

Crystal Data: Monoclinic. *Point Group:* 2/m. Small crystals exhibit {100}, {111}, {110}, with a few additional forms, typically with uneven face development; in powdery aggregates, granular, massive.

Physical Properties: *Cleavage:* On {001}, $\{\bar{1}01\}$, perfect; on {100}, good. Hardness = 4–4.5 D(meas.) = 2.128 D(calc.) = [2.110] Slightly soluble in H₂O.

Optical Properties: Transparent. *Color:* Colorless to white, uncommonly reddish brown; colorless in transmitted light. *Luster:* Vitreous.

Optical Class: Biaxial (+). *Orientation:* Y = b; Z \wedge c = 64°30'. $\alpha = 1.508$ $\beta = 1.526$ –1.527 $\gamma = 1.549$ –1.550 2V(meas.) = 80°38'

Cell Data: *Space Group:* C2/c. a = 18.572(6) b = 8.466(3) c = 14.689(5) $\beta = 100.02(3)^\circ$ Z = 4

X-ray Powder Pattern: Leopoldshall, Germany.

7.22 (100), 6.215 (100), 3.104 (71), 2.488 (71), 3.837 (50), 3.770 (50), 3.359 (50)

Chemistry:

	(1)	(2)
B ₂ O ₃	[57.46]	58.30
MgO	12.06	11.25
K ₂ O	6.48	6.57
H ₂ O	24.00	23.88
Total	[100.00]	100.00

(1) Schmidtmannshall, Germany; B₂O₃ by difference. (2) KHMg₂B₁₂O₁₆(OH)₁₀•4H₂O.

Occurrence: An uncommon component in marine potash deposits; rarely in efflorescences.

Association: Boracite, pinnoite, kainite (Germany); anhydrite, halite (Inder deposit, Kazakhstan).

Distribution: In Germany, in Saxony-Anhalt, from Schmidtmannshall, near Aschersleben; Neustassfurt and Leopoldshall, in Stassfurt, 34 km south of Magdeburg. At Sallent-Balsareny, Barcelona Province, Spain. From Monte Sambuco, Calascibetta, Sicily, Italy. At the Inder borate deposit, Kazakhstan. In the USA, from the Eagle Borax Spring, Furnace Creek district, Death Valley, Inyo Co., California.

Name: For potassium, KAlIum, and BORate in the composition.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 367–368. (2) Mrose, M.E. and W.T. Schaller (1965) The identity of paternoite with kaliborite (K₂O•4MgO•11B₂O₃•18H₂O). Amer. Mineral., 50, 1079–1083. (3) Burns, P.C. and F.C. Hawthorne (1994) Kaliborite: an example of a crystallographically symmetrical hydrogen bond. Can. Mineral., 32, 885–894.