

Crystal Data: Monoclinic. *Point Group:* $2/m$. Crystals short prismatic [201], to 3 mm, and pyramidal; striated on {100} || [0 $\bar{1}$ 0] and on { $\bar{1}$ 12} || [110]; curved crystals common.

Physical Properties: *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 2.5
VHN = 140–157 (100 g load). D(meas.) = 5.22 D(calc.) = 5.19

Optical Properties: Opaque. *Color:* Lead-gray; may tarnish steel-blue or bronzy white in polished section. *Streak:* Reddish gray. *Luster:* Metallic. *Anisotropism:* May be weak in bluish gray, moderate in blue-green to red-brown.

R₁–R₂: (400) 37.8–45.9, (420) 37.6–45.7, (440) 37.3–45.2, (460) 37.1–44.6, (480) 37.0–44.0, (500) 36.7–43.4, (520) 36.3–42.6, (540) 36.1–42.0, (560) 35.9–41.3, (580) 35.4–40.5, (600) 34.6–39.3, (620) 33.6–38.1, (640) 32.5–36.9, (660) 31.6–35.9, (680) 30.8–35.1, 700) 30.1–34.4

Cell Data: *Space Group:* $C2/c$. $a = 13.441$ $b = 11.726$ $c = 16.930$ $\beta = 94.71(8)^\circ$
Z = 4

X-ray Powder Pattern: Baia Mare, Romania.

3.89 (100), 3.20 (90), 2.919 (80), 2.822 (80), 3.23 (70), 2.749 (70), 6.25 (50)

Chemistry:

	(1)	(2)	(3)
Pb	28.29	30.6	29.93
Sb	47.50	47.0	46.91
S	24.10	23.1	23.16
rem.	0.19		
Total	100.08	100.7	100.00

(1) Baia Mare, Romania; remainder is SiO₂, corresponds to Pb_{2.95}Sb_{7.90}S_{15.00}. (2) Skalnøye deposit, Kazakhstan; [??by electron microprobe??] corresponds to Pb_{3.01}Sb_{8.02}S_{15.00}.

(3) Pb₃Sb₈S₁₅.

Occurrence: Of hydrothermal origin.

Association: Zinkenite, semseyite, fizélyite, andorite, freieslebenite, geocronite, boulangerite, jamesonite, cinnabar, sphalerite, marcasite, quartz, dolomite.

Distribution: In Romania, in the Baia Mare (Nagybánya) district, from the Dealul Crucii (Kereszthegy) [TL] and Herja mines. At Wet Swine Gill, Caldbeck Fells, Cumbria, England. In France, from Auliac, Cantal; Bodennec and Bournac, Montagne Noire, [Hérault??not=??so double check both Bodennec and Bournac localities??] Finistère. From the North Altyntopkan Pb–Zn skarn deposit, northwestern Karamazar, Tajikistan. At the Skalnøye Hg–Sb deposit, central Kazakhstan. In the Lake George antimony deposit, 40 km west of Fredricton, New Brunswick, Canada.

Name: For Dr. Béla Fülöpp (1863–1938), mineral collector of Hungary.

Type Material: The Natural History Museum, London, England, 1929,248.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 463–464. (2) Jambor, J.L. (1969) Sulfosalts of the plagionite group. *Mineral. Mag.*, 37, 442–446. (3) Nuffield, E.W. (1975) The crystal structure of fülöppite, Pb₃Sb₈S₁₅. *Acta Cryst.*, 31, 151–157. (4) Swinnea, J.S., A.J. Tenorio, and H. Steinfink (1985) Sb₁₀S₁₅, a Pb-free analog of fülöppite, Pb₃Sb₈S₁₅. *Amer. Mineral.*, 70, 1056–1058. (5) Vershkovskaya, O.V., D.K. Shcherbachev, O.Y. Yushko-Zakharova, L.S. Dubakina, and I.Y. Maksimiyuk (1984) First fülöppite find in mercury-antimony ore. *Doklady Acad. Nauk SSSR*, 264, 1203–1206 (in Russian). (6) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 180.

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