

Kuliokite-(Y)**(Y, Yb)₄Al(SiO₄)₂(OH)₂F₅**

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Crystal Data: Triclinic. *Point Group:* 1. As platy crystals up to 0.5 mm.**Physical Properties:** *Cleavage:* Poor on {010}. *Hardness* = 4–5 *D*(meas.) = 4.3(5)
D(calc.) = 4.26 *Yellow-green cathodoluminescence.***Optical Properties:** Transparent. *Color:* Colorless. *Streak:* White. *Luster:* Adamantine.
Optical Class: Biaxial (–). *Orientation:* $Z = c$; $X \wedge a = 7^\circ$; $Y \wedge b = 28^\circ$. *Dispersion:* $r > v$.
 $\alpha = 1.656(1)$ $\beta = 1.700(1)$ $\gamma = 1.703(1)$ $2V(\text{meas.}) = 19(1)^\circ$ $2V(\text{calc.}) = 29^\circ$ **Cell Data:** *Space Group:* *P*1. $a = 8.606(6)$ $b = 8.672(8)$ $c = 4.317(3)$ $\alpha = 102.79(6)^\circ$
 $\beta = 97.94(5)^\circ$ $\gamma = 116.66(6)^\circ$ $Z = 1$ **X-ray Powder Pattern:** Mt. Ploskaya, Russia.

2.793 (10b), 3.710 (9), 3.490 (9), 2.459 (8b), 1.702 (8b), 2.144 (7), 3.310 (6)

Chemistry:

	(1)
SiO ₂	17.75
Al ₂ O ₃	7.36
Y ₂ O ₃	56.40
Gd ₂ O ₃	0.39
Dy ₂ O ₃	1.38
Ho ₂ O ₃	0.19
Er ₂ O ₃	2.24
Tm ₂ O ₃	0.10
Yb ₂ O ₃	2.71
Lu ₂ O ₃	0.11
F	13.45
H ₂ O	[3.58]
–O = F ₂	5.66
Total	[100.00]

(1) Mt. Ploskaya, Russia; by electron microprobe, H₂O by difference; corresponding to
(Y_{3.58}RE_{0.27})_{Σ=3.85}Al_{1.04}Si_{2.12}O_{7.60}(OH)_{2.88}F_{5.08}.**Occurrence:** As inclusions in fluorite or on fissures in microcline pegmatites.**Association:** Thalenite, xenotime, kainosite, bastnäsite, keiviite-(Y), keiviite-(Yb), quartz, fluorite.**Distribution:** From the Mt. Ploskaya, Keivy massif, Kola Peninsula, Russia.**Name:** For the Kuliok River, Kola Peninsula, Russia, and *yttrium* in its composition.**Type Material:** Geology Museum, Kola Branch, Academy of Sciences, Apatity, 5958/7; Mining Institute, St. Petersburg, 945/2; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 85666, 85670.**References:** (1) Voloshin, A.V., Y.A. Pakhomovskii, F.N. Tyusheva, Y.V. Sokolova, and Y.K. Yegorov-Tismenko (1986) Kuliokite-(Y) – a new yttrium–aluminum fluoride–silicate from amazonite pegmatites of the Kola Peninsula. *Mineral. Zhurnal*, 8(2), 94–99 (in Russian with English abs.). (2) (1988) *Amer. Mineral.*, 73, 192 (abs. ref. 1).