Tyretskite **$Ca_2B_5O_9(OH,Cl)\cdot H_2O$**

Crystal Data: Triclinic. *Point Group:* $\overline{1}$. As lamellar crystals, to 4 mm, in radiating and spherulitic aggregates.

Physical Properties: Hardness = n.d. D(meas.) = 2.189 D(calc.) = [2.57]

Optical Properties: Semitransparent. *Color:* White to pale brown.
Optical Class: Biaxial. $\alpha = 1.637$ β = n.d. $\gamma = 1.670$ 2V(meas.) = $\sim 46°$

Cell Data: *Space Group:* $P\overline{1}$. $a = 6.44$ $b = 6.45$ $c = 6.41$ $\alpha = 118.23°$ $\beta = 119.75°$ $\gamma = 73.50°$ Z = 1

X-ray Powder Pattern: Tyret station, Russia.
2.93 (10), 2.86 (10), 2.14 (9), 1.846 (9), 2.06 (8), 2.80 (7), 3.23 (6), 1.985 (6)

Chemistry:

	(1)	(2)	(3)
SO_3	2.38		
CO_2	4.73		
B_2O_3	43.36	55.54	55.56
R_2O_3	0.36		
MgO	2.14		
CaO	29.77	32.08	35.81
SrO	1.94	2.49	
Na_2O	3.50		
Cl	5.13	1.44	
H_2O	6.85	8.77	8.63
insol.	0.54		
$-O = Cl_2$	1.16	0.32	
Total	99.54	[100.00]	100.00

(1) Tyret station, Russia; (2) Do.; analysis (1) after deduction of halite 6.64%, anhydrite 4.07%, dolomite 9.8%, calcite 0.13%, R_2O_3, and insoluble; corresponds to $(Ca_{1.80}Sr_{0.08})_{\Sigma=1.88}B_{5.02}O_{9.00}[(OH)_{0.69}Cl_{0.13}]_{\Sigma=0.82}\cdot 1.18H_2O$. (3) $Ca_2B_5O_9(OH)\cdot H_2O$.

Polymorphism & Series: The 1A polytype is known.

Occurrence: Very rare, in a cavity in dolomitic saline rock, in drillcore from a depth of 1233 m.

Association: Sylvite, halite, carnallite, halite.

Distribution: From near the Tyret railway station, on the east Siberian railway, in the Lena-Angara salt basin, Irkutsk district, Siberia, Russia.

Name: For its initial occurrence near the Tyret station, Russia.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 76340.

References: (1) Ivanov, A.A. and Y.Y. Yarzhemskii (1954) Boron manifestations in the saline strata of the Leno-Angar basin. Trudy Vses. Nauch. Issled. Inst. Halurgi, 29, 210-214. (2) Kondrat'eva, V.V. (1964) X-ray study of some minerals of the hilgardite group. X-ray study of minerals. 'Nedra', Moscow, 4, 10–18 (in Russian). (3) (1966) Mineral. Abs., 17, 500–501 (abs. ref. 1–2). (4) Davies, W.O. and M.P. Machin (1968) Strontiohilgardite-1Tc and tyretskite, a structural pair. Amer. Mineral., 53, 2084–2087. (5) Ghose, S. (1985) A new nomenclature for the borate minerals in the hilgardite ($Ca_2B_5O_9\cdot H_2O$)−tyretskite ($Ca_2B_5O_9\cdot H_2O$) group. Amer. Mineral., 70, 636–637. (6) Pekov, I.V. (1998) Minerals first discovered on the territory of the former Soviet Union. Ocean Pictures, Moscow, 219–220.