Tuzlaite $NaCaB_5O_8(OH)_2 \cdot 3H_2O$

Crystal Data: Monoclinic. *Point Group:* $2/m$. Prismatic crystals, elongated along [001], showing {100}, {010}, {011}, {110}, $\{\bar{1}11\}$ to 0.5 mm, typically in nearly parallel aggregates; massive in veins.

Physical Properties: *Cleavage:* On {001}, perfect. Hardness = 2–3 D(meas.) = 2.21(2) D(calc.) = 2.23

Optical Properties: Semitransparent. *Color:* Colorless to white. *Streak:* White. *Luster:* Silky to pearly.
Optical Class: Biaxial (+). *Orientation:* $Y = b$; $Z \wedge a = 14°$. $\alpha = 1.532(2)$ $\beta = 1.544(2)$ $\gamma = 1.561(2)$ 2V(meas.) = 80.9°

Cell Data: *Space Group:* $P2_1/c$. $a = 6.506(1)$ $b = 13.280(3)$ $c = 11.462(3)$ $\beta = 92.97(2)°$ Z = 4

X-ray Powder Pattern: Tuzla mine, Bosnia-Herzegovina.
8.638 (100), 6.617 (30), 2.868 (29), 4.179 (17), 2.586 (15), 2.845 (14), 2.065 (14)

Chemistry:

	(1)	(2)
B_2O_3	52.19	52.24
Al_2O_3	0.26	
CaO	14.64	16.83
SrO	0.21	
Na_2O	10.25	9.30
H_2O	21.66	21.63
Total	99.21	100.00

(1) Tuzla mine, Bosnia-Herzegovina; average of six analyses, by flamephotometry, TGA, and crystal-structure analysis; corresponds to $Na_{1.00}(Ca_{0.87}Na_{0.10}Sr_{0.01})_{\Sigma=0.98}B_{4.98}Al_{0.02}O_{7.92}(OH)_2 \cdot 3H_2O$. (2) $NaCaB_5O_8(OH)_2 \cdot 3H_2O$.

Occurrence: In a saline evaporite deposit, as veins in dolomitic marl between salt layers.

Association: Halite.

Distribution: From the Tuzla salt mine, Bosnia-Herzegovina.

Name: For Tuzla, Bosnia-Herzegovina, the town near the salt mine in which the species was found.

Type Material: Croatian Museum of Natural History, Zagreb, Croatia, HPM 8888; Natural History Museum, Bern, Switzerland, B 8361; Royal Ontario Museum, Toronto, Canada, M45848a.

References: (1) Bermanec, V., T. Armbruster, D. Tibljaš, D. Sturman, and G. Kniewald (1994) Tuzlaite, $NaCa[B_5O_8(OH)_2] \cdot 3H_2O$, a new mineral with a pentaborate sheet structure from the Tuzla salt mine, Bosnia and Hercegovina [*sic*]. Amer. Mineral., 79, 562–569.