

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$ or $mm2$. As lath-shaped grains, to several mm; also massive and fine-granular.

Physical Properties: *Cleavage:* Noticeable along grain length; transverse and longitudinal partings. Hardness = ~ 2 VHN = 150–206 D(meas.) = n.d. D(calc.) = 7.58

Optical Properties: Opaque. *Color:* Lead-gray to iron-black; in polished section, white. *Luster:* Metallic. *Pleochroism:* Weak in air, weak to distinct in oil. *Anisotropism:* Weak in air, distinct to strong in oil, in gray to black.

R₁–R₂: (400) 42.6–46.6, (420) 43.0–47.3, (440) 43.4–48.0, (460) 43.6–48.2, (480) 43.5–48.2, (500) 43.2–48.0, (520) 42.9–47.7, (540) 42.4–47.2, (560) 42.0–46.7, (580) 41.7–46.2, (600) 41.4–46.0, (620) 41.2–45.7, (640) 41.1–45.6, (660) 41.0–45.5, (680) 40.9–45.3, (700) 40.9–45.1

Cell Data: *Space Group:* $Bbmm$, $Bb2_1m$, or $Bbm2$. $a = 13.448(2)$ $b = 44.386(1)$
 $c = 4.022(12)$ $Z = 8$

X-ray Powder Pattern: Treasure Vault mine, Colorado, USA.
2.035 (100), 3.207 (90), 2.923 (90), 2.878 (70), 2.873 (70), 2.786 (70), 2.382 (70)

Chemistry:	(1)	(2)	(3)
Ag	9.1	9.51	8.97
Cu	0.1		
Pb	29.0	18.27	34.47
Bi	45.9	55.26	40.56
S	16.7	16.96	16.00
Total	100.8	100.00	100.00

(1) Treasure Vault mine, Colorado, USA; by electron microprobe. (2) Ag₃Pb₃Bi₉S₁₈.
(3) Ag₃Pb₆Bi₇S₁₈.

Occurrence: Disseminated through quartz.

Association: Galena, matildite, hessite, aikinite, clausthalite, bismuthinite, lillianite.

Distribution: In the USA, in Colorado, from several mines on the Treasure Vault and parallel lodes, Geneva district [TL], Clear Creek, Park, and Summit Cos.; in the Lake City district, Hinsdale Co.; from Darwin, Inyo Co., California. In Scotland, from Corrie Buie, Meal nan Oighreag, Perthshire. At the Monteneme W–Sn deposit, Galice?? which Prov. or delete??, Spain. In the Toroiaga mine, Baia Borsa district, Romania. From the Zambarak Pb–Zn deposit, eastern Karamazar, Tajikistan. At the Kochbulak gold deposit, Chatkal-Kuramin Mountains, eastern Uzbekistan. In China, at the Shanhu W–Sn deposit, Guangxi Zhuangzu Autonomous Region, and in the Huangshaping Pb–Zn deposit, Guiyang, Hunan Province. Additional localities are known, but the species may be confused with other homologous sulfosalts.

Name: In honor of Dr. J.F.L. Schirmer, former Superintendent of the U.S. Mint, Denver, Colorado, USA.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 424. (2) Karup-Møller, S. (1973) New data on schirmerite. *Can. Mineral.*, 11, 952–957. (3) Makovicky, E. and S. Karup-Møller (1977) Chemistry and crystallography of the lillianite homologous series. *Neues Jahrb. Mineral., Abh.*, 131, 56–82. (4) Ramdohr, P. (1969) The ore minerals and their intergrowths, (3rd edition), 736–737.