Heidornite $Na_2Ca_3B_5O_8(SO_4)_2(OH)_2Cl$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As doubly-terminated steeply dipyramidal crystals, to 7 cm, composed of {110}, $\{11\overline{1}\}$ and $\{11\overline{2}\}$.

Physical Properties: *Cleavage:* {001}, perfect. Hardness = 4–5 D(meas.) = 2.753(2) D(calc.) = 2.70

Optical Properties: Transparent. *Color:* Colorless. *Luster:* [Vitreous.] *Optical Class:* Biaxial (+). *Orientation:* $Y = b$; $Z \wedge a = 23°$. *Dispersion:* $r < v$. $\alpha = 1.579(5)$ $\beta = 1.588(5)$ $\gamma = 1.604(5)$ 2V(meas.) = 73°–77° 2V(calc.) = 74°

Cell Data: *Space Group:* $C2/c$. $a = 10.21$ $b = 7.84$ $c = 18.79$ $\beta = 93.5°$ Z = 4

X-ray Powder Pattern: Near Nordhorn, Germany.
3.11 (vs), 3.77 (s), 2.74 (s), 2.96 (ms), 2.90 (m), 2.81 (m), 2.54 (m)

Chemistry:

	(1)	(2)
SO_3	26.55	26.26
B_2O_3	27.99	28.54
CaO	27.61	27.59
Na_2O	5.07	5.08
NaCl	9.40	9.58
H_2O^+	3.15	
H_2O^-	0.14	
H_2O		2.95
insol.	0.07	
Total	99.98	100.00

(1) Near Nordhorn, Germany. (2) $Na_2Ca_3B_5O_8(SO_4)_2(OH)_2Cl$.

Occurrence: Very rare, in a cavity in a marine evaporite deposit.

Association: Glauberite, anhydrite.

Distribution: From Frenswegen, northwest of Nordhorn, Lower Saxony, Germany.

Name: Honors Dr. F. Heidorn, Bentheim, Germany, for his scientific study of the Zechstein deposits.

Type Material: The Natural History Museum, London, England, 1957,370; Harvard University, Cambridge, Massachusetts, USA, 109587.

References: (1) von Engelhardt, W., H. Füchtbauer, and J. Zemann (1956) Heidornit $Na_2Ca_3[Cl•(SO_4)_2•B_5O_8(OH)_2]$ ein neues Bormineral aus dem Zechsteinanhydrit. Heidelberger Beitr. Mineralog. Petrog., 5, 177–186 (in German). (2) (1957) Amer. Mineral., 42, 120–121 (abs. ref. 1). (3) Burzlaff, H. (1967) Die Struktur des Heidornit $Ca_3Na_2Cl(SO_4)_2B_5O_8(OH)_2$. Neues Jahrb. Mineral., Monatsh., 157–169 (in German).