

# Inyoite

# CaB<sub>3</sub>O<sub>3</sub>(OH)<sub>5</sub>•4H<sub>2</sub>O

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**Crystal Data:** Monoclinic. *Point Group:* 2/*m*. Typically as crystals, short prismatic along [001], tabular on {001}, exhibiting prominent {110} and {001} and a dozen other minor forms, to 2.5 cm; in cockscomb aggregates of pseudorhomboidal crystals; also coarse spherulitic, granular.

**Physical Properties:** *Cleavage:* {001}, good; {010}, distinct. *Fracture:* Irregular. *Tenacity:* Brittle. Hardness = 2 D(meas.) = 1.875 D(calc.) = 1.87 Soluble in H<sub>2</sub>O.

**Optical Properties:** Transparent, translucent on dehydration. *Color:* Colorless, white on dehydration. *Luster:* Vitreous.

*Optical Class:* Biaxial (-). *Orientation:* Y = b; X ∧ c = 37°; Z ∧ c = -53°. *Dispersion:* r < v, slight. α = 1.490–1.495 β = 1.501–1.505 γ = 1.516–1.520 2V(meas.) = 70°–86°

**Cell Data:** *Space Group:* P2<sub>1</sub>/a. a = 10.621(1) b = 12.066(1) c = 8.408(1)  
β = 114°1.2° Z = 4

**X-ray Powder Pattern:** Monte Azul mine, Argentina.

7.67 (100), 2.526 (25), 3.368 (22), 1.968 (22), 2.547 (21), 3.450 (20), 2.799 (19)

## Chemistry:

	(1)	(2)
B <sub>2</sub> O <sub>3</sub>	37.44	37.62
CaO	20.42	20.20
H <sub>2</sub> O <sup>+</sup>	9.46	
H <sub>2</sub> O <sup>-</sup>	32.46	
H <sub>2</sub> O		42.18
rem.	0.55	
Total	100.33	100.00

(1) Hillsborough, Canada; remnant is gypsum. (2) CaB<sub>3</sub>O<sub>3</sub>(OH)<sub>5</sub>•4H<sub>2</sub>O.

**Occurrence:** Along fractures and nodular in sedimentary borate deposits; may be authigenic in playa sediments.

**Association:** Meyerhofferite, colemanite, priceite, hydroboracite, ulexite, gypsum.

**Distribution:** In the USA, in California, from an adit on Mount Blanco, Furnace Creek district, Death Valley, Inyo Co., and in the Kramer borate deposit, Boron, Kern Co. From Hillsborough and Wentworth, New Brunswick, Canada. In large amounts in the Inder boron deposit, Kazakhstan. From many deposits in the Bigadiç borate district, Balıkesir Province, Turkey. In Argentina, from the Loma Blanca deposit, eight km southwest of Coranzulí, Jujuy Province; in the Tincalayu borax deposit, Salar del Hombre Muerto, and at the Monte Azul mine, south of Sijes, Salta Province. From Laguna Salinas, about 65 km east of Arequipa, Arequipa Province, Peru.

**Name:** For Inyo Co., California, USA, wherein the first specimens were collected.

**Type Material:** National Museum of Natural History, Washington, D.C., USA, 87237, 93639.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 358–360. (2) Christ, C.L. (1953) Studies of borate minerals (II): X-ray crystallography of inyoite and meyerhofferite; X-ray and morphological crystallography of 2CaO•3B<sub>2</sub>O<sub>3</sub>•9H<sub>2</sub>O. Amer. Mineral., 38, 912–918. (3) Muessig, S. (1958) First known occurrence of inyoite in a playa, at Laguna Salinas, Peru. Amer. Mineral., 43, 1144–1147. (4) Clark, J.R. (1959) Studies of borate minerals. IV. The crystal structure of inyoite, CaB<sub>3</sub>O<sub>3</sub>(OH)<sub>5</sub>•4H<sub>2</sub>O. Acta Cryst., 12, 162–170. (5) Aristarain, L. and R. Erd (1971) Inyoita, 2CaO.3B<sub>2</sub>O<sub>3</sub>.13H<sub>2</sub>O, de la Puna, Argentina. Annal. Soc. Cient. Argent., 191(5–6), 191–211 (in Spanish with English abs.).

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