Cylindrite Pb\textsubscript{3}Sn\textsubscript{4}FeSb\textsubscript{2}S\textsubscript{14}

Crystal Data: Triclinic. Point Group: T. In concentric spherical or tubular shells and aggregates, up to 5 cm across and 2–3 cm in length, rarely terminated; also massive.

Physical Properties: Cleavage: \{100\}, excellent. Tenacity: Slightly malleable. Hardness = 2.5 VHN = 54–93 (100 g load). D(meas.) = 5.42–5.49 D(calc.) = 5.443


Cell Data: Space Group: Two subcells are recognized, both \textit{P}1: the first (pseudotetragonal) has \(a = 11.733(5)\) \(b = 5.790(8)\) \(c = 5.810(5)\) \(α = 90.00(0.20)\) \(β = 92.38(0.20)\) \(γ = 93.87(0.20)\) \(Z = 2\) and the second (pseudohexagonal) has \(a = 11.709(5)\) \(b = 3.670(8)\) \(c = 6.320(5)\) \(α = 90.00(0.20)\) \(β = 92.58(0.20)\) \(γ = 90.85(0.20)\) \(Z = 2\).

X-ray Powder Pattern: Poopó, Bolivia. 3.85 (100), 2.885 (100), 3.9 (90), 3.06 (65), 2.849 (65), 2.044 (65), 2.026 (65)

Chemistry:

<table>
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<td>Sb</td>
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</table>

Total 99.97 100.8 100.15 100.00

(1) Poopó, Bolivia; average of two analyses; corresponds to Pb\textsubscript{3.15}Sn\textsubscript{4.02}Fe\textsubscript{0.94}Ag\textsubscript{0.07}Sb\textsubscript{1.95}S\textsubscript{14.00}.
(2) Do.; by electron microprobe; corresponds to Pb\textsubscript{3.30}Sn\textsubscript{4.35}Fe\textsubscript{0.99}Ag\textsubscript{0.09}Sb\textsubscript{1.90}S\textsubscript{14.00}.
(3) Do.; by electron microprobe; corresponds to Pb\textsubscript{2.96}Sn\textsubscript{4.19}Fe\textsubscript{0.88}Sb\textsubscript{1.75}S\textsubscript{14.00}.
(4) Pb\textsubscript{3}Sn\textsubscript{4}FeSb\textsubscript{2}S\textsubscript{14} [average from structure, not charge balanced; see ref. 3].

Occurrence: In tin-bearing hydrothermal veins.

Association: Franckeite, stannite, incaite, potosiite, teallite, jamesonite, boulangerite, cassiterite, galena, pyrite, sphalerite.

Distribution: In Bolivia, with fine examples from Poopó, in the Santa Cruz [TL] and Trinacria mines; at the Porvenir and María Francisca mines, Huanuni; from the Nueva Virginia vein, Colquecha; and from the Purisima vein, all in Oruro; also from Llallagua, Potosí. In the Smirnovsk deposit, Transbaikalia, Russia.

Name: In allusion to its typical cylindrical habit.

Type Material: Mining Academy, Freiberg, Germany; The Natural History Museum, London, England, 84255.


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