

Crystal Data: Monoclinic. *Point Group:* 2/m. In concentric, radiated to spherulitic aggregates, to 0.5 mm, of crystals elongated along [001].

Physical Properties: *Cleavage:* {100}. Hardness = 2-3 D(meas.) = 6.36; 6.89 D(calc.) = 7.731
Radioactive.

Optical Properties: Semitransparent. *Color:* Yellow-orange, golden to reddish orange, brick-red.

Streak: Yellow. *Luster:* Greasy.

Optical Class: Biaxial (+). *Orientation:* X = a; Y = b; Z = c. *Dispersion:* r < v, strong.

$\alpha = 1.955-1.959$ $\beta = 1.981-1.985$ $\gamma = 2.05-2.060$ 2V(meas.) = Large. 2V(calc.) = 56°

Cell Data: *Space Group:* P2₁/n. a = 7.559(2) b = 7.811(2) c = 7.693(2) $\beta = 92.88(3)^\circ$ Z = 4

X-ray Powder Pattern: Schneeberg, Germany.

3.16 (10), 1.83 (8), 3.87 (7), 5.25 (6), 3.47 (6), 1.90 (5), 4.37 (4)

Chemistry:	(1)	(2)	(3)
UO ₃	50.88	52.62	52.38
Bi ₂ O ₃	44.34	43.46	42.67
<u>H₂O</u>	<u>4.75</u>	<u>3.59</u>	<u>4.95</u>
Total	99.97	99.67	100.00

(1-2) Schneeberg, Germany. (3) Bi₂U₂O₉·3H₂O.

Occurrence: An oxidation product of uraninite in a Co-Ni-Bi-bearing hydrothermal vein (Schneeberg, Germany).

Association: Walpurgite, uranospinite, uranospathite, asselbornite, trögerite, zeunerite, erythrite, cobaltian wad (Schneeberg, Germany); uraninite, wölsendorfite, renardite (Kersegelec, France).

Distribution: From the Walpurgis vein, Weisser Hirsch mine, Neustädtl, near Schneeberg, Saxony and from the Clara mine, Black Forest, Germany. At Kersegalec, near Lignol, Morbihan, France.

Name: For URANIum in the composition, and the Greek for *sphere*, for the typical habit.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 631. (2) Frondel, C. (1958) Systematic mineralogy of uranium and thorium. U.S. Geol. Sur. Bull. 1064, 98-99. (3) Protas, J. (1959) Contribution à l'étude des oxydes d'uranium hydratés. Bull. Soc. fr. Minéral., 82, 239-272, esp. 265-268. (4) Hughes, K.-A., P.C. Burns, and U. Kolitsch (2003) The crystal structure and crystal chemistry of uranosphaerite, Bi(UO₂)O₂OH. Can. Mineral., 41, 677-685. (5) (2004) Amer. Mineral., 89(1), 252 (abs. ref. 4). (6) Colmenero, F., J. Plášil, and I. Němec (2020) Uranosphaerite: Crystal structure, hydrogen bonding, mechanics, infrared and Raman spectroscopy and thermodynamics. J. Physics and Chem. Solids, 141, 109400.