Inyoite $CaB_3O_3(OH)_5 \cdot 4H_2O$

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 pseudorhombohedral 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_2O.

Optical Properties: Transparent, translucent on dehydration. *Color:* Colorless, white on dehydration. *Luster:* Vitreous.
Optical Class: Biaxial (–). *Orientation:* $Y = b$; $X \wedge c = 37°$; $Z \wedge c = -53°$. *Dispersion:* $r < v$, slight. $\alpha = 1.490–1.495$ $\beta = 1.501–1.505$ $\gamma = 1.516–1.520$ 2V(meas.) = 70°–86°

Cell Data: *Space Group:* $P2_1/a$. $a = 10.621(1))$ $b = 12.066(1)$ $c = 8.408(1)$ $\beta = 114°1.2°$ 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_2O_3	37.44	37.62
CaO	20.42	20.20
H_2O^+	9.46	
H_2O^-	32.46	
H_2O		42.18
rem.	0.55	
Total	100.33	100.00

(1) Hillsborough, Canada; remnant is gypsum. (2) $CaB_3O_3(OH)_5 \cdot 4H_2O$.

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 $2CaO \cdot 3B_2O_3 \cdot 9H_2O$. 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, $CaB_3O_3(OH)_5 \cdot 4H_2O$. Acta Cryst., 12, 162–170. (5) Aristarain, L. and R. Erd (1971) Inyoita, $2CaO.3B_2O_3.13H_2O$, de la Puna, Argentina. Annal. Soc. Cient. Argent., 191(5–6), 191–211 (in Spanish with English abs.).