

Cordylite-(La)**(Na,Ca)₂Ba₂(La₃Sr)_{Σ=4}(CO₃)₈F₂**

Crystal Data: Hexagonal. *Point Group:* 6/m 2/m 2/m. As irregular grains or rounded tabular to short-prismatic, striated hexagonal crystals, to 3 mm. Also as cores within cordylite-(Ce) grains.

Physical Properties: *Cleavage:* Perfect on {0001}. *Fracture:* Conchoidal to uneven.
Tenacity: Brittle. *Hardness* = 4 *D(meas.)* = 4.31(1) *D(calc.)* = 4.311-4.329

Optical Properties: Translucent. *Color:* Colorless, honey-yellow, or pinkish yellow.
Streak: White. *Luster:* Greasy to vitreous.
Optical Class: Uniaxial(-). $\varepsilon = 1.573(1)$ – $1.574(1)$ $\omega = 1.749(2)$ – $1.751(2)$

Cell Data: *Space Group:* *P6₃/mcc.* *a* = 5.1182(3) *c* = 23.1785(16) *Z* = 1

X-ray Powder Pattern: Biraya Fe-REE deposit, 145 km east of Bodaibo city, Russia.
 3.209 (100), 3.532 (95), 2.562 (89), 4.371 (65), 4.148 (54), 2.213 (52), 1.921 (52)

Chemistry:	(1)	(2)
La ₂ O ₃	18.31	17.01
Ce ₂ O ₃	15.67	15.93
Pr ₂ O ₃	0.48	1.21
Nd ₂ O ₃	2.10	3.09
CaO	3.17	3.22
SrO	6.70	7.16
BaO	23.43	22.21
Na ₂ O	2.80	2.78
F	2.47	2.10
-O = F	1.01	0.88
CO ₂	[25.87]	[25.89]
H ₂ O	[0.03]	[0.25]
Total	99.99	99.97

(1) Biraya Fe-REE deposit, 145 km east of Bodaibo city, Russia; electron microprobe analysis, H₂O and CO₂ calculated from crystal structure analysis; corresponding to (Na_{1.24}Ca_{0.78})_{Σ=2.02}Ba_{2.10}

[(La_{1.54}Ce_{1.31}Nd_{0.17}Pr_{0.04})_{Σ=3.06}Sr_{0.89}]_{Σ=3.95}(C_{1.01}O₃)₈(F_{1.78}OH_{0.05})_{Σ=1.83}.

(2) same as above; corresponding to (Na_{1.23}Ca_{0.79})_{Σ=2.02}Ba_{1.98}[(La_{1.43}Ce_{1.33}Nd_{0.25}Pr_{0.10})_{Σ=3.11}Sr_{0.94}]_{Σ=4.05}(C_{1.01}O₃)₈(F_{1.51}OH_{0.38})_{Σ=1.89}.

Occurrence: In carbonatite lenses associated with a fenite dike.

Association: Aragonite-strontianite, calcian strontianite, strontian calcite, ancylite-(Ce), thorite, carbocernaite, barite, biraite-(Ce), niobium-rich chevkinite-(Ce), fergusonite-(Nd), ancylite-(La), daqingshanite-(Ce), daqingshanite-(La), bastnäsite-(Ce), hydroxylbastnäsite-(Ce), monazite-(Ce), talc, humite, galena, pyrite, pyrrhotite.

Distribution: At the Biraya Fe-REE deposit, north of the Irkutsk district, 145 km east of Bodaibo city, Russia.

Name: For its structural and chemical identity with *cordylite* and dominance of *La* among its rare earth elements.

Type Material: Mineral Science Department, Natural History Museum of Los Angeles County, Los Angeles, USA., (63360) and at the A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia (4028/1, 4029/1).

References: (1) Mills, S.J., P.M. Kartashov, A.R. Kampf, A.A. Konev, A.A. Koneva, and M. Raudsepp (2012) Cordylite-(La), a new mineral species in fenite from the Biraya Fe-REE deposit, Irkutsk, Russia. *Can. Mineral.*, 50, 1281-1290. (2) (2014) *Amer. Mineral.*, 99, 1512-1513 (abs. ref. 1).