Hydroxylborite $Mg_3(BO_3)(OH)_3$

Crystal Data: Hexagonal. *Point Group*: 6/*m*. As prismatic crystals dominated by {10$\bar{1}$ 0}, to 1.5 mm; in radial aggregates.

Physical Properties: *Cleavage*: Imperfect on {0001}. *Fracture*: Conchoidal. *Tenacity*: Brittle. Hardness = 3.5 D(meas.) = 2.89(1) D(calc.) = 2.872

Optical Properties: Transparent. *Color*: Colorless. *Streak*: White. *Luster*: Vitreous. *Optical Class*: Uniaxial (-). ω = 1.566(1) ε = 1.531(1)

Cell Data: *Space Group*: $P6_3/m$. a = 8.912(8) c = 3.112(4) Z = 2

X-ray Powder Pattern: Visyachy area, Sakha-Yakutia Republic, Russia.
2.422 (100), 4.45 (82), 2.573 (65), 2.128 (60), 7.69 (52), 2.551 (49), 2.141 (44)

Chemistry:

	(1)	(2)
MgO	65.71	66.16
B_2O_3	18.43	19.05
F	45.45	
H_2O	9.73	14.79
$-O=F_2$	4.31	
Total	99.79	100.00

(1) Visyachy area, Sakha-Yakutia Republic, Russia; average of 3 electron microprobe analyses, H_2O by Penfeld method, IR confirms OH, corresponding to $Mg_{3.03}(B_{0.98}[(OH)_{2.00}F_{1.00}]O_{3.00}$.
(2) $Mg_3(BO_3)(OH)_3$.

Occurrence: As disseminations and veinlets in boron-mineralized calcsilicate marbles.

Association: Calcite, dolomite, Mg-rich ludwigite, kotoite, szaibelyite, clinohumite, magnetite, serpentine, chlorite.

Distribution: Visyachy area, Titovsky deposit, Chersky Range, Dogdo Basin, Sakha-Yakutia Republic, Russia.

Name: For its chemical composition, as a hydroxyl dominant analog of fluoborite.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow (91968); Geological Museum of All-Russia Institute of Mineral Resources, Moscow (M-1663).

References: (1) Rudnev, V.V., N.V. Chukanov, G.N. Nechelyustov, and N.A. Yamnova (2007) Hydroxylborite, $Mg_3(BO_3)(OH)_3$, a new mineral, and the isomorphous fluoborite hydroxylborite series. Zap. Ross. Mineral. Obshch., 136(1), 69–82 (in Russian, English abstract); (2007) Geology of Ore Deposits, 49, 710–719 (in English). (2) (2009) Amer. Mineral., 94, 1078 (abs. ref. 1).