

Rhabdophane-(Ce)**(Ce, La)PO₄•H₂O**

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Crystal Data: Hexagonal. *Point Group:* 6/m 2/m 2/m. As stalactitic, globular, or botryoidal incrustations with internally radial fibrous structure.

Physical Properties: *Fracture:* Uneven to conchoidal. Hardness = 3–3.5
D(meas.) = 3.77–4.01 D(calc.) = 4.19 (synthetic CePO₄•H₂O).

Optical Properties: Translucent. *Color:* Brown, pale pink, yellowish white, creamy, may be pale green. *Luster:* Greasy to dull.

Optical Class: Uniaxial (+). *Pleochroism:* O = colorless; E = brownish. *Orientation:* Positive elongation. $\omega = 1.654\text{--}1.700$ $\epsilon = 1.703\text{--}1.744$

Cell Data: *Space Group:* P6₂22. $a = 7.055(5)$ $c = 6.439(3)$ $Z = 3$

X-ray Powder Pattern: Clara mine, Germany.
3.03 (10), 6.09 (9), 2.83 (9), 4.41 (8), 3.51 (7), 2.16 (6), 1.865 (6)

Chemistry:	(1)	(2)
P ₂ O ₅	24.64	28.04
SiO ₂	3.76	
(Al, Fe) ₂ O ₃	1.93	
(Ce, Y) ₂ O ₃	61.69	
Ce ₂ O ₃		64.84
H ₂ O	7.50	7.12
Total	99.52	100.00

(1) Cornwall, England. (2) CePO₄•H₂O.

Occurrence: A very rare mineral in some hydrothermal ore deposits.

Association: Sphalerite (Fowey Consols mine, England); barite, fluorite, chalcopyrite, tetrahedrite (Clara mine, Germany).

Distribution: In England, from an unknown locality Cornwall. In Germany, at the Clara mine, near Oberwolfach, Black Forest; from Waldstein, Fichtelgebirge, Bavaria; at the Krufter Ofen volcano, Eifel district. In the Ilímaussaq intrusion, Greenland. At Mont Saint-Hilaire and from near Saint-Amable, Quebec, Canada. At Iron Hill, Powderhorn district, Gunnison Co., Colorado, and in the Majuba Hill mine, Antelope district, Pershing Co., Nevada, USA. From the Lovozero and Kovdor massifs, Kola Peninsula, and at the Kiya alkalic massif, Yenisei Ridge, Siberia, Russia. In the Sumi region, Ukraine. From Karonge, Burundi.

Name: From the Greek for *a rod* and *to appear*, for the characteristic bands due to cerium in its emission spectrum, and the dominant rare earth, *cerium*.

Type Material: The Natural History Museum, London, England, Ludlam collection.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 774. (2) Vlasov, K.A., Ed. (1966) Mineralogy of rare elements, v. II, 293–297. (3) Walenta, K. (1978) Chukhrovit-(Ce) and rhabdophan-(Ce) aus der Grube Clara bei Oberwolfach, im mittleren Schwarzwald. Chem. Erde, 38, 331–339 (in German). (4) Mooney, R.C.L. (1950) X-ray diffraction study of cerous phosphate and related crystals. I. Hexagonal modification. Acta Cryst., 3, 337–340.