Ameghinite $NaB_3O_3(OH)_4$

Crystal Data: Monoclinic. *Point Group:* $2/m$. Crystals are elongated along [010], may be bent or curved, showing {001}, {010}, {100}, {110}, {011}, {101}, {$\bar{1}$01}, {310}, to 5 mm; as cluster of crystals and nodular masses.

Physical Properties: *Cleavage:* {100}, very good; {001} and {010}, poor. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 2.5 D(meas.) = 2.030(6) D(calc.) = 2.037 Soluble in H_2O; pale blue fluorescence and phosphorescence under SW and LW UV.

Optical Properties: Transparent. *Color:* Colorless. *Luster:* Vitreous. *Optical Class:* Biaxial (–). *Orientation:* $Z = b$; $X \wedge c = 9°$. *Dispersion:* $r < v$, weak. $\alpha = 1.429(1)$ $\beta = 1.528(1)$ $\gamma = 1.538(1)$ 2V(meas.) = 33°

Cell Data: *Space Group:* $C2/c$. $a = 18.428(3)$ $b = 9.882(2)$ $c = 6.326(2)$ $\beta = 104°23(6)'$ Z = 8

X-ray Powder Pattern: Tincalayu deposit, Argentina.
3.064 (100), 3.147 (76), 2.548 (29), 3.352 (17), 2.914 (17), 4.951 (13), 2.655 (11)

Chemistry:

	(1)	(2)
B_2O_3	59.3	60.91
Na_2O	19.5	18.08
H_2O^+	20.7	
H_2O^-	0.6	
H_2O		21.01
Total	100.1	100.00

(1) Tincalayu deposit, Argentina; corresponds to $Na_{1.11}B_{3.00}O_3(OH)_{4.05}$. (2) $NaB_3O_3(OH)_4$.

Occurrence: Formed in massive borax in a borate-rich playa.

Association: Tincalconite, borax, ezcurrite, rivadavite.

Distribution: From the Tincalayu borax deposit, Salar del Hombre Muerto, Salta Province, Argentina.

Name: Honors two brothers, Carlos Ameghino (1865–1936) and Florentino Ameghino (1854–1911), Argentine geologists.

Type Material: Natural History Museum, Paris, France; Harvard University, Cambridge, Massachusetts, 109054; National Museum of Natural History, Washington, D.C., USA, 137297.

References: (1) Aristarain, L.F. and C.S. Hurlbut, Jr. (1967) Ameghinite, $Na_2O \bullet 3B_2O_3 \bullet 4H_2O$, a new borate from Argentina. Amer. Mineral., 52, 935–945. (2) Dal Negro, A., J.M.M. Pozas, and L. Ungaretti (1975) The crystal structure of ameghinite. Amer. Mineral., 60, 879–883.