

**Crystal Data:** Triclinic. *Point Group:*  $\bar{1}$  or 1. As small crystals to 1 mm, more commonly massive.

**Physical Properties:** *Cleavage:* Pronounced on {001}. Hardness = n.d. VHN = n.d. D(meas.) = n.d. D(calc.) = 5.71

**Optical Properties:** Opaque. *Color:* Lead-gray. *Luster:* Metallic.  
R<sub>1</sub>-R<sub>2</sub>: n.d.

**Cell Data:** *Space Group:*  $P\bar{1}$  or  $P1$ .  $a = 9.215$   $b = 8.524$   $c = 7.980$   $\alpha = 55^\circ 59(6)'$   
 $\beta = 62^\circ 30(6)'$   $\gamma = 69^\circ 24(6)'$   $Z = 2$

**X-ray Powder Pattern:** Binntal, Switzerland.  
3.339 (100), 2.834 (50), 2.879 (30), 2.667 (30), 4.555 (25), 4.233 (25), 2.985 (25)

Chemistry:	(1)	(2)
Pb	25.2	26.38
Tl	26.	26.03
Cu	6.9	8.09
Ag	2.7	
As	20.5	19.08
S	19.	20.42
Total	100.3	100.00

(1) Binntal, Switzerland; by electron microprobe. (2) PbTlCuAs<sub>2</sub>S<sub>5</sub>.

**Occurrence:** Overgrowing other lead sulfosalts.

**Association:** Dufrenoyite, rathite, pyrite.

**Distribution:** In Switzerland, at the Lengenbach quarry, Binntal, Valais.

**Name:** For Wallis, the German name for the Swiss Canton in which the Lengenbach quarry is located.

**Type Material:** Mineralogical-Petrographical Institute, University of Bern, Bern, Switzerland, L2533-63.

**References:** (1) Nowacki, W. (1965) Über einige Mineralfunde aus dem Lengenbach (Binnatal, Kt. Wallis). *Eclogae Geol. Helveticae*, 58, 403–406 (in German). (2) (1966) *Amer. Mineral.*, 51, 532 (abs. ref. 1). (3) Nowacki, W., G. Burri, P. Engel, and F. Marumo (1965) Über einige Mineralstufen aus dem Lengenbach (Binnatal) II. *Neues Jahrb. Mineral., Monatsh.*, 43–48 (in German). (4) (1969) *Amer. Mineral.*, 54, 1497 (abs. ref. 3). (5) Takéuchi, Y., M. Ohmasa, and W. Nowacki (1968) The crystal structure of wallisite, PbTlCuAs<sub>2</sub>S<sub>5</sub>, the Cu analogue of hatchite, PbTlAgAs<sub>2</sub>S<sub>5</sub>. *Zeits. Krist.*, 127, 349–365.