

## Metakirchheimerite



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**Crystal Data:** Tetragonal. *Point Group:* n.d. As square tabular crystals, to 50  $\mu\text{m}$ .

**Physical Properties:** *Cleavage:* Perfect on {001}; good on {010}. Hardness = 2–2.5  
D(meas.) = > 3.33 D(calc.) = [4.11] Radioactive.

**Optical Properties:** Transparent to translucent. *Color:* Pale rose to flesh-pink; colorless in transmitted light. *Luster:* Pearly on {001}.

*Optical Class:* Uniaxial (-), anomalously biaxial (-).  $\omega = 1.644(2)$   $\epsilon = 1.617(2)$   
 $2V(\text{meas.}) = 0^\circ\text{--}20^\circ$

**Cell Data:** *Space Group:* n.d.  $a = 6.98$   $c = 16.93$   $Z = [2]$

**X-ray Powder Pattern:** Sophia mine, Germany; indistinguishable from metakahlerite.  
8.78 (10), 3.57 (10), 5.08 (6), 4.30 (6), 3.01 (6), 3.42 (5), 2.52 (5)

**Chemistry:** (1) Sophia mine, Germany; no quantitative analysis has been performed, qualitatively major Co, U, As and minor Fe, Ni were confirmed by microchemical analysis.

**Mineral Group:** Meta-autunite group.

**Occurrence:** A very rare secondary mineral formed in the oxidized zone of a U–As deposit.

**Association:** Metakahlerite, nováčekite, metaheinrichite, erythrite, uraninite.

**Distribution:** From the dump of the Sophia mine, near Wittichen, Black Forest, Germany.

**Name:** The prefix *meta* indicates membership of this species in the *meta-autunite* group; the name honors Professor Franz Waldemar Kirchheimer (1911– ), former Director of the Geological Survey of Baden-Württemberg, Germany.

**Type Material:** n.d.

**References:** (1) Walenta, K. (1958) Die sekundären Uranmineralien des Schwarzwaldes. Jahresheft geol. Landesamt Baden-Württemberg, 3, 17–51, esp. 34–36 (in German).  
(2) (1959) Amer. Mineral., 44, 466 (abs. ref. 1). (3) Vochten, R. and A. Goeminne (1984) Synthesis, crystallographic data, solubility, and electrokinetic properties of meta-zeunerite, meta-kirchheimerite and nickel-uranylarsenate. Phys. Chem. Minerals, 11, 95–100.