Lead Pb

Crystal Data: Cubic. *Point Group:* $4/m\ \overline{3}\ 2/m$. Crystals rare, to 6 cm; octahedral, cubic, and dodecahedral; commonly as rounded masses and plates, up to 60 kg in weight. Assumes wirelike and dendritic forms. *Twinning:* On {111}.

Physical Properties: *Tenacity:* Very malleable, moderately sectile. Hardness = 1.5 VHN = 5 (100 g load). D(meas.) = 11.37 D(calc.) = 11.341

Optical Properties: Opaque. *Color:* Gray-white, tarnishing to dull lead-gray; in polished section, gray-white, quickly tarnishing. *Streak:* Lead-gray. *Luster:* Metallic.
R: (400) 68.7, (420) 69.0, (440) 69.4, (460) 69.5, (480) 69.6, (500) 69.7, (520) 69.8, (540) 69.6, (560) 69.3, (580) 69.1, (600) 69.1, (620) 69.2, (640) 69.3, (660) 69.4, (680) 69.5, (700) 69.6

Cell Data: *Space Group: Fm3m.* $a = 4.9396(3)$ Z = 4

X-ray Powder Pattern: Synthetic.
2.855 (100), 2.475 (50), 1.493 (32), 1.750 (31), 1.1359 (10), 1.429 (9), 0.8369 (9)

Chemistry: Nearly pure lead, commonly with a little silver, copper, zinc, iron, tin, or antimony.

Occurrence: A rare mineral of hydrothermal origin, and found in placers; possibly also formed by authigenic processes and known to replace tree roots.

Association: Hydrocerussite, caryopilite, sarkinite, brandtite (Harstigen mine, Sweden); galena, minium, cerussite (Jay Gould mine, Idaho, USA; Red Cap mine, Australia); willemite, andradite, axinite (Franklin, New Jersey, USA).

Distribution: In the USA, in the Parker shaft at Franklin, Sussex Co., New Jersey; in Idaho, at the Jay Gould mine, Wood River district, and near Hailey, Mineral Hill district, Blaine Co.; in Arizona, from near Tubac, Santa Cruz Co., where it replaced tree roots; and in the Shafter district, Presidio Co., Texas. From El Dorado, Gran Sabana, Venezuela. At Keno Hill, Yukon Territory, Canada. From the Ilímaussaq intrusion, southern Greenland. In Sweden, in fine crystals and large masses from Långban, and at the Harstigen mine, near Persberg, Värmland. In the Zechstein copper district, near Legnica, Lower Silesia, Poland. From the Red Cap mine, near Chilliago, Queensland; and as minute balls in the Hawkesbury Sandstone, New South Wales, Australia. Reported from numerous other localities, but confirmation by modern methods is desirable.

Name: An Old English word for the metal; the chemical symbol from the Latin *plumbum*.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 102–103. (2) Owen, E.A. and E.L. Yates (1933) XLI. Precision measurements of crystal parameters. Phil. Mag., 472–488. (3) (1953) NBS Circ. 539, 1, 141–143. (4) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 317.