

**Hydroxylbastnäsite-(Ce)****(Ce, La)(CO<sub>3</sub>)(OH, F)**

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**Crystal Data:** Hexagonal. *Point Group:*  $\bar{6}m2$ . Tabular crystals exhibit {0001} and {11 $\bar{2}$ 0}, to 0.5 mm; granular to short prismatic, reniform, and in sheaflike aggregates. *Twinning:* On {11 $\bar{2}$ 0}.

**Physical Properties:** *Cleavage:* {11 $\bar{2}$ 0}, imperfect. *Fracture:* Uneven. Hardness = ~4  
D(meas.) = 4.745 D(calc.) = [4.79]

**Optical Properties:** Translucent to nearly opaque. *Color:* Colorless, wax-yellow, dark brown; colorless in transmitted light. *Luster:* Vitreous to greasy.  
*Optical Class:* Uniaxial (+).  $\omega = 1.760(3)$   $\epsilon = 1.870(6)$

**Cell Data:** *Space Group:*  $P\bar{6}2c$ .  $a = 7.23(2)$   $c = 9.98(5)$   $Z = 6$

**X-ray Powder Pattern:** Vuoriyarvi complex, Kola Peninsula, Russia [close to bastnäsite-(Ce)].

2.92 (10), 3.59 (9), 2.09 (9), 1.923 (9), 2.05 (8), 1.698 (7), 1.319 (7)

<b>Chemistry:</b>	(1)		(1)		(1)
SO <sub>3</sub>	0.40	Ce <sub>2</sub> O <sub>3</sub>	37.50	CaO	0.40
P <sub>2</sub> O <sub>5</sub>	0.23	Nd <sub>2</sub> O <sub>3</sub>	3.43	BaO	0.70
CO <sub>2</sub>	19.70	Sm <sub>2</sub> O <sub>3</sub>	1.59	Na <sub>2</sub> O	0.13
SiO <sub>2</sub>	0.30	(Y + Dy) <sub>2</sub> O <sub>3</sub>	1.47	F	1.15
TiO <sub>2</sub>	0.04	Fe <sub>2</sub> O <sub>3</sub>	2.17	H <sub>2</sub> O <sup>+</sup>	3.96
ThO <sub>2</sub>	0.50	MnO	0.06	H <sub>2</sub> O <sup>-</sup>	0.11
La <sub>2</sub> O <sub>3</sub>	26.86	MgO	0.16	-O = F <sub>2</sub>	0.50
				Total	100.36

(1) Vuoriyarvi complex, Kola Peninsula, Russia; after deduction of about 5% impurities such as quartz, anatase, dolomite, barite, rhabdophane, and goethite, corresponds to (Ce<sub>0.53</sub>La<sub>0.38</sub>Nd<sub>0.05</sub>Sm<sub>0.02</sub>Y<sub>0.02</sub>)<sub>Σ=1.00</sub>(CO<sub>3</sub>)<sub>1.03</sub>[(OH)<sub>0.86</sub>F<sub>0.14</sub>]<sub>Σ=1.00</sub>.

**Polymorphism & Series:** Forms a series with bastnäsite-(Ce).

**Occurrence:** In calcite–dolomite carbonatite veins in pyroxenite of an alkalic ultramafic complex (Vuoriyarvi complex, Kola Peninsula, Russia); in a vug in perthitic pegmatite (Kamihori, Japan); in veins and lenses in marble (Desmont mine, Canada).

**Association:** Barite, strontianite, ancyllite, fluorite, pyrrhotite, pyrite, chalcopyrite, magnetite, anatase, monazite, burbankite, quartz (Vuoriyarvi complex, Kola Peninsula, Russia); beryl, zircon, xenotime, allanite, fergusonite, gadolinite, ilmenite (Kamihori, Japan); stillwellite, calcite, apatite, titanite, thorite, thorianite, uranothorite, scapolite, tourmaline (Desmont mine, Canada).

**Distribution:** From the Vuoriyarvi carbonatite complex, Kola Peninsula, Russia. In the Ossling quarry, between Kamenz and Hoyerswenda, Saxony, Germany. At Kamihori, Miyazaki Prefecture, Japan. In the Desmont mine, two km northwest of Wilberforce, Ontario, Canada.

**Name:** For a member of the *bastnäsite* group with (OH)<sup>1-</sup> > F<sup>1-</sup> and with *cerium* the dominant rare earth element.

**Type Material:** n.d.

**References:** (1) Kirillov, A.S. (1964) A new variety of bastnäsite – hydroxyl-bastnäsite. Doklady Acad. Nauk SSSR, 159, 1048–1050 (in Russian). (2) (1965) Amer. Mineral., 50, 805 (abs. ref. 1). (3) (1965) Mineral. Abs., 17, 303–304 (abs. ref. 1). (4) Kirillov, A.S. (1966) Hydroxyl-bastnäsite, a new mineral variety. Zap. Vses. Mineral. Obshch., 95, 51–59 (in Russian). (5) (1966) Amer. Mineral., 51, 1819–1820 (abs. ref. 4). (6) Minakawa, T., T. Adachi, and M. Matsuda (1992) The first occurrence of hydroxylbastnäsite-(Ce) in Japan. Geoscience Magazine, 41, 155–159 (in Japanese). (7) (1996) Mineral. Abs., 47, 248 (abs. ref. 6). (8) Sabina, A.P. (1982) Some rare minerals of the Bancroft area. Mineral. Record, 13, 223–228. (9) Pekov, I.V. (1998) Minerals first discovered on the territory of the former Soviet Union. Ocean Pictures, Moscow, 99. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior written permission of Mineral Data Publishing.