

Crystal Data: Monoclinic. *Point Group:* 2/m. As thick tabular {010} crystals, prismatic along [001], to 3 mm, with dominant {110}, {010}, {111}, and six other forms. *Twining:* On (010) twin plane with $[\bar{1} 01]$ twin axis.

Physical Properties: *Cleavage:* On {010}, perfect; on {001}, very good. *Tenacity:* Easily deformed. Hardness = 2-3 D(meas.) = 2.25(1) D(calc.) = 2.265

Optical Properties: Transparent. *Color:* Colorless. *Luster:* Silky.
Optical Class: Biaxial (+). $\alpha = 1.512-1.515$ $\beta = 1.524-1.526$ $\gamma = 1.573-1.577$ $2V(\text{meas.}) = 49^\circ-53^\circ$
Orientation: $Y = b$; $Z \wedge c = 38^\circ-42^\circ$; $Z \wedge [\bar{1} 01] = -49^\circ$ to -54° .

Cell Data: *Space Group:* P2₁/a. $a = 12.817(8)$ $b = 14.448(8)$ $c = 12.783(8)$ $\beta = 101^\circ 25(5)'$ $Z = 4$

X-ray Powder Pattern: Königshall-Hindenburg mine, Germany.
 7.25 (vs), 2.10 (s), 5.40 (m), 3.92 (m), 3.34 (m), 1.19 (m), 4.75 (mw)

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|-------------------------------|----------------|
| Chemistry: | (1) |
| SrO | 12.23 |
| CaO | 7.47 |
| B ₂ O ₃ | [61.22] |
| <u>H₂O</u> | <u>[18.10]</u> |
| Total | 99.02 |

(1) Penobsquis, Kings County, New Brunswick, Canada; average of 9 electron microprobe analyses, B₂O₃ and H₂O calculated from structure; corresponds to Sr_{1.06}Ca_{0.94}B₁₄O₂₀(OH)₆·5H₂O.

(2) Stoichiometry established by analogy to ginorite, and validated by close similarity of X-ray powder patterns, optical properties and densities; SrO 10%-20% by X-ray fluorescence analysis, corresponding to as much as Sr(Ca_{0.66}Sr_{0.34})_{Σ=1.00}B₁₄O₂₀(OH)₆·5H₂O.

Occurrence: A rare insoluble residue in salt beds (Königshall-Hindenburg mine, Germany).

Association: Halite, anhydrite (Königshall-Hindenburg mine, Germany); halite, sylvite, hilgardite, volkovskite, trembathite, danburite, howlite, veatchite, hydroboracite (New Brunswick).

Distribution: From the Königshall-Hindenburg potash mine, Reyershausen, near Göttingen, Lower Saxony, Germany. At the Inder borate deposit, Kazakhstan. From the Furnace Creek district, Death Valley, Inyo Co., California, USA. In the Tincalayu borax deposit, Salar del Hombre Muerto, Salta Province, Argentina. In the Potash Corporation of Saskatchewan (New Brunswick Division) mine at Penobsquis, Kings County, New Brunswick, Canada.

Name: As the strontium analog of *ginorite*.

Type Material: National Museum of Natural History, Washington, D.C., USA, 114168.

References: (1) Braitsch, O. (1959) Über Strontioginorit, eine neue Ginorit-Varietät aus dem Zechsteinsalz. Beitr. Mineral. u. Petrog., 6, 366-370 (in German). (2) (1960) Amer. Mineral., 45, 478 (abs. ref. 1). (3) Konnert, J.A., J.R. Clark, and C.L. Christ (1970) Crystal structure of strontioginorite, (Sr,Ca)₂B₁₄O₂₀(OH)₆·5H₂O. Amer. Mineral., 55, 1911-1931. (4) Christian, R.P., G.D. Eberlein, and J.A. Konnert (1974) Optical and X-ray crystallographic investigations of strontioginorites. J. Res. U.S. Geol. Surv., 2(6), 699-700. (5) Grice, J.D. (2005) Strontioginorite: crystal-structure analysis and hydrogen bonding. Can. Mineral., 43, 1019-1026. (6) (2006) Amer. Mineral., 91(1), 223 (abs. ref. 5).