

Rivadavite

Na₆Mg[B₆O₇(OH)₆]₄•10H₂O

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Crystal Data: Monoclinic. *Point Group:* 2/m. Crystals, elongated along [010], and flattened on {100}, showing large {100} modified by { $\bar{1}02$ }, {012}, { $\bar{1}12$ }, to 3 mm, in subparallel massive aggregates.

Physical Properties: *Cleavage:* Perfect on {100}, { $\bar{1}02$ }; poor on {010}. *Fracture:* Splintery. *Tenacity:* Brittle. Hardness = 3.5 D(meas.) = 1.905(2) D(calc.) = 1.91 Soluble in H₂O.

Optical Properties: Transparent. *Color:* Colorless, white *Luster:* Vitreous, silky in aggregates.

Optical Class: Biaxial (+). *Orientation:* Y = b; Z \wedge c = -32°. *Dispersion:* r > v.
 $\alpha = 1.470(1)$ $\beta = 1.481(1)$ $\gamma = 1.497(1)$ 2V(meas.) = 80°

Cell Data: *Space Group:* P2₁/m. a = 15.870 b = 8.010 c = 22.256 $\beta = 116^\circ 26'$ Z = 1

X-ray Powder Pattern: Tincalayu deposit, Argentina.

14.2 (100), 7.59 (100), 2.950 (65), 3.246 (64), 6.23 (51), 4.740 (51), 5.340 (49)

Chemistry:

	(1)	(2)
B ₂ O ₃	58.2	57.30
FeO	0.05	
MgO	2.70	2.76
Na ₂ O	12.7	12.76
K ₂ O	0.03	
H ₂ O ⁺	25.3	
H ₂ O ⁻	1.4	
H ₂ O		27.18
Total	100.38	100.00

(1) Tincalayu deposit, Argentina; corresponds to Na_{5.90}Mg_{0.94}[B_{6.01}O₇(OH)₆]₄•10.7H₂O.

(2) Na₆Mg[B₆O₇(OH)₆]₄•10H₂O.

Occurrence: In sedimentary borate deposits; deposited from borate-rich hot springs.

Association: Borax, tincalconite (Tincalayu deposit, Argentina).

Distribution: From the Tincalayu borax deposit, Salar del Hombre Muerto, Salta Province, Argentina. In the USA, from the Eagle Borax Spring, Furnace Creek district, Death Valley, Inyo Co., California. At the Tülüovasideposit, Bigadiç borate district, Balıkesir Province, Turkey.

Name: In honor of Bernardino Rivadavia (1780–1845), first President of the Argentine Republic.

Type Material: Harvard University, Cambridge, Massachusetts, 109055; National Museum of Natural History, Washington, D.C., USA, 137290, 137295.

References: (1) Hurlbut, C.S., Jr. and L.F. Aristarain (1967) Rivadavite, Na₆MgB₂₄O₄₀•22H₂O, a new borate from Argentina. *Amer. Mineral.*, 52, 326–335. (2) Dal Negro, A. and L. Ungaretti (1973) Crystal structure of rivadavite. *Naturwiss.*, 69(7), 350.