

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Crystals are slender prismatic and striated || [001], to 2 cm. Also massive, fibrous to compact.

Physical Properties: *Cleavage:* Perfect but interrupted on {010}; poor on {001}.
Fracture: Conchoidal. *Tenacity:* Brittle. Hardness = 2.5 VHN = n.d. D(meas.) = 6.36
D(calc.) = 6.35

Optical Properties: Opaque. *Color:* Blackish lead-gray; white in polished section.
Streak: Shining black. *Luster:* Bright metallic. *Pleochroism:* Weak. *Anisotropism:* Strong.
R₁–R₂: (400) 39.6–46.6, (420) 39.0–46.0, (440) 38.5–45.4, (460) 38.2–44.9, (480) 37.8–44.4, (500) 37.5–44.0, (520) 37.2–43.6, (540) 37.0–43.4, (560) 36.9–43.2, (580) 36.7–42.8, (600) 36.3–42.2, (620) 35.9–41.6, (640) 35.4–40.9, (660) 34.9–40.1, (680) 34.4–39.4, (700) 33.7–38.7

Cell Data: *Space Group:* *Pbnm*. $a = 11.343$ – 11.369 $b = 24.028$ – 24.080 $c = 4.126$ – 4.140
Z = 4

X-ray Powder Pattern: Bottino, Italy.
3.274 (10), 2.922 (9), 3.740 (8), 3.489 (6), 4.13 (5), 2.741 (4), 3.080 (3)

Chemistry:	(1)	(2)	(3)	(1)	(2)	(3)
Pb	61.52	62.44	61.51	Sb	19.53	19.47
Cu	1.20	1.52	1.45	S	17.59	17.58
				Total	99.84	100.02
						100.00

- (1) Bottino, Italy; by electron microprobe, corresponding to Pb_{12.99}Cu_{0.83}Sb_{7.02}S_{24.00}.
(2) Marmora, Canada; by electron microprobe. corresponding to Pb_{13.26}Cu_{1.05}Sb_{7.04}S_{24.00}.
(3) Pb₁₃CuSb₇S₂₄.

Occurrence: Uncommon, but widespread in hydrothermal veins, also contact metasomatic, volcanogenic sulfide, Cu–Mo porphyry, and rarely, Kuroko deposits.

Association: Galena, chalcopyrite, sphalerite, bournonite, cubanite, pyrite, pyrrhotite, boulangerite, jamesonite, franckeite, tetrahedrite, gudmundite.

Distribution: In Italy, from Bottino, about two km east of Seravezza, Tuscany [TL]. In England, at Shallowford Bridge, near South Molton, Devon, and in the Pengenna mine, St. Kew, the Pentire veins, St. Minver, and the Portquin veins, St. Endellion, Cornwall. From the Ochsenkopf, near Schwarzenberg, Saxony; at Goldkronach, in the Fichtelgebirge, Bavaria; and elsewhere in Germany. In the Maronia Cu–Mo deposit, 30 km southeast of Komotini, Greece. At Bournac, Montagne Noire, Finistère, France. From Hällefors, Sweden. At Aijala, Finland. In the Dodo mine, about 100 km west-northwest of Saranpaul, Subpolar Ural Mountains, Russia. At Pun-dung, North Korea. From Pingtoushan, Jiangxi Province, China. At Broken Hill, New South Wales, Australia. In Canada, in Ontario, at Marble Lake; in British Columbia, at the Bluebird-Mayflower mine, Trail Creek; and other localities. In the USA, at the Kalkar quarry, Santa Cruz, Santa Cruz Co., California. Many additional minor occurrences are known.

Name: Honors Professor Giuseppe Meneghini (1811–1889) of Pisa, Italy, who first observed the species.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 402–404. (2) Jambor, J.L. (1975) Synthetic copper-free meneghinite. Geol. Survey of Canada Paper 75-1B, 71–72. (3) Hicks, W.D. and E.W. Nuffield (1978) Natural and synthetic meneghinite. Can. Mineral., 16, 393–395. (4) Euler, R. and E. Hellner (1960) Über komplex zusammengesetzte sulfidische Erze. VI. Zur Kristallstruktur des Meneghinites, CuPb₁₃Sb₇S₂₄. Zeits. Krist., 113, 345–372 (in German with English abs.). (5) Moëlo, Y., A. Meerschaut, P. Palvadeau, and N. Meisser (2002) Structure cristalline d'une ménéghinite naturelle pauvre en cuivre, Cu_{0.58}Pb_{12.72}(Sb_{7.04}Bi_{0.24})S₂₄ (in French with English abs.). Compt. Rendus Acad. Sci. Paris-Geoscience, 334(8), 529–536. (6) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 364.

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