Datolite $CaBSiO_4(OH)$

Crystal Data: Monoclinic. *Point Group:* $2/m$. Crystals typically short prismatic, with prominent {110}, {011}, or tabular on {010}, to 12 cm. Botryoidal or globular, having columnar structure; granular to compact; cryptocrystalline.

Physical Properties: *Fracture:* Conchoidal to uneven. *Tenacity:* Brittle. Hardness = 5–5.5 D(meas.) = 2.96–3.00 D(calc.) = [3.00] Commonly fluoresces blue under SW UV.

Optical Properties: Transparent to translucent, rarely opaque. *Color:* Colorless or white, commonly with a greenish tinge; may be grayish, yellow, green, red, pink; in thin section, colorless. *Luster:* Vitreous, rarely subresinous on fracture surface.
Optical Class: Biaxial (–). *Orientation:* $Y = b$; $Z \wedge c = -1°$ to $-4°$. *Dispersion:* $r > v$, weak. $\alpha = 1.622–1.626$ $\beta = 1.649–1.654$ $\gamma = 1.666–1.670$ 2V(meas.) = 72°–75°

Cell Data: *Space Group:* $P2_1/c$. $a = 4.832(4)$ $b = 7.608(4)$ $c = 9.636(8)$ $\beta = 90.40(7)°$ $Z = 4$

X-ray Powder Pattern: St. Andreasberg, Germany. (ICDD 11-70).
3.11 (100), 2.855 (65), 2.189 (60), 3.76 (45), 1.875 (40), 1.644 (40), 2.986 (35)

Chemistry:

	(1)
SiO_2	38.00
B_2O_3	19.38
Al_2O_3	0.65
Fe_2O_3	0.28
MnO	0.39
MgO	0.09
CaO	35.39
H_2O^+	5.71
H_2O^-	0.26
Total	100.15

(1) Silver Harbour, Lake Superior, Ontario, Canada; corresponds to $(Ca_{1.02}Mg_{0.02}Mn_{0.01})_{\Sigma=1.05}B_{0.90}(Si_{1.03}Al_{0.02})_{\Sigma=1.05}O_{4.05}(OH)_{0.95}$.

Mineral Group: Gadolinite group.

Occurrence: A secondary mineral in mafic igneous rocks; in geodes in tuffs; in skarns in limestones; in serpentinites and "hornblende" schists; from some ore veins.

Association: Calcite, prehnite, zeolites, danburite, axinite, garnet.

Distribution: Widespread; some localities for fine specimens are: in Norway, from Arendal, and north of Hardangerfjiord. At St. Andreasberg, Harz Mountains, Germany. In Italy, from Serra dei Zanchetti, near Bologna, Emilia-Romagna, and from Alpe di Siusi, Trentino-Alto Adige. From the Kratzenberg, Habachtal, Austria. In Japan, from the Iwato copper mine, Miyazaki Prefecture. As exceptional crystals from Dal'negorsk, Primorskiy Kray, Russia. In the USA, large crystals from the Lane quarry, Westfield, Hampden Co., Massachusetts; in the Roncari quarry, East Granby, Hartford Co., Connecticut; from Bergen Hill, Hudson Co., Great Notch, Essex Co., and at Paterson and Prospect Park, Passaic Co., New Jersey; in the Goose Creek quarry, near Leesburg, Loudoun Co., Virginia. Very large crystals from Charcas, San Luis Potosí, Mexico.

Name: From the Greek *to divide*, in reference to the granular structure of a massive variety.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 502–505.
(2) Deer, W.A., R.A. Howie, and J. Zussman (1963) Rock-forming minerals, v. 3, sheet silicates, 171–175. (3) Foit, F.F., Jr., M.W. Phillips, and G.V. Gibbs (1973) A refinement of the crystal structure of datolite, $CaBSiO_4(OH)$. Amer. Mineral., 58, 909–914.