

Preobrazhenskite

Mg₃B₁₁O₁₅(OH)₉

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Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. As crystals, to 4 cm; in nodules and granular massive.

Physical Properties: Hardness = 4.5–5 D(meas.) = n.d. D(calc.) = 2.45

Optical Properties: Semitransparent. *Color:* Colorless, lemon-yellow, dark gray.
Optical Class: Biaxial (+), nearly uniaxial (+). $\alpha = 1.570$ $\beta = 1.570$ $\gamma = 1.595$
 $2V(\text{meas.}) = \text{n.d.}$

Cell Data: *Space Group:* $Pbcm$. $a = 16.291(4)$ $b = 9.181(2)$ $c = 10.571(2)$ $Z = 4$

X-ray Powder Pattern: Inder deposit, Kazakhstan.
5.28 (10), 3.79 (10), 3.230 (9), 3.187 (9), 2.821 (9), 2.769 (9), 2.641 (9)

Chemistry:	(1)	(2)
SiO ₂	0.30	
B ₂ O ₃	65.90	65.47
R ₂ O ₃	0.17	
MgO	20.65	20.67
CaO	0.00	
H ₂ O ⁺	13.39	13.86
H ₂ O ⁻	0.16	
Total	100.57	100.00

(1) Inder deposit, Kazakhstan; after washing to remove soluble halides. (2) Mg₃B₁₁O₁₅(OH)₉.

Occurrence: In fine-grained halite–polyhalite rock.

Association: Inyoite, halite, polyhalite, kieserite, anhydrite, aksaite, boracite, ginorite, halurgite, strontiorborite, metaborite, kaliborite.

Distribution: In Kazakhstan, in and under the Inder borate deposit, and from the Chalkar salt dome, Ak-sai Valley, Uralsk district.

Name: To honor Pavel Ivanovich Preobrazhenskii (1874–1944), investigator of Russian salt deposits, Institute of Halurgy, St. Petersburg, and Institute of Mining and Chemical Stock, Moscow, Russia, a discoverer of the Inder deposit, Kazakhstan.

Type Material: Mining Institute, St. Petersburg, 1497/1–2,5; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 57015.

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