

Crystal Data: Orthorhombic. *Point Group:* $mm2$. Crystals slender prismatic, striated || elongation; rarely tabular, flattened on {010}, equant, to 3 mm.

Physical Properties: *Cleavage:* {120}, distinct. *Tenacity:* Brittle. Hardness = 3
D(meas.) = 5.90 D(calc.) = 6.141 Piezoelectric.

Optical Properties: Transparent. *Color:* White, colorless. *Luster:* Adamantine, pearly on platy surfaces.

Optical Class: Biaxial (-). *Orientation:* $X = a$; $Y = c$; $Z = b$. *Dispersion:* $r > v$, easily perceptible. *Absorption:* Strong. $\alpha = 1.92(1)$ $\beta = 1.95(1)$ $\gamma = 1.96(1)$ $2V(\text{meas.}) = 80^\circ$

Cell Data: *Space Group:* $Pna2_1$. $a = 8.244$ $b = 18.963$ $c = 5.06$ $Z = 8$

X-ray Powder Pattern: Synthetic.

3.19 (100), 2.854 (90), 4.88 (80), 3.04 (80), 4.19 (60), 4.11 (50), 4.03 (50)

Chemistry:

	(1)	(2)	(3)
SiO ₂	16.87	17.2	16.48
FeO	0.10		
MnO	0.14		
ZnO	22.74	24.0	22.32
PbO	56.66	59.1	61.20
MgO	0.20		
CaO	2.42	0.1	
H ₂ O	0.76		
Total	99.89	100.4	100.00

(1) Franklin, New Jersey, USA; average of two analyses. (2) Do.; by electron microprobe.

(3) PbZnSiO₄.

Occurrence: A very rare secondary mineral in veins cutting and replacing coarse, massive willemite-franklinite ore in a metamorphosed stratiform zinc deposit (Franklin, New Jersey, USA).

Association: Willemite, clinohedrite, esperite, hardystonite, hodgkinsonite, andradite, calcite, smithsonite, zincite, franklinite, roeblingite (Franklin, New Jersey, USA); queitite, alamosite (Tsumeb, Namibia).

Distribution: From Franklin, Sussex Co., New Jersey, USA. At Tsumeb, Namibia. In the Puttapa zinc mine, near Beltana, South Australia.

Name: For Esper Signius Larsen, Jr. (1879–1961), American petrologist, Harvard University, Cambridge, Massachusetts, USA.

Type Material: n.d.

References: (1) Palache, C., L.H. Bauer, and H. Berman (1928) Larsenite and calcium-larsenite, new members of the chrysolite group, from Franklin, New Jersey. *Amer. Mineral.*, 13, 142–144. (2) Palache, C., L.H. Bauer, and H. Berman (1928) Larsenite, calcium-larsenite and the associated minerals at Franklin, New Jersey. *Amer. Mineral.*, 13, 334–340. (3) Palache, C. (1935) The minerals of Franklin and Sterling Hill, Sussex County, New Jersey. *U.S. Geol. Sur. Prof. Paper* 180, 80–82. (4) Prewitt, C.T., E. Kirchner, and A. Preisinger (1967) Crystal structure of larsenite PbZnSiO₄. *Zeits. Krist.*, 124, 115–130. (5) Ito, J. and C. Frondel (1967) Synthesis of lead silicates: larsenite, barysilite and related phases. *Amer. Mineral.*, 52, 1077–1084. (6) Dunn, P.J. (1985) The lead silicates from Franklin, New Jersey: occurrence and composition. *Mineral. Mag.*, 49, 721–727.

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