Pseudoboleite $Pb_{31}Cu_{24}Cl_{62}(OH)_{48}$

Crystal Data: Tetragonal, pseudocubic. *Point Group:* $4/m\ 2/m\ 2/m$. Very rarely as single crystals, to 1 mm; commonly intergrown with and overgrown on boleite with mutually ∥ {001}.

Physical Properties: *Cleavage:* {001}, perfect; {101}, nearly perfect. Hardness = 2.5 D(meas.) = 4.85 D(calc.) = 5.07

Optical Properties: Translucent. *Color:* Indigo blue. *Luster:* Pearly on cleavages. *Optical Class:* Uniaxial (–). $\omega = 2.03$ $\epsilon = 2.00$

Cell Data: *Space Group:* $I4/mmm$. $a = 15.24(2)$ $c = 30.74(5)$ Z = 2

X-ray Powder Pattern: Chancay, Peru; may totally obscure the pattern of intergrown boleite. (ICDD 22-470).
4.43 (100), 3.83 (100), 2.707 (95), 2.334 (65), 2.551 (60), 2.389 (60), 1.990 (60)

Chemistry:

	(1)	(2)	(3)
AgCl	1.6		
Pb	53.5	57.7	56.37
CuO	16.5	16.9	16.75
Cl	20.2	19.8	19.29
H_2O	5.5	5.6	7.59
insol.	0.8		
Total	98.1	[100.0]	100.00

(1) Boleo, Mexico. (2) Analysis (1) corrected to 100.0% after deduction of AgCl 1.6% as boleite and insoluble 0.8%. (3) $Pb_{31}Cu_{24}Cl_{62}(OH)_{48}$.

Occurrence: A secondary mineral formed through reaction of chloride with primary sulfides in the oxidized zone of Pb–Cu deposits; in smelter slag immersed in and leached by sea water.

Association: Boleite, cumengeite, atacamite, anglesite, cerussite, phosgenite, gypsum (Boleo, Mexico).

Distribution: In Mexico, in the Amelia mine, Boleo, near Santa Rosalía, Baja California, and from an undefined locality in Sonora. In the USA, in the Mammoth-St. Anthony mine, Tiger, Pinal Co., and the Banner mine, Pima Co., Arizona. From Laurium, Greece, in slag. At Tolcarne Beach, Newquay, Cornwall, England. From Mantos Blancos, and at several mines around Caracoles, Sierra Gorda district, Antofagasta, Chile. In Peru, at Chancay.

Name: From the Greek for *false* and *boleite*, as it was mistaken for that species.

Type Material: n.d.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 80–81. (2) Winchell, R.E. and R.C. Rouse (1974) The mineralogy of the boleite group. Mineral. Record, 5, 280–287. (3) Giuseppetti, G., F. Mazzi, and C. Tadini (1992) The crystal structure of pseudoboleite: $Pb_{31}Cu_{24}Cl_{62}(OH)_{48}$; its relations with the structures of boleite and cumengite. Neues Jahrb. Mineral., Monatsh., 113–126.