

# Hydroxylbastnäsite-(Nd)

(Nd, Ce, La)(CO<sub>3</sub>)(OH, F)

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**Crystal Data:** Hexagonal. *Point Group:*  $\bar{6}m2$ . Stacked platy crystals, to 0.2 mm, in massive intergrowths.

**Physical Properties:** *Cleavage:* On {0001}, a parting. Hardness = 1–2 in aggregates. D(meas.) = n.d. D(calc.) = 4.89

**Optical Properties:** Translucent. *Color:* White. *Streak:* White. *Luster:* Dull in aggregates. *Optical Class:* Uniaxial (+).  $\omega = 1.715(2)$   $\epsilon = 1.81(1)$

**Cell Data:** *Space Group:*  $[P\bar{6}2c]$  (by analogy to other bastnäsite species).  $a = 7.191(1)$   
 $c = 9.921(2)$   $Z = 6$

**X-ray Powder Pattern:** Near Nikšić, Yugoslavia.

2.911 (100), 4.95 (88), 3.596 (79), 2.042 (51), 1.914 (30), 2.077 (29), 2.481 (16)

## Chemistry:

	(1)		(1)
CO <sub>2</sub>	20.63	Eu <sub>2</sub> O <sub>3</sub>	1.3
Y <sub>2</sub> O <sub>3</sub>	0.2	Gd <sub>2</sub> O <sub>3</sub>	1.4
La <sub>2</sub> O <sub>3</sub>	27.1	CaO	0.3
Ce <sub>2</sub> O <sub>3</sub>	0.3	F	3.3
Pr <sub>2</sub> O <sub>3</sub>	8.5	H <sub>2</sub> O	2.26
Nd <sub>2</sub> O <sub>3</sub>	31.5	–O = F <sub>2</sub>	1.39
Sm <sub>2</sub> O <sub>3</sub>	4.4	Total	99.80

(1) Near Nikšić, Yugoslavia; by electron microprobe, CO<sub>2</sub> and H<sub>2</sub>O by TGA and mass spectrometer, presence of (CO<sub>3</sub>)<sup>2–</sup> and H<sub>2</sub>O confirmed by IR; corresponds to (Nd<sub>0.41</sub>La<sub>0.36</sub>Pr<sub>0.11</sub>Sm<sub>0.06</sub>Gd<sub>0.02</sub>Eu<sub>0.02</sub>Ca<sub>0.01</sub>)<sub>Σ=0.97</sub>[(OH)<sub>0.55</sub>F<sub>0.38</sub>]<sub>Σ=0.93</sub>(CO<sub>3</sub>)<sub>1.03</sub>.

**Polymorphism & Series:** Dimorphous with kozoite-(Nd).

**Occurrence:** As a rare authigenic mineral in a bauxite deposit developed on limestone.

**Association:** “Bauxite”.

**Distribution:** From the Zagrad bauxite deposit, near Nikšić, Montenegro, Yugoslavia.

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

**Type Material:** University of Belgrade, Belgrade, Yugoslavia, Zagrad 10,8397; Hungarian Academy of Sciences, Budapest, Hungary; Royal Ontario Museum, Toronto, Canada.

**References:** (1) Maksimović, Z. and G. Pantó (1985) Hydroxyl-bastnaesite-(Nd), a new mineral from Montenegro, Yugoslavia. *Mineral. Mag.*, 49, 717–720. (2) Farkas, L., Z. Maksimović, and G. Pantó (1985) X-ray powder data and unit cell of natural hydroxyl-bastnaesite-(Nd). *Neues Jahrb. Mineral., Monatsh.*, 298–304. (3) (1988) *Amer. Mineral.*, 73, 440–441 (abs. refs. 1 and 2).