

**Braitschite-(Ce)**

**Crystal Data:** Hexagonal. *Point Group:* 6/*m*. As hexagonal plates, to 70 μm; in spherical aggregates.

**Physical Properties:** Hardness = n.d. D(meas.) = 2.903(2) D(calc.) = 2.837

**Optical Properties:** Semitransparent. *Color:* Colorless to white, may be pink to red from admixed hematite. *Luster:* Vitreous.

*Optical Class:* Uniaxial (+). ω = 1.646(2) ε = 1.647(2)

**Cell Data:** *Space Group:* P6/*m*. a = 12.1506(6) c = 7.3678(4) Z = 1

**X-ray Powder Pattern:** Cane Creek mine, Utah, USA.

4.283 (100), 3.021 (92), 10.52 (54), 2.8090 (53), 3.168 (45), 3.155 (38), 1.8805 (35)

<b>Chemistry:</b>	(1)		(1)
B <sub>2</sub> O <sub>3</sub>	48.2	Dy <sub>2</sub> O <sub>3</sub>	0.25
Y <sub>2</sub> O <sub>3</sub>	1.50	Ho <sub>2</sub> O <sub>3</sub>	0.05
La <sub>2</sub> O <sub>3</sub>	4.57	Er <sub>2</sub> O <sub>3</sub>	0.08
Ce <sub>2</sub> O <sub>3</sub>	7.64	Tm <sub>2</sub> O <sub>3</sub>	0.02
Pr <sub>2</sub> O <sub>3</sub>	1.00	Yb <sub>2</sub> O <sub>3</sub>	0.02
Nd <sub>2</sub> O <sub>3</sub>	3.67	Lu <sub>2</sub> O <sub>3</sub>	0.01
Sm <sub>2</sub> O <sub>3</sub>	0.94	CaO	21.8
Eu <sub>2</sub> O <sub>3</sub>	0.39	Na <sub>2</sub> O	1.68
Gd <sub>2</sub> O <sub>3</sub>	0.32	<u>H<sub>2</sub>O<sup>+</sup></u>	<u>7.75</u>
Tb <sub>2</sub> O <sub>3</sub>	0.10	Total	[100.0]

(1) Cane Creek mine, Utah, USA; by a wide variety of analytical methods, recalculated to 100% from an original total of 99.91%; after deduction of about 35% admixed quartz, dolomite, hematite, and a chloritelike mineral; based on the structure analysis corresponds to Ca<sub>6.15</sub>Na<sub>0.85</sub>REE<sub>2.08</sub>[B<sub>6</sub>O<sub>7</sub>(OH)<sub>3</sub>(O, (OH))<sub>3</sub>]<sub>4</sub>·H<sub>2</sub>O.

**Occurrence:** In anhydrite at the contact with sylvite in a thick sequence of marine evaporites, at a depth of about 1 km.

**Association:** Anhydrite, dolomite, halite, hematite, chalcopyrite.

**Distribution:** From the Cane Creek potash mine, about 13 km southwest of Moab, and in the CC-1 well, about 1.8 km south of that mine, Grand Co., Utah, USA.

**Name:** Honors Dr. Otto *Braitsch* (1921-1966), University of Freiburg, Freiburg, Germany, for his contributions to evaporite mineralogy and geochemistry. A suffix indicates the dominant REE.

**Type Material:** National Museum of Natural History, Washington, D.C., USA, 120627.

**References:** (1) Raup, O.B., A.J. Gude, 3rd, E.J. Dwornik, F. Cuttitta, and H.J. Rose, Jr. (1968) Braitschite, a new hydrous calcium rare-earth borate mineral from the Paradox Basin, Grand County, Utah. *Amer. Mineral.*, 53, 1081-1095. (2) Rowland, C.E., C.L. Cahill, and J.E. Post (2011) The structure of braitschite, a calcium rare earth borate. *Amer. Mineral.*, 96, 197-201.