

Crystal Data: Orthorhombic. *Point Group:* n.d. As crusts of prismatic crystals to 0.15 μm.

Physical Properties: *Cleavage:* None. *Fracture:* Irregular. *Tenacity:* n.d. Hardness = ~ 2
D(meas.) = n.d. D(calc.) = 5.14

Optical Properties: Opaque to translucent. *Color:* Yellow, yellow-brown or orange-brown.
Streak: Yellow. *Luster:* Vitreous.
Optical Class: Biaxial (-). $\alpha = 1.733(3)$ β is close to γ $\gamma = 1.800(5)$ $2V(\text{meas.}) = \text{n.d.}$
Crystals have positive elongation and straight extinction.

Cell Data: *Space Group:* $P2_12_12_1$, $Pna2_1$ or $Pnma$. $a = 13.10(1)$ $b = 13.76(1)$ $c = 14.50(1)$
 $Z = 24$

X-ray Powder Pattern: Menzenschwand, Germany.
7.92 (10), 7.25 (9), 3.27 (9), 3.57(7), 5.96 (4), 1.992 (4), 4.02 (3)

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|-------------------|--------|
| Chemistry: | (1) |
| UO ₃ | 88.58 |
| PbO | 1.31 |
| BaO | 0.17 |
| CaO | 0.13 |
| H ₂ O | [9.81] |
| Total | 100.00 |

(1) Menzenschwand, Germany; average of 15 electron microprobe analyses, H₂O by difference, OH and H₂O confirmed by Raman spectroscopy; corresponding to U_{1.04}Pb_{0.02}Ca_{0.01}Ba_{<0.01}H_{3.67}O₅.

Occurrence: A secondary mineral formed by weathering.

Association: Quartz, uraninite, billietite, studtite, rutherfordine, joliotite, goethite, hematite, barite (Menzenschwand); uraninite, anglesite, dumontite (Sherana mine); uraninite, richetite, antlerite, zeunerite, metazeunerite, nováčekite, langite (Joachimsthal).

Distribution: Krunkelbach Valley near Menzenschwand, Southern Black Forest, Baden Württemberg, Germany, from the El Sherana Mine, South-Alligator-River-District, Northern Territory, Australia, also at Joachimsthal, Czech Republic.

Name: Honors German physicist Werner Heisenberg (1901-1976).

Type Material: Staatliches Museum für Naturkunde, Stuttgart, Germany.

References: (1) Walenta, K. and T. Theye (2012) Heisenbergite, a new uranium mineral from the uranium deposit of Menzenschwand in the Southern Black Forest, Germany. Neues Jahrbuch für Mineralogie-Abhandlungen, 189/2, 117-123. (2) (2015) Amer. Mineral., 100, 2007-2008 (abs. ref. 1).