Satimolite **$KNa_2Al_4B_6O_{15}Cl_3 \cdot 13H_2O$**

Crystal Data: Orthorhombic. *Point Group:* n.d. Crystals are tabular rhombic, to 0.02 mm; commonly anhedral granular, in dense chalklike aggregates.

Physical Properties: Hardness = n.d. D(meas.) = 1.70, after correction for boracite 31%. D(calc.) = [1.70]

Optical Properties: Semitransparent. *Color:* White.
Optical Class: Biaxial (–). $\alpha = 1.535(2)$ $\beta = 1.552(2)$ $\gamma = 1.552(2)$ 2V(meas.) = Very small.

Cell Data: *Space Group:* n.d. $a = 12.62$ $b = 18.64$ $c = 6.97$ Z = 2

X-ray Powder Pattern: Satimola salt dome, Kazakhstan.
3.20 (10), 9.5 (9), 6.3 (9), 4.01 (9), 3.51 (8), 2.441 (8), 1.966 (8)

Chemistry:

	(1)	(2)	(3)
B_2O_3	35.80	24.76	24.91
Al_2O_3	16.62	24.10	24.32
Fe_2O_3	1.78		
MgO	8.39		
Na_2O	4.97	7.21	7.39
K_2O	4.18	6.06	5.62
Cl	11.48	12.70	12.69
H_2O^+	19.33		
H_2O^-	0.00		
H_2O		28.02	27.93
$-O = Cl_2$	2.59	2.85	2.86
Total	99.96	[100.00]	100.00

(1) Satimola salt dome, Kazakhstan. (2) Do.; after deduction of boracite and Fe_2O_3, and recalculating to 100%, then corresponds to $K_{1.00}Na_{2.00}Al_{4.00}B_{6.01}O_{15}Cl_{3.00} \cdot 13.02H_2O$. (3) $KNa_2Al_4B_6O_{15}Cl_3 \cdot 13H_2O$.

Occurrence: In halite–polyhalite–boracite–kieserite–clay rocks.

Association: Kaliborite, boracite, kieserite, magnesite.

Distribution: From the Satimola salt dome, north Caspian region, Kazakhstan.

Name: For its occurrence in the Satimola salt dome, Kazakhstan.

Type Material: Mining Institute, St. Petersburg, 1023/1; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 69941.

References: (1) Bocharov, V.M., I.I. Khalturina, N.P. Avrova,, and Y.V. Shipovalov (1969) The new mineral satimolite, a hydrous chlorine-containing borate of aluminum and alkalies. Trudy Mineral. Muzeya Akad. Nauk SSSR, 19, 121–125 (in Russian). (2) Ostrovskaya, I.V. (1969) The formula for the new borate satimolite. Trudy Mineral. Muzeya Akad. Nauk SSSR, 19, 202–205 (in Russian). (3) (1970) Amer. Mineral., 55, 1069–1070 (abs. ref. 1–2).