Okayamalite $Ca_2B_2SiO_7$

Crystal Data: Tetragonal. *Point Group*: $\bar{4}$ 2*m*. As grains to 10 μm in equigranular aggregates.

Physical Properties: *Cleavage*: None. *Fracture*: n.d. *Tenacity*: n.d. Hardness = ~5.5
D(meas.) = n.d. D(calc.) = 3.30

Optical Properties: Translucent. *Color*: Creamy white, colorless in thin section. *Streak*: White. *Luster*: Earthy.
Optical Class: Uniaxial (-). ω = 1.700 ε = 1.696

Cell Data: *Space Group*: $P\bar{4}$ 21*m*. *a* = 7.1248(2) *c* = 4.8177(2) Z = 2

X-ray Powder Pattern: Fuka Mine, Okayama Prefecture, Japan.
2.654 (100), 2.862 (55), 3.479 (40), 1.920 (35), 1.644 (29), 2.129 (20), 1.644 (20)

Chemistry:

	(1)
CaO	46.28
B_2O_3	28.50
SiO_2	24.24
Al_2O_3	0.36
Total	99.38

(1) Fuka Mine, Okayama Prefecture, Japan; average electron microprobe analysis; corresponding to $Ca_{2.01}B_{2.00}Si_{0.98}Al_{0.02}O_7$. (2) Arendal district, Sørlandet, Norway; average electron microprobe analysis corrected for SiO_2 impurity, analysis given in at. wt. %; corresponds to $Ca_{1.96}B_{2.07}Si_{0.97}O_{7.00}$.

Mineral Group: Melilite group.

Occurrence: In skarn by boron metasomatism of a wollastonite-calcite aggregate (Japan); probably by desilication-dehydroxylation of datolite in a magnetite-hematite skarn deposit (Norway).

Association: Wollastonite, vesuvianite, calcite, johnbaumite (Japan); datolite, calcite, apophyllite, chlorite, amorphous silica (Norway).

Distribution: From the Fuka Mine, Bicchu-cho, Okayama Prefecture, Japan [TL]. In the Arendal district, Sørlandet, Norway.

Name: For *Okayama* prefecture, Japan.

Type Material: National Science Museum, Tokyo, Japan (NSM M-27525).

References: (1) Matsubara, S., R. Miyawaki, A. Kato, K. Yokoyama, and A. Okamoto (1998) Okayamalite, $Ca_2B_2SiO_7$, a new mineral, boron analogue of gehlenite. Mineral. Mag., 62, 703-706. (2) Olmi, F., C. Viti, L. Bindi, P. Bonazzi, and S. Menchetti (2000) Second occurrence of okayamalite, $Ca_2SiB_2O_7$: chemical and TEM characterization. Amer. Mineral., 85(10), 1508-1511. (3) Giuli, G., L. Bindi, and P. Bonazzi (2000) Rietveld refinement of okayamalite, $Ca_2SiB_2O_7$: Structural evidence for the B/Si ordered distribution. Amer. Mineral., 85(10), 1512-1515.