

Crystal Data: Orthorhombic, pseudocubic. *Point Group:* *mm*2. Euhedral crystals, to 2.5 cm, (referred to pseudotetrahedral morphology) show prominent {001}, {110}, {111}, { $\bar{1}11$ }, and a dozen other modifying forms; spherulitic, plumose to fibrous, fine granular aggregates. *Twinning:* On {111}, as penetration twins.

Physical Properties: *Fracture:* Conchoidal to uneven. Hardness = 7–7.5
D(meas.) = 2.91–3.10 D(calc.) = 2.97 Very slowly soluble in H₂O; strongly piezoelectric and pyroelectric.

Optical Properties: Transparent to translucent. *Color:* Colorless, white, gray, yellow; bluish green, green to dark green if ferroan; colorless in transmitted light. *Streak:* White. *Luster:* Vitreous to adamantine.
Optical Class: Biaxial (+). *Orientation:* $X = c$; $Y = a$; $Z = b$. $\alpha = 1.662$ – 1.658
 $\beta = 1.662$ – 1.667 $\gamma = 1.668$ – 1.673 $2V(\text{meas.}) = 82.5^\circ$

Cell Data: *Space Group:* *Pca*2₁. $a = 8.577(6)$ $b = 8.553(8)$ $c = 12.09(1)$ $Z = 4$

X-ray Powder Pattern: England.
2.044 (100), 3.025 (88), 2.705 (55), 3.492 (45), 2.137 (30), 6.050 (27), 2.468 (21)

Chemistry:	(1)	(2)
B ₂ O ₃	59.68	62.15
FeO	1.09	
MgO	26.38	25.71
MgCl ₂	12.17	12.14
LOI	0.55	
Total	99.87	100.00

(1) Lüneburg, Germany; average of two analyses. (2) Mg₃B₇O₁₃Cl.

Polymorphism & Series: Dimorphous with trembathite; forms a series with ericaite.

Occurrence: An uncommon component of bedded sedimentary salt and potash deposits of marine origin, the boron probably derived from nearby volcanic activity.

Association: Anhydrite, gypsum, halite, sylvite, carnallite, kainite, hilgardite.

Distribution: In Germany, from Lüneburg, 40 km south-southeast of Hamburg, Lower Saxony; in Saxony-Anhalt, in the Stassfurt-Westeregeln-Bernburg district, at the Douglashall, Berlepsch, Solvayhall, Wilhelmshall and other mines; in Thuringia, from Bischofferode, in the Glückauf mine, Sondershausen, and elsewhere. In France, at Lunéville, Meurthe-et-Moselle. In the Boulby potash mine, northwest of Whitby, Yorkshire, England. In the Chelkar salt dome, Ak-sai Valley, Uralsk district, Kazakhstan. Large crystals from Alto Chapare, Cochabamba, Bolivia. In the USA, in the Choctaw salt dome, Iberville Parish, Louisiana, and the Louann Salt Formation, Clarke Co., Alabama. From the Penobsquis and Salt Springs evaporite deposits, near Sussex, New Brunswick, Canada.

Name: For boron in the composition.

Type Material: Mining Academy, Freiberg, Germany, 19324.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 378–381. (2) Dowty, E. and J.R. Clark (1973) Crystal structure refinements for orthorhombic boracite, Mg₃ClB₇O₁₃, and a trigonal, iron-rich analogue. *Zeits. Krist.*, 138, 64–99. (3) Burns, P.C. (1995) X-ray powder diffraction data for the identification of boracite-group minerals. *Powder Diffraction*, 10(4), 250–260. (4) Burns, P.C. and M.A. Carpenter (1996) Phase transitions in the series boracite–trembathite–congolite: phase relations. *Can. Mineral.*, 34, 881–892.

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