

# Furutobeite

# (Cu, Ag)<sub>6</sub>PbS<sub>4</sub>

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**Crystal Data:** Monoclinic. *Point Group:*  $m$ , 2, or  $2/m$ . Granular, to 300  $\mu\text{m}$ ).

**Physical Properties:** Hardness = n.d. VHN = 100–108 (25 g load). D(meas.) = n.d.  
D(calc.) = 6.74

**Optical Properties:** Opaque. *Color:* Gray, with a creamy yellow tint in reflected light.  
*Luster:* Metallic. *Pleochroism:* Weak. *Anisotropism:* Moderate, from pale yellow to dark brown.  
 $R_1$ – $R_2$ : (400) 35.7–34.2, (420) 35.2–34.3, (440) 35.0–34.5, (460) 34.7–34.9, (480) 34.5–35.3, (500)  
34.4–35.6, (520) 34.4–35.9, (540) 34.6–36.2, (560) 34.7–36.3, (580) 34.8–36.4, (600) 34.9–36.4, (620)  
34.9–36.3, (640) 34.9–36.3, (660) 34.8–36.2, (680) 34.5–36.1, (700) 34.3–36.0

**Cell Data:** *Space Group:*  $Cm$ ,  $C2$ , or  $C2/m$ .  $a = 20.025(13)$   $b = 3.963(2)$   $c = 9.705(4)$   
 $\beta = 101.57(4)^\circ$   $Z = 4$

**X-ray Powder Pattern:** Furutobe mine, Japan.  
2.50 (100), 2.95 (90), 2.55 (70), 3.43 (50), 2.61 (50), 2.14 (40), 2.09 (40)

Chemistry:	(1)	(2)	(3)
Cu	40.4	42.4	41.75
Ag	15.7	13.9	14.17
Pb	26.6	27.6	27.23
S	16.8	16.0	16.85
Total	99.5	99.9	100.00

(1) Furutobe mine, Japan; by electron microprobe, average of seven analyses; corresponds to  $(\text{Cu}_{4.85}\text{Ag}_{1.11})_{\Sigma=5.96}\text{Pb}_{0.98}\text{S}_{4.00}$ . (2) Tsumeb, Namibia; by electron microprobe, corresponds to  $(\text{Cu}_{5.35}\text{Ag}_{1.03})_{\Sigma=6.38}\text{Pb}_{1.07}\text{S}_{4.00}$ . (3)  $(\text{Cu, Ag})_6\text{PbS}_4$  with Cu:Ag = 5:1.

**Occurrence:** In veinlets of stromeyerite that cut bornite in the Kuroko zone of a stratabound, Kuroko-type, massive sulfide deposit (Furutobe mine, Japan).

**Association:** Stromeyerite, bornite, galena, sphalerite, tennantite, digenite, argentian gold.

**Distribution:** In Japan, in Akita Prefecture, in the Daikokuzawa-Higashi deposit of the Furutobe mine [TL], and the No. 11 deposit of the Shakanai mine, near Ohdate City. At Tsumeb, Namibia. In the Erasmus mine, Leogang, Salzburg, Austria.

**Name:** For the type locality at the Furutobe mine, Japan.

**Type Material:** Institute of Mineralogy, Petrology and Economic Geology, Faculty of Science, Tohoku University, Sendai, Japan.

**References:** (1) Sugaki, A., A. Kitakaze, and Y. Odashima (1981) Furutobeite, a new copper–silver–lead sulfide mineral. Bull. Minéral., 104, 737–741. (2) (1982) Amer. Mineral., 67, 1075 (abs. ref. 1). (3) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 181.