

## **Hundholmenite-(Y) $(Y,REE,Ca,Na)_{15}(Al,Fe^{3+})Ca_xAs^{3+}_{1-x}(Si,As^{5+})Si_6B_3(O,F)_{48}$**

**Crystal Data:** Hexagonal. *Point Group:* 3m. As subhedral equant to tabular crystals to 7 mm.

**Physical Properties:** *Cleavage:* None. *Tenacity:* Brittle. *Fracture:* Uneven to subconchoidal. Hardness = ~5-6 D(meas.) = > 4.2 D(calc.) = 5.206(9) Nonfluorescent.

**Optical Properties:** Translucent. *Color:* Pale reddish to grayish brown, grayish yellow to gray; colorless in thin section. *Streak:* White. *Luster:* Vitreous to adamantine.

*Optical Class:* Uniaxial (-).  $\omega = 1.7578(5)$   $\epsilon = 1.7487(5)$  Nonpleochroic.

**Cell Data:** *Space Group:* R3m.  $a = 10.675(6)$   $c = 27.02(2)$   $Z = 3$

**X-Ray Diffraction Pattern:** Hundholmen, Tysfjord, Nordland County, Norway. 2.972 (100), 2.947 (76), 2.924 (66), 3.114 (43), 4.38 (33), 1.978 (37), 2.681 (36)

<b>Chemistry:</b>	(1)	(1)	(1)
Na <sub>2</sub> O	0.31	Pr <sub>2</sub> O <sub>3</sub> 1.73	Yb <sub>2</sub> O <sub>3</sub> 3.53
CaO	6.45	Nd <sub>2</sub> O <sub>3</sub> 7.87	Lu <sub>2</sub> O <sub>3</sub> 0.78
MnO	0.07	Sm <sub>2</sub> O <sub>3</sub> 2.93	SiO <sub>2</sub> 15.05
PbO	0.14	Eu <sub>2</sub> O <sub>3</sub> 0.83	ThO <sub>2</sub> 0.09
B <sub>2</sub> O <sub>3</sub>	3.922	Gd <sub>2</sub> O <sub>3</sub> 4.39	P <sub>2</sub> O <sub>5</sub> 0.14
Al <sub>2</sub> O <sub>3</sub>	1.23	Tb <sub>2</sub> O <sub>3</sub> 0.49	As <sub>2</sub> O <sub>3</sub> [0.804]
Fe <sub>2</sub> O <sub>3</sub>	0.793	Dy <sub>2</sub> O <sub>3</sub> 4.20	As <sub>2</sub> O <sub>5</sub> [1.094]
Y <sub>2</sub> O <sub>3</sub>	18.07	Ho <sub>2</sub> O <sub>3</sub> 0.80	F 7.75
La <sub>2</sub> O <sub>3</sub>	4.84	Er <sub>2</sub> O <sub>3</sub> 3.16	- O = F <sub>2</sub> 3.26
Ce <sub>2</sub> O <sub>3</sub>	12.70	Tm <sub>2</sub> O <sub>3</sub> 0.79	Total 101.68

(1) Hundholmen, Tysfjord, Nordland County, Norway; average electron microprobe analysis, As<sub>2</sub>O<sub>3</sub> and As<sub>2</sub>O<sub>5</sub> recalculated from structure data, boron by ICP-AES; corresponds to  $(Y,REE,Ca,Na)_{15}(Al,Fe^{3+})Ca_xAs^{3+}_{1-x}(Si,As^{5+})Si_6B_3(O,F)_{48}$  ( $x = 0.78$ ).

**Mineral Group:** Vicanite group.

**Occurrence:** A late-stage, primary mineral in granite pegmatite.

**Association:** REE-bearing fluorite, allanite-(Ce).

**Distribution:** From Hundholmen [TL], 7 km northwest of Kjølpsvik, and at Stetind, Tysfjord, and at Lagmannsvik, Hamarøy, Nordland County, Norway.

**Name:** For *Hundholmen*, Norway, where the studied samples were collected and a suffix for the dominant rare earth element.

**Type Material:** Natural History Museum, University of Oslo, Norway (41590).

**References:** (1) Raade, G., O. Johnsen, M. Erambert, and O.V. Petersen (2007) Hundholmenite-(Y) from Norway - a new mineral species in the vicanite group: descriptive data and crystal structure. *Mineral., Mag.*, 71, 179-192.