

Gatelite-(Ce)**(Ca, Ce)₄(Al, Mg, Fe)₄(Si₂O₇)(SiO₄)₃(O, F, OH)₃**

Crystal Data: Monoclinic. *Point Group:* 2/m. As bladed crystals elongated and striated along [010] to 700 μm; as oriented intergrowths in törnebohmit-(Ce) with [010] of both species parallel.

Physical Properties: *Cleavage:* Good on {100}; imperfect on {001}. *Tenacity:* Brittle. *Fracture:* Irregular. Hardness = 6-7 D(meas.) = n.d. D(calc.) = 4.51

Optical Properties: Transparent. *Color:* Colorless. *Streak:* White. *Luster:* Vitreous. *Optical Class:* n(calc.) = 1.807

Cell Data: *Space Group:* P2₁/a. a = 17.770(4) b = 5.651(1) c = 17.458(4) β = 16.18(2)° Z = 4

X-ray Powder Pattern: Calculated pattern.

2.97 (100), 15.67 (87), 2.61 (56), 3.49 (50), 2.83 (44), 4.61 (33), 2.74 (32)

Chemistry:

	(1)
CaO	5.660
La ₂ O ₃	8.170
Ce ₂ O ₃	20.580
Pr ₂ O ₃	2.215
Nd ₂ O ₃	11.740
Sm ₂ O ₃	1.755
Dy ₂ O ₃	0.150
Y ₂ O ₃	0.370
MgO	1.910
FeO	2.133
Al ₂ O ₃	14.435
Nb ₂ O ₅	0.075
SiO ₂	28.105
F	0.245
H ₂ O	[1.34]
<u>- O = F</u>	<u>0.103</u>
Total	98.780

(1) Trimouns talc deposit, Luzenac, Ariège, French Pyrenees, H₂O calculated from stoichiometry; corresponds to (Ca_{1.09}La_{0.54}Ce_{1.36}Pr_{0.14}Nd_{0.75}Sm_{0.11}Dy_{0.01}Y_{0.04})_{Σ=4.04}(Al_{3.06}Mg_{0.51}Fe²⁺_{0.32}Nb_{0.01})_{Σ=3.90}Si_{5.06}O_{20.26}(OH)_{1.60}F_{0.14}. The slight excess of Si and REE cations could be due to the presence of minute lamellae of törnebohmit-(Ce).

Mineral Group: Gatelite supergroup, gatelite group.

Occurrence: In dolomitic portions of a talc deposit.

Association: Pyrite, aeschynite-(Y), dolomite, törnebohmit-(Ce), dissakisite-(Ce), talc, quartz.

Distribution: From the Trimouns talc deposit, Luzenac, Ariège, French Pyrenees.

Name: Honors Pierre *Gatel*, French mineral collector, founder of the Association Française de Microminéralogie.

Type Material: Natural History Museum, Paris, France (MNHM 201.228).

References: (1) Bonazzi, P., L. Bindi, and G. Parodi (2003) Gatelite-(Ce), a new REE-bearing mineral from Trimouns, French Pyrenees: Crystal structure and polysomatic relationships with epidote and törnebohmit-(Ce). *Amer. Mineral.*, 88(8), 223-228. (2) Bonazzi, P., D. Holtstam, and L. Bindi (2019) Gatelite-supergroup minerals: recommended nomenclature and review. *Eur. J. Mineral.*, 31(1), 173-181.