Caysichite-(Y) $\mathbf{Ca_3(Yb,Er)Y_4Si_8O_{20}(CO_3)_6(OH)\cdot 7H_2O}$

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Crystal Data: Orthorhombic. *Point Group:* $mm2$. Most commonly as a pulverulent coating or stain. As radiating groups of crystals elongated ‖ [001], terminated by {001}; in thin, brittle incrustations with columnar structure.

Physical Properties: *Cleavage:* {010} (?). Hardness = 4.5 VHN = 551 D(meas.) = 3.03 D(calc.) = 3.029 Faint green cathodoluminescence.

Optical Properties: Semitransparent. *Color:* Colorless, white to pale yellow; rarely greenish. *Streak:* White. *Luster:* Vitreous.
Optical Class: Biaxial (–). *Orientation:* $X = b$; $Y = a$; $Z = c$. $\alpha = 1.586(4)$ $\beta = 1.614(1)$ $\gamma = 1.621(1)$ 2V(meas.) = 53° 2V(calc.) = 54°30′

Cell Data: *Space Group:* $Ccm2_1$. $a = 13.282(3)$ $b = 13.925(3)$ $c = 9.724(4)$ Z = 4

X-ray Powder Pattern: Evans-Lou quarry, Canada.
6.93 (100), 3.321 (90), 4.38 (60), 4.22 (60), 3.481 (60), 4.87 (40), 2.323 (40)

Chemistry:

	(1)
SiO_2	28.84
Al_2O_3	0.58
Y_2O_3	28.18
RE_2O_3	8.08
CaO	10.04
H_2O	8.6
CO_2	15.7
Total	100.02

(1) Evans-Lou quarry, Canada; by electron microprobe, H_2O by gravimetry, CO_2 by titrimetry; $RE_2O_3 = La_2O_3$ 0.08%, CeO_2 0.24%, Pr_2O_3 0.09%, Nd_2O_3 0.30%, Sm_2O_3 0.20%, Eu_2O_3 0.09%, Gd_2O_3 0.51%, Tb_2O_3 0.16%, Dy_2O_3 1.16%, Ho_2O_3 0.66%, Er_2O_3 1.84%, Tm_2O_3 0.21%, Yb_2O_3 2.12%, Lu_2O_3 0.42%; corresponds to $Ca_{2.95}RE_{0.70}Y_{4.11}(Si_{7.90}Al_{0.18})_{\Sigma=8.08}O_{20.36}(CO_3)_{5.87}\cdot 7.86H_2O$.

Occurrence: In perthite surrounding the quartz core of a granite pegmatite, coating fractures and filling cavities in quartz, perthite, or hellandite; apparently of secondary origin.

Association: Quartz, hellandite, fergusonite, kainosite, tengerite, lokkaite, yttrian thorogummite, yttrian spessartine, xenotime, wakefieldite-(Y), synchysite-(Y).

Distribution: In the Evans-Lou quarry, near Wakefield Lake, Quebec, Canada.

Name: For the chemical composition: *Ca, Y, Si, C, H.*

Type Material: Canadian Museum of Nature, Ottawa; Canadian Geological Survey, Ottawa, Canada, 10402; The Natural History Museum, London, England, 1977,278.

References: (1) Hogarth, D.D., G.Y. Chao, A.G. Plant, and H.R. Steacy (1974) Caysichite, a new silico-carbonate of yttrium and calcium. Can. Mineral., 12, 293–298. (2) (1976) Amer. Mineral., 61, 174–175 (abs. ref. 1). (3) Mellini, M. and S. Merlino (1978) Caysichite: a double crank shaft chain structure. Can. Mineral., 16, 81–88.

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