Hizenite-(Y) $Ca_2Y_6(CO_3)_{11}\cdot 14H_2O$

Crystal Data: Orthorhombic. *Point Group*: n.d. As platy crystals, to 50 μm, in radial spherical aggregates to 1 cm.

Physical Properties: *Cleavage*: Perfect on {001}. *Fracture*: n.d. *Tenacity*: n.d. Hardness = n.d. D(meas.) = n.d. D(calc.) = 2.98

Optical Properties: Transparent to translucent. *Color*: White. *Streak*: White. *Luster*: Vitreous to silky.
Optical Class: n.d.

Cell Data: *Space Group*: n.d. a = 6.295(1) b = 9.089(2) c = 63.49(1) Z = 4

X-ray Powder Pattern: Mitsukoshi, Karatsu, Saga Prefecture, Japan.
10.63 (100), 6.384 (77), 3.962 (51), 3.821 (27), 2.060 (23), 15.57 (20), 2.445 (16)

Chemistry:

	(1)
Y_2O_3	27.61
La_2O_3	1.11
Pr_2O_3	0.65
Nd_2O_3	5.80
Sm_2O_3	1.68
Eu_2O_3	0.73
Gd_2O_3	3.82
Tb_2O_3	0.24
Dy_2O_3	3.10
Ho_2O_3	0.47
Er_2O_3	1.58
Tm_2O_3	0.04
Yb_2O_3	0.10
CaO	5.93
CO_2	29.55
H_2O	15.03
Total	97.44

(1) Mitsukoshi, Karatsu, Saga Prefecture, Japan; average of 5 electron microprobe analyses, CO_2 and H_2O by CHN analyzer; corresponding to $Ca_{1.76}(Y_{4.08}Nd_{0.58}Gd_{0.35}Dy_{0.28}Sm_{0.16}Er_{0.14}La_{0.11}Pr_{0.07}Eu_{0.07}Ho_{0.04}Tb_{0.02}Yb_{0.01})_{\Sigma=5.91}(CO_3)_{11.2}\cdot 13.9H_2O$.

Occurrence: As a druse in alkali olivine basalt.

Association: Lokkaite- (Y), tengerite-(Y), kimuraite-(Y).

Distribution: At Mitsukoshi, Karatsu, Saga Prefecture, Japan.

Name: For "Hizen", the historic name (between the 7th and 16th centuries) for the locality that produced the first specimens and a suffix for the dominant rare earth element.

Type Material: Kitakyushu Museum of Natural History and Human History, Kitakyushu, Japan (KMNHM000001).

References: (1) Takai Y. and S. Uehara (2013) Hizenite-(Y), $Ca_2Y_6(CO_3)_{11}\cdot 14H_2O$, a new mineral in alkali olivine basalt from Mitsukoshi, Karatsu, Saga Prefecture, Japan. J. of Mineral. and Petro. Sci., 108(3), 161-165. (2) (2016) Amer. Mineral., 101, 488 (abs. ref. 1).