

Crystal Data: Hexagonal. *Point Group:* 3, 3*m*, or 6. As crystals showing {0001}, {10 $\bar{1}$ 1}, {11 $\bar{2}$ 1}, with half-a-dozen less common forms, typically hemihedral, or prismatic along [0001], to 1.5 cm. *Twining:* Noted, complex.

Physical Properties: *Cleavage:* Perfect on {0001}. *Fracture:* Irregular. Hardness = 3 VHN = 85 D(meas.) = 2.03–2.06 D(calc.) = 2.04

Optical Properties: Transparent to translucent. *Color:* Colorless to white, may be zoned. *Luster:* Vitreous.

Optical Class: Uniaxial (-). $\omega = 1.5804$ – 1.5817 $\epsilon = 1.485$ – 1.4928

Cell Data: *Space Group:* P3 (1T), with $a = 4.4328(8)$ $c = 5.337(1)$ $Z = 1$, or *Space Group:* P3c1 (2T), with $a = 4.4348(4)$ $c = 10.664(1)$ $Z = 2$, or *Space Group:* P6₃ (2H), with $a = 4.4403(8)$ $c = 10.655(2)$ $Z = 2$

X-ray Powder Pattern: Saga quarry, Norway (1T).
5.35 (100), 2.666 (50), 3.120 (45), 2.046 (20), 3.840 (5), 2.218 (5), 1.780 (5)

| Chemistry: | (1) | (3) |
|-------------------------------|------|--------|
| B ₂ O ₃ | 23.5 | 31.12 |
| BeO | 39.3 | 44.72 |
| H ₂ O | | 24.16 |
| LOI | 33.2 | |
| Total | 96.0 | 100.00 |

(1) Luppikko deposit, Russia; hambergite and fluorite estimated 2%–3%. (2) Saga quarry, Norway; stated to have Be:B = 1.99–2.02:1.00. (3) Be₂(BO₃)(OH)•H₂O.

Polymorphism & Series: 1T, 2T, 2H polytypes.

Occurrence: In serpentized dolostone associated with W–Sr–B–Be-bearing skarns (Pitkäranta district, Russia); in vugs with natrolite (Saga quarry, Norway).

Association: Hambergite, schoenfliesite, helvite, apatite, cassiterite, fluorite, calcite, dolomite, magnetite, sphalerite, vesuvianite, chondrodite, diopside, smithsonite, goethite (Pitkäranta district, Russia); natrolite, thomsonite (Saga quarry, Norway).

Distribution: From the Luppikko deposit, Pitkäranta district, Lake Ladoga, Karelia, Russia. In the Saga and Tuften larvikite quarries, Tvedalen, and at Brønnebukta, Siktesøya Island, Langesundsford, Norway.

Name: For BERYllium and BORate in the composition.

Type Material: Mineralogical Museum, St. Petersburg, 15180; Mining Institute, St. Petersburg, 1003/1–1003/5; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 69274.

References: (1) Nefedov, E.I. (1967) Berborite, a new mineral. Doklady Acad. Nauk SSSR, 174, 189–192 (in Russian). (2) (1968) Amer. Mineral., 53, 348–349 (abs. ref. 1). (3) Schlatti, M. (1968) Hydrothermalsynthese und Strukturtyp des Berylliumborates ∞ Be₂BO₃OH.H₂O. Tschermaks Mineral. Petrog. Mitt., 12, 463–469 (in German with English abs.). (4) Giuseppetti, G., F. Mazzi, C. Tadini, A.O. Larsen, A. Åsheim, and G. Raade (1990) Berborite polytypes. Neues Jahrb. Mineral., Abh., 162, 101–116.