

**Crystal Data:** Isometric. *Point Group:* 23. As fine-grained aggregates.

**Physical Properties:** *Tenacity:* Slightly sectile. Hardness = 2.5 VHN = n.d.  
D(meas.) = 5.92(2) D(calc.) = 5.90

**Optical Properties:** Opaque. *Color:* Dark lead-gray to black. *Luster:* Metallic.

**Cell Data:** *Space Group:* P2<sub>1</sub>3. *a* = 10.4760(8) *Z* = 4

**X-ray Powder Pattern:** Tintic, Utah, USA.

3.05 (10), 3.19 (7), 3.53 (6), 2.83 (6), 2.49 (6), 3.34 (5), 6.11 (4)

<b>Chemistry:</b>	(1)	(2)
Ag	75.59	72.84
Cu	0.02	0.25
Fe	0.06	0.06
As	5.73	6.32
Sb	1.50	1.53
S	16.28	18.73
rem.	0.61	
Total	99.79	99.73

(1) Tintic, Utah, USA; corresponding to Ag<sub>7</sub>(As<sub>0.86</sub>Sb<sub>0.14</sub>)<sub>Σ=1.00</sub>S<sub>6</sub>. (2) Tintic, Utah, USA; average of 6 electron microprobe analyses; corresponds to (Ag<sub>6.94</sub>Cu<sub>0.04</sub>Fe<sub>0.01</sub>)<sub>Σ=6.99</sub>(As<sub>0.87</sub>Sb<sub>0.13</sub>)<sub>Σ=1.00</sub>S<sub>6.01</sub>.

**Occurrence:** Believed to have occurred in a body of high-grade hydrothermal silver ore.

**Association:** Acanthite, tennantite, bismuthinite, galena, pyrite.

**Distribution:** From the North Lily mine, East Tintic district, Utah Co., Utah, USA.

**Name:** For Paul Billingsley (1887-1962), mining geologist, who discovered the North Lily mine, and collected the type material.

**Type Material:** National School of Mines, Paris, France; Harvard University, Cambridge, Massachusetts (#110530) and the National Museum of Natural History, Washington, D.C., USA. (R18987); and the collection of the RRUFF project (deposition no. R070350; <http://rruff.info/R070350>).

**References:** (1) Frondel, C. and R.M. Honea (1968) Billingsleyite, a new silver sulfosalts. *Amer. Mineral.*, 53, 1791-1798. (2) Bindi, L., R.T. Downs, and S. Menchetti (2010) The crystal structure of billingsleyite, Ag<sub>7</sub>(As,Sb)S<sub>6</sub>, a sulfosalts containing As<sup>5+</sup>. *Can. Mineral.* 48, 155-162. (3) (2011) *Amer. Mineral.*, 96, 1661 (abs. ref. 2).