

**Thometzekite****Pb(Cu, Zn)<sub>2</sub>(AsO<sub>4</sub>)<sub>2</sub>(OH, H<sub>2</sub>O)<sub>2</sub>**

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**Crystal Data:** Monoclinic or triclinic. *Point Group:*  $2/m$  or  $\bar{1}$ . Thin, platy to wedge-shaped crystals, to 20  $\mu\text{m}$ , in crusts.

**Physical Properties:** Hardness = 4.5 D(meas.) = n.d. D(calc.) = 5.21

**Optical Properties:** Semitransparent. *Color:* Bluish green to green, greenish yellow; pale gray in transmitted light. *Luster:* Earthy.

*Optical Class:* Biaxial.  $n = 1.855$

**Cell Data:** *Space Group:*  $C2/m$ .  $a = 9.077(8)$   $b = 6.300(8)$   $c = 7.661(8)$   
 $\beta = 116.99(8)^\circ$   $Z = 2$

**X-ray Powder Pattern:** Tsumeb, Namibia.

3.273 (10), 4.694 (8), 2.961 (7), 2.870 (7), 2.516 (7), 2.729 (6), 4.495 (5)

**Chemistry:**

	(1)	(2)
SO <sub>3</sub>		9.00
As <sub>2</sub> O <sub>5</sub>	33.13	24.77
SiO <sub>2</sub>	0.06	
Fe <sub>2</sub> O <sub>3</sub>		0.32
Al <sub>2</sub> O <sub>3</sub>		0.55
FeO	0.30	
CuO	19.18	19.44
ZnO	5.63	5.52
PbO	36.04	36.10
CaO	0.18	
H <sub>2</sub> O	4.9	[4.72]
Total	99.42	[100.42]

(1) Tsumeb, Namibia; by electron microprobe, average of six analyses, total Fe as FeO, H<sub>2</sub>O by TGA. (2) Do.; by electron microprobe, average of 26 analyses, total Fe as Fe<sub>2</sub>O<sub>3</sub>, confirmed by IR and Mössbauer spectroscopy, H<sub>2</sub>O calculated from theory; corresponds to Pb<sub>0.99</sub>(Cu<sub>1.50</sub>Zn<sub>0.41</sub>Al<sub>0.07</sub>Fe<sub>0.02</sub>)<sub>Σ=2.00</sub>[(AsO<sub>4</sub>)<sub>1.32</sub>(SO<sub>4</sub>)<sub>0.69</sub>]<sub>Σ=2.01</sub>[(H<sub>2</sub>O)<sub>1.23</sub>(OH)<sub>0.74</sub>]<sub>Σ=1.97</sub>. (3) Gold Hill, Utah, USA; analysis not given, stated to correspond to Pb<sub>0.98</sub>(Cu<sub>1.14</sub>Fe<sub>0.80</sub>Zn<sub>0.02</sub>)<sub>Σ=1.96</sub>(AsO<sub>4</sub>)<sub>2.00</sub>(OH, H<sub>2</sub>O)<sub>2</sub>.

**Mineral Group:** Tsumcorite group.

**Occurrence:** A very rare secondary mineral from an oxidized zone in a dolostone-hosted hydrothermal polymetallic ore deposit (Tsumeb, Namibia).

**Association:** Anglesite, mimetite, gypsum (Tsumeb, Namibia).

**Distribution:** From Tsumeb, Namibia. At Gold Hill, Tooele Co., Utah, USA. From Moldava, 20 km northwest of Teplice, Czech Republic. At the Clara mine, near Oberwolfach, Black Forest, Germany. From Broken Hill, New South Wales, Australia.

**Name:** To honor Wilhelm Thometzek, former General Manager of the Tsumeb mining company.

**Type Material:** Mineralogical-Petrological Institute, Heidelberg University, Heidelberg, Germany.

**References:** (1) Schmetzer, K., B. Nuber, and O. Medenbach (1985) Thometzekite, a new mineral from Tsumeb, Namibia, and symmetry relation in the tsumcorite-helmutwinklerite family. *Neues Jahrb. Mineral., Monatsh.*, 446–452. (2) (1988) *Amer. Mineral.*, 73, 931 (abs. ref. 1). (3) Kokinos, M. and W.S. Wise (1993) The Gold Hill mine, Tooele County, Utah. *Mineral. Record*, 24, 11–22. (4) Krause, W., K. Belendorff, H.-J. Bernhardt, C. McCammon, H. Effenberger, and W. Mikenda (1998) Crystal chemistry of the tsumcorite-group minerals. New data on ferrilotharmeyerite, tsumcorite, thometzekite, mounanaite, helmutwinklerite, and a redefinition of gartrellite. *Eur. J. Mineral.*, 10, 179–206.

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