

Crystal Data: Orthorhombic. *Point Group:* *mm*2 or *2/m 2/m 2/m*. As thin tabular to prismatic crystals displaying square cross sections, to 2 cm; granular, massive.

Physical Properties: *Cleavage:* Good on {001} and {100}, imperfect on {010}. *Tenacity:* Brittle. Hardness = 7 VHN = 734 D(meas.) = 4.066(2) D(calc.) = 4.01 May fluoresce vivid blue.

Optical Properties: Translucent. *Color:* Colorless, white, blue. *Luster:* Vitreous to greasy. *Optical Class:* Biaxial (-) or (+). $\alpha = 1.695(2)$ $\beta = 1.702(2)$ $\gamma = 1.708(2)$ $2V(\text{meas.}) = 60^\circ\text{-}70^\circ$ *Orientation:* $X = b$; $Y = c$; $Z = a$. *Dispersion:* $r > v$; moderate.

Cell Data: *Space group:* *Pmnb* (*2O* polytype). $a = 11.67$ $b = 9.82$ $c = 4.69$ $Z = 4$
Space group: *Pmn*2₁ (*1O* polytype). $a = 11.650$ $b = 4.922$ $c = 4.674$ $Z = 2$

X-ray Powder Pattern: Khibiny, Kola, Russia. (Barylite-1O)
2.923 (100), 2.981 (95), 3.381 (80), 5.80 (79), 3.043 (78), 2.075 (54), 1.682 (53)

X-ray Powder Pattern: Långban, Sweden. (Barylite-2O)
3.37 (100), 3.04 (80), 2.68 (80), 1.74 (70), 4.88 (60), 1.69 (60), 3.24 (50)

Chemistry:	(1)	(2)	(3)		(1)	(2)	(3)
SiO ₂	35.51	36.42	37.54	BeO	16.01	15.77	[15.46]
Al ₂ O ₃	0.05			MgO	0.21	0.29	
Fe ₂ O ₃	0.04			CaO	0.42		
FeO		0.19	trace	BaO	47.43	46.49	46.75
ZnO		trace		H ₂ O	0.57	0.40	
PbO		0.11		Total	100.24	99.67	[99.75]

(1) Långban, Sweden. (2) Franklin, New Jersey, USA. (3) Narssârssuk, Greenland; by electron microprobe, BeO from stoichiometry; corresponds to Ba_{0.99}Be_{2.00}Si_{2.02}O_{7.03}.

Polymorphism & Series: Polytypes *1O* (former 'clinobarylite') and *2O*.

Occurrence: In a banded vein in a metamorphosed stratiform zinc orebody (Franklin, New Jersey, USA); in an "amazonite" pocket (Park Co., Colorado, USA); in narrow veins in chertlike silica and albite in fenitized gneisses (Seal Lake, Canada); in calcite veins cutting amphibole gneisses (Vishnevye Mountains, Russia); in nepheline syenite pegmatite (Narssârssuk, Greenland).

Association: Hedyphane (Långban, Sweden); hedyphane, willemite (Franklin, New Jersey); microcline, baryte, fluorite (Park Co., Colorado); eudialyte (Seal Lake, Canada); bastnäsité, aeschynite, baryte, strontianite, thorigummite, harmotome, fluorite, quartz (Vishnevye Mountains).

Distribution: At Långban, Värmland, Sweden. In Norway, on Arø Island, Langesundsfjord, and at Bratthagen, 10 km northwest of Larvik, Lågandal. From Narssârssuk, Greenland. In the USA, at Franklin, Sussex Co., New Jersey, with exceptional crystals from an undisclosed locality in Park Co., Colorado. In Canada, at Seal Lake and Letitia Lake, Labrador, Newfoundland, and Mont Saint-Hilaire, Quebec. In Russia, from the Vishnevye-Ilmen Mountains, Southern Ural Mountains. In the Pokrovo-Kireevsk structure, Kazakhstan.

Name: From the Greek for *heavy*, for its high density and a suffix for the polytype.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 562. (2) Palache, C. (1935) The minerals of Franklin and Sterling Hill, Sussex County, New Jersey. U.S. Geol. Sur. Prof. Paper 180, 92. (3) Heinrich, E.W. and R.W. Deane (1962) An occurrence of barylite near Seal Lake, Labrador. Amer. Mineral., 47, 758-763. (4) Robinson, P.D. and J.H. Fang (1977) Barylite, BaBe₂Si₂O₇: its space group and crystal structure. Amer. Mineral., 62, 167-169. (5) Petersen, O.V. and O. Johnson (1980) First occurrence of the rare mineral barylite in Greenland. Tschermaks Mineral. Petrog. Mitt., 27, 35-39. (6) Vlasov, K.A., Ed. (1966) Mineralogy of rare elements, v. II, 87-89. (7) Merlino, S., C. Biagioni, E. Bonaccorsi, N.V. Chukanov, I.V. Pekov, S.V. Krivovichev, V.N. Yakovenchuk, and T. Armbruster (2015) 'Clinobarylite'-barylite: order-disorder relationships and nomenclature. Mineral. Mag., 79, 145-155. Mineralogical Society of America Handbook of Mineralogy Revised 1/8/2021