Menzenschwand, Black Forest. A uranium ore at Cayrou, Entraygues, Aveyron, France. From Vinaninkarena, near Antsirabe, Madagascar. At the Mounana mine, Franceville, Gabon. In the USA, in the Honeycomb Hills, Juab Co., Utah; the Wind River Basin, Fremont Co., Wyoming; and from Annie Creek, Lawrence Co., South Dakota; found near Cameron, Coconino Co., Arizona.

Name: The prefix *meta* indicates the dehydration product of “uranocircite”, named for its content of uranium, and from the Greek for *falcon*, for its occurrence at the Falkenstein, Germany.

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

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana’s system of mineralogy, (7th edition), v. II, 987–988 [uranocircite = metauranocircite]. (2) Nuffield, E.W. and I.H. Milne (1953) Studies of radioactive compounds: VI – metauranocircite. Amer. Mineral., 38, 476–488. (3) Frondel, C. (1958) Systematic mineralogy of uranium and thorium. U.S. Geol. Sur. Bull. 1064, 211–215. (4) Walenta, K. (1963) Über die Barium-Uranylphosphatminerale Uranocircit I, Uranocircite II, Meta-uranocircit I und Meta-Uranocircite II von Menzenschwand im südlichen Schwarzwald. Jahresheft geol. Landesamt Baden-Württemberg, 6, 113–135 (in German).

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