

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. As veinlets and dense aggregates of grains, to 0.15 mm.

Physical Properties: *Tenacity:* Brittle. Hardness = 3.5 VHN = 151–181, 168 average (25 g load). $D(\text{meas.}) = 2.14\text{--}2.22$ $D(\text{calc.}) = 2.259$ Violet cathodoluminescence.

Optical Properties: Opaque, translucent through thin edges. *Color:* White, with a grayish tint; colorless in transmitted light. *Luster:* Vitreous to dull.

Optical Class: Biaxial (+). $\alpha = 1.572$ $\beta = 1.573$ $\gamma = 1.586$ $2V(\text{meas.}) = \sim 75^\circ$

Cell Data: *Space Group:* $P\bar{1}$. $a = 7.774(2)$ $b = 5.680(1)$ $c = 8.136(2)$ $\alpha = 113.15(1)^\circ$ $\beta = 101.67(2)^\circ$ $\gamma = 107.87(2)^\circ$ $Z = 2$

X-ray Powder Pattern: Novofrolovskoye deposit, Russia.

6.08 (10), 3.858 (9), 3.471 (8), 2.357 (8), 2.522 (7), 2.330 (7), 2.65 (6)

Chemistry:

	(1)	(2)	(3)
SO ₃	1.78		
SiO ₂	0.57		
B ₂ O ₃	34.20	34.57	35.20
Fe ₂ O ₃	0.10		
MgO	0.72		
CaO	28.70	27.67	28.36
H ₂ O ⁺		35.57	
H ₂ O [−]		2.06	
H ₂ O	32.96		36.44
Total	99.03	99.87	100.00

(1) Novofrolovskoye deposit, Russia; estimated gypsum 3% impurity. (2) Fuka, Japan; corresponds to Ca_{1.00}B_{2.01}(OH)_{8.03}. (3) CaB₂(OH)₈.

Occurrence: A rare alteration product of hydrothermal boron minerals in skarn deposits.

Association: Calciborite, calcite, gypsum, garnet, magnetite (Novofrolovskoye deposit, Russia); olshanskyite, parasibirskite, sibirskite, takedaite, pentahydroborite, nifontovite, calcite (Fuka, Japan).

Distribution: In Russia, from the Novofrolovskoye copper deposit, near Krasnoturinsk, Turinsk district, Northern Ural Mountains, and in the Solongo boron deposit, Buryatia. At the Sayak-IV boron deposit, northeast Balkhash region, Kazakhstan. From Fuka, near Bicchu, Okayama Prefecture, Japan.

Name: For the first-noted occurrence in the NovoFROLOVskoye deposit, Russia.

Type Material: Institute of Mining-Chemical Stock, Moscow, Russia, 1317a.

References: (1) Petrova, E.S. (1957) Frolovite, a new hydrous calcium borate. *Zap. Vses. Mineral. Obshch.*, 86, 622–625 (in Russian). (2) (1958) *Amer. Mineral.*, 43, 385–386 (abs. ref. 1). (3) Kusachi, I., C. Henmi, and S. Kobayashi (1995) Frolovite from Fuka, Okayama Prefecture, Japan. *Mineral. J. (Japan)*, 17, 330–337. (4) Simonov, M.A., E.V. Kazanskaya, Y.K. Yegorov-Tismenko, E.P. Zhelezin, and N.V. Belov (1976) Redetermination of the crystal structure of frolovite Ca[B(OH)₄]₂. *Doklady Acad. Nauk SSSR*, 230, 91–94 (in Russian).