Arsentsumebite $Pb_2Cu(AsO_4)(SO_4)(OH)$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As distorted crystals, to 2 mm, in aggregates and crusts. *Twinning:* Complex, observed.

Physical Properties: *Fracture:* [Uneven] (by analogy to tsumebite). *Tenacity:* [Brittle.] Hardness = [3.5] D(meas.) = 6.46 D(calc.) = 6.39

Optical Properties: Semitransparent. *Color:* Grass-green to apple-green. *Luster:* [Vitreous.] *Optical Class:* Biaxial (–). *Pleochroism:* X = pale pistachio-green; $Y = Z$ = bottle-green. $\alpha = 1.970$ $\beta = 1.992$ $\gamma = 2.011$ 2V(meas.) = 88°

Cell Data: *Space Group:* $P2_1/m$. $a = 8.85$ $b = 5.92$ $c = 7.84$ $\beta = 112.6°$ Z = 2

X-ray Powder Pattern: Tsumeb, Namibia; close to tsumebite. (ICDD 25-456). 3.25 (100), 4.80 (65), 2.76 (60), 3.64 (46), 2.96 (40), 3.01 (32), 2.094 (30)

Chemistry:

	(1)	(2)
SO_3	9.36	10.97
P_2O_5	0.55	
As_2O_5	13.45	15.74
CuO	10.61	10.90
PbO	61.91	61.16
H_2O	1.58	1.23
Total	97.46	100.00

(1) Tsumeb, Namibia; by electron microprobe, As_2O_5 originally given as As_2O_3, H_2O by CHN analyzer. (2) $Pb_2Cu(AsO_4)(SO_4)(OH)$.

Mineral Group: Brackebuschite group.

Occurrence: A rare mineral in the oxidized zone of a dolostone-hosted hydrothermal polymetallic ore deposit (Tsumeb, Namibia); in a hydrothermal polymetallic barite–fluorite deposit (Clara mine, Germany).

Association: Malachite, cerussite, azurite, smithsonite, mimetite, bayldonite, conichalcite, duftite, quartz, iron oxide (Tsumeb, Namibia).

Distribution: From Tsumeb, Namibia. In the Clara mine, near Oberwolfach, Black Forest, Germany. At Moldava, 20 km northwest of Teplice, Czech Republic. From the Buckhorn mine, Red Cloud district, Lincoln Co., New Mexico, USA. From the From the Anticline prospect, 11 km west-southwest of Ashburton Downs homestead, Capricorn Range, Western Australia, and at Broken Hill, New South Wales, Australia.

Name: As the *arsenate* analog of *tsumebite*.

Type Material: Harvard University, Cambridge, Massachusetts, USA, 134586.

References: (1) Bideaux, R.A., M.C. Nichols, and S.A. Williams (1966) The arsenate analog of tsumebite, a new mineral. Mineral. Soc. Amer. Annual Meeting. Amer. Mineral., 51, 258–259 (abs.). (2) Schlüter, J., G. Gebhard, and G. Wappler (1994) Tsumebit oder Arsentsumebit aus Tsumeb? Lapis, 19(10), 31–34, 86 (in German).