

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)

Chemistry:	(1)		(1)
B ₂ O ₃	48.2	Dy ₂ O ₃	0.25
Y ₂ O ₃	1.50	Ho ₂ O ₃	0.05
La ₂ O ₃	4.57	Er ₂ O ₃	0.08
Ce ₂ O ₃	7.64	Tm ₂ O ₃	0.02
Pr ₂ O ₃	1.00	Yb ₂ O ₃	0.02
Nd ₂ O ₃	3.67	Lu ₂ O ₃	0.01
Sm ₂ O ₃	0.94	CaO	21.8
Eu ₂ O ₃	0.39	Na ₂ O	1.68
Gd ₂ O ₃	0.32	<u>H₂O⁺</u>	<u>7.75</u>
Tb ₂ O ₃	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_{6.15}Na_{0.85}REE_{2.08}[B₆O₇(OH)₃(O, (OH))₃]₄·H₂O.

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 evaporate 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.