

Caysichite-(Y)**Ca₃(Yb, Er)Y₄Si₈O₂₀(CO₃)₆(OH)·7H₂O**

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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. $\alpha = 1.586(4)$ $\beta = 1.614(1)$ $\gamma = 1.621(1)$ $2V(\text{meas.}) = 53^\circ$ $2V(\text{calc.}) = 54^\circ 30'$

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 ₂ O ₃	0.58
Y ₂ O ₃	28.18
RE ₂ O ₃	8.08
CaO	10.04
H ₂ O	8.6
CO ₂	15.7
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Total	100.02

(1) Evans-Lou quarry, Canada; by electron microprobe, H₂O by gravimetry, CO₂ by titrimetry; RE₂O₃ = La₂O₃ 0.08%, CeO₂ 0.24%, Pr₂O₃ 0.09%, Nd₂O₃ 0.30%, Sm₂O₃ 0.20%, Eu₂O₃ 0.09%, Gd₂O₃ 0.51%, Tb₂O₃ 0.16%, Dy₂O₃ 1.16%, Ho₂O₃ 0.66%, Er₂O₃ 1.84%, Tm₂O₃ 0.21%, Yb₂O₃ 2.12%, Lu₂O₃ 0.42%; corresponds to Ca_{2.95}RE_{0.70}Y_{4.11}(Si_{7.90}Al_{0.18})_{Σ=8.08}O_{20.36}(CO₃)_{5.87}·7.86H₂O.

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, tenerite, 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.