

Bertrandite

Be₄Si₂O₇(OH)₂

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Crystal Data: Orthorhombic. *Point Group:* *mm*2. Crystals thin tabular, commonly prismatic to needlelike, to 5 cm; in radial aggregates. *Twinning:* Common on {011} or {021}; twins heart-shaped or V-shaped with axes crossing at angles of about 60° and 120°.

Physical Properties: *Cleavage:* Perfect on {001}; distinct on {100}, {010}, and {110}. Hardness = 6–7 D(meas.) = 2.59–2.60 D(calc.) = [2.61] Pyroelectric.

Optical Properties: Transparent. *Color:* Colorless to slightly yellow. *Luster:* Vitreous, pearly on {001}.

Optical Class: Biaxial (-). *Orientation:* X = a; Y = b. *Dispersion:* r < v, weak. α = 1.583–1.591 β = 1.598–1.605 γ = 1.608–1.614 2V(meas.) = ~75°

Cell Data: *Space Group:* Cmc2₁. a = 8.7135(4) b = 15.268(1) c = 4.5683(3) Z = 4

X-ray Powder Pattern: Mica Creek, Mt. Isa, Queensland, Australia. 4.38 (100), 3.19 (90), 2.54 (80), 2.28 (60), 2.22 (50), 3.94 (40), 1.305 (40)

Chemistry:

	(1)	(2)
SiO ₂	49.26	50.44
Al ₂ O ₃	trace	
Fe ₂ O ₃	1.40	
BeO	42.0	42.00
H ₂ O	6.90	7.56
Total	99.56	100.00

(1) Barbin, France. (2) Be₄Si₂O₇(OH)₂.

Occurrence: In fissures in granites and associated pegmatites and in miarolitic cavities in greisens; commonly an alteration product of beryl, more rarely as a primary mineral.

Association: Beryl, phenakite, herderite, tourmaline, muscovite, fluorite, quartz.

Distribution: In small amounts at numerous localities. A few affording pure material or larger crystals include: in France, near Nantes, in the Barbin quarries at Petit-Port, Loire-Atlantique. At Val Vigezzo, Piedmont, Italy. From Písek, Czech Republic. In the USA, in the Strickland quarry, Portland, Middlesex Co., Connecticut; in Virginia, at Amelia, Amelia Co.; in Colorado, on Mt. Antero, Chaffee Co. and elsewhere. At Spor Mountain, Juab Co., Utah, a large commercial deposit; in the Pala district, San Diego Co., California. In a large deposit at Sierra de Aguachile, Acuña, Coahuila, Mexico. Large crystals at the Golconda mine, near Governador Valadares, Minas Gerais, Brazil. From Klein Spitzkopje, Namibia. In the Tae Hwa mine, Chung Cheong Buk Do, South Korea. From Akchatau, Kara-Oba, and Kounrad, Kazakhstan.

Name: Honoring Emile Bertrand (1844–1909), French mineralogist.

Type Material: National School of Mines, Paris, France.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 545–546. (2) Vernon, R.H. and K.L. Williams (1960) Bertrandite from Mica Creek, Queensland. Amer. Mineral., 45, 1300–1303. (3) Vlasov, K.A., Ed. (1966) Mineralogy of rare elements, v. II, 89–93. (4) Henderson, W.A. (1975) The bertrandites of Connecticut. Mineral. Record, 6, 114–123. (5) Downs, J.W. and F.K. Ross (1987) Neutron-diffraction study of bertrandite. Amer. Mineral., 72, 979–983.