

Inderborite

CaMg[B₃O₃(OH)₅]₂•6H₂O

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Crystal Data: Monoclinic. *Point Group:* 2/m. As well-formed prismatic crystals, to 10 cm, with a dozen forms noted; coarsely crystalline aggregates.

Physical Properties: *Cleavage:* On {100}, good. *Fracture:* Conchoidal. Hardness = 3.5
D(meas.) = 1.93–2.00 D(calc.) = [1.92] Soluble in H₂O.

Optical Properties: Transparent. *Color:* Colorless to white. *Luster:* Vitreous.
Optical Class: Biaxial (-). *Orientation:* Z = b; X ∧ c = 2.5°. α = 1.482–1.496
β = 1.512–1.521 γ = 1.530–1.54 2V(meas.) = 77°–86°

Cell Data: *Space Group:* C2/c. a = 12.137(2) b = 7.433(1) c = 19.234(3)
β = 90.29(1)° Z = 4

X-ray Powder Pattern: Inder deposit, Kazakhstan.
3.35 (100), 3.26 (80), 3.07 (80), 2.45 (80), 2.29 (80), 1.801 (80), 6.13 (50)

Chemistry:	(1)	(2)
B ₂ O ₃	41.70	41.49
MgO	8.00	8.01
CaO	11.27	11.14
H ₂ O	39.48	39.36
Total	100.45	100.00

(1) Inder deposit, Kazakhstan. (2) CaMg[B₃O₃(OH)₅]₂•6H₂O.

Occurrence: With other borates in the caprock of a salt diapir (Inder deposit, Kazakhstan); in lacustrine borate deposits (Sarıkaya, Turkey).

Association: Inyoite, colemanite, ulexite, szaibélyite (Inder deposit, Kazakhstan).

Distribution: Large crystals from the Inder borate deposit, Kazakhstan. In Turkey, at Sarıkaya, near Kirka, Eskişehir Province; in the Günevi mine, Bigadiç borate district, Balıkesir Province. In the USA, from the Furnace Creek district, Death Valley, Inyo Co., California. At the Santa Rosa mine, Sijes district, Salta Province, Argentina.

Name: For the locality that produced the first specimens, the Inder deposit, Kazakhstan, and boron, an essential chemical component.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 43443–43447.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 355–356. (2) Burns, P.C. and F.C. Hawthorne (1994) Structure and hydrogen bonding in inderborite, a heteropolyhedral sheet structure. *Can. Mineral.*, 32, 533–539. (3) Ikornikova-Lemlein, N.Y. (1944) A study of a new hydrous hexaborate, inderborite. *Zap. Vses. Mineral. Obsch.*, 73, 193–200 (in Russian).