Oyelite $Ca_5BSi_4O_{13}(OH)_3 \cdot 4H_2O$

Crystal Data: Triclinic. *Point Group*: $\bar{1}$. As lamellar to acicular crystals to 4 mm, in divergent fan-shaped aggregates or radial rosettes to 8 mm and clusters of aggregates to 12 mm.

Physical Properties: *Cleavage*: n.d. *Fracture*: n.d. *Tenacity*: n.d. Hardness = 5
D(meas.) = 2.62 D(calc.) = n.d.

Optical Properties: Transparent to translucent. *Color*: Colorless to pearly white (aggregates), colorless in thin section. *Streak*: n.d. *Luster*: Vitreous.
Optical Class: Biaxial (+). α = 1.602 β = 1.606 γ = 1.613 2V(meas.) = n.d. 2V(calc.) = n.d.

Cell Data: Space Group: $P\bar{1}$. a = 7.2557(5) b = 10.7390(11) c = 11.2399(8) α = 89.432(7)° β = 89.198(6)° γ = 72.097(8)° Z = 2

X-ray Powder Pattern: Bazhenovskoe chrysotile asbestos deposit, Asbest, Central Urals, Russia. 2.917 (100), 10.22 (71), 2.812 (42), 3.031 (38), 4.921 (29), 3.067 (24), 3.409 (23)

Chemistry:

	(1)	(2)
CaO	42.29	42.83
B_2O_3	5.38	5.32
SiO_2	36.65	36.71
H_2O	[15.07]	15.14
Total	99.39	100.00

(1) Bazhenovskoe deposit, Urals, Russia; average electron microprobe analysis supplemented by FTIR spectroscopy, H_2O calculated from structure; corresponds to $Ca_{4.96}B_{1.02}Si_{4.01}O_{13}(OH)_3 \cdot 4H_2O$.
(2) $Ca_5BSi_4O_{13}(OH)_3 \cdot 4H_2O$.

Occurrence: A hydrothermal mineral in late-stage assemblages of several geological origins. At Crestmore and Fuka in classic calcic skarns, at Suisho-dani in rodingite embedded in serpentinite and at N'Chwaning in strata-bound manganese ores in metamorphosed volcanogenic-sedimentary rocks. At the Bazhenovskoe deposit in rodingite formed by low-grade metamorphism of gabbro dikes embedded in serpentinites.

Association: Tatarinovite, pectolite, xonotlite, calcite, grossular, diopside (Bazhenovskoe); charlesite, bultfonteinite, rhodochrosite, hausmannite (N'Chwaning II mine); bultfonteinite, scawtite, xonotlite, calcite (Fuka).

Distribution: Exceptional specimens from the N'Chwaning II mine, Kalahari Manganese Field, South Africa. At Crestmore quarries, Riverside County, California, USA. From the Bazhenovskoe chrysotile asbestos deposit, Asbest, Central Urals, Russia. In Japan at the Fuka Mine, Fuka, Bitchu-cho, Okayama Prefecture and at Suisho-dani, Ise City, Mie Prefecture.

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Type Material: National Science Museum, Tokyo, Japan (M23576); National Museum of Natural History, Washington, D.C., USA (148213).

References: (1) Pekov, I.V., N.V. Zubkova, N.V. Chukanov, V.O. Yapaskurt, S.N. Britvin, A.V. Kasatkin, and D.Y. Pushcharovky (2019) Oyelite: new mineralogical data, crystal structure model and refined formula $Ca_5BSi_4O_{13}(OH)_3 \cdot 4H_2O$. Eur. J. Mineral., 31(3), 595-608. (2) (2020) Amer. Mineral., 105(10), 1604-1605 (abs. ref. 1). (3) Kusachi, I., C. Henmi, and K. Henmi (1984) An oyelite-bearing vein at Fuka, the town of Bitchu, Okayama Prefecture, Japan. J. Japan. Assoc. Min. Petr. Econ. Geol., 79, 267-275. (4) (1986) Amer. Mineral., 71, 230 (abs. ref. 3).