

**Satimolite** **$\text{KNa}_2\text{Al}_4\text{B}_6\text{O}_{15}\text{Cl}_3 \cdot 13\text{H}_2\text{O}$** 

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**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.  $D(\text{meas.}) = 1.70$ , after correction for boracite 31%.  $D(\text{calc.}) = [1.70]$

**Optical Properties:** Semitransparent. *Color:* White.

*Optical Class:* Biaxial (-).  $\alpha = 1.535(2)$   $\beta = 1.552(2)$   $\gamma = 1.552(2)$   $2V(\text{meas.}) =$  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)
$\text{B}_2\text{O}_3$	35.80	24.76	24.91
$\text{Al}_2\text{O}_3$	16.62	24.10	24.32
$\text{Fe}_2\text{O}_3$	1.78		
MgO	8.39		
$\text{Na}_2\text{O}$	4.97	7.21	7.39
$\text{K}_2\text{O}$	4.18	6.06	5.62
Cl	11.48	12.70	12.69
$\text{H}_2\text{O}^+$	19.33		
$\text{H}_2\text{O}^-$	0.00		
$\text{H}_2\text{O}$		28.02	27.93
$-\text{O} = \text{Cl}_2$	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  $\text{Fe}_2\text{O}_3$ , and recalculating to 100%, then corresponds to  $\text{K}_{1.00}\text{Na}_{2.00}\text{Al}_{4.00}\text{B}_{6.01}\text{O}_{15}\text{Cl}_{3.00} \cdot 13.02\text{H}_2\text{O}$ . (3)  $\text{KNa}_2\text{Al}_4\text{B}_6\text{O}_{15}\text{Cl}_3 \cdot 13\text{H}_2\text{O}$ .

**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 alkalis. *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).