Keiviite-(Yb)  \((\text{Yb, Y})_2\text{Si}_2\text{O}_7\)

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Crystal Data: Monoclinic.  \textbf{Point Group}: \(2/m\). As elongated platy and prismatic crystals, to 0.8 mm. Twinning: Polysynthetic, common.

Physical Properties: \textit{Cleavage}: Perfect on \{110\}, imperfect on \{001\}. Hardness = n.d. D(meas.) = 5.95  D(calc.) = 5.99  Faint green cathodoluminescence.

Optical Properties: \textit{Cleavage}: Perfect on \(\{110\}\), imperfect on \(\{001\}\). \textit{Color}: Colorless. \textit{Luster}: Vitreous. \textit{Optical Class}: Biaxial \((-\). Orientation: Z = b; X \& c = 3°–5°; Y \& a = 7°–8°. \textit{Dispersion}: \(r < v\), strong. \(\alpha = 1.723\) \(\beta = 1.758\) \(\gamma = 1.768\) \(2V(\text{meas.}) = 58°\)

Cell Data: \textit{Space Group}: \(C2/m\). \(a = 6.840(2)\) \(b = 8.916(4)\) \(c = 4.745(1)\) \(\beta = 102.11(3)°\) \(Z = 2\)

X-ray Powder Pattern: Mt. Ploskaya, Russia; nearly identical to keiviite-(Y). 3.24 (10), 3.20 (10), 3.03 (9), 4.64 (8), 2.720 (7), 2.674 (7), 2.262 (7)

Chemistry:

\begin{tabular}{lccc}
SiO\(_2\) & 23.47 & 26.71 \\
Y\(_2\)O\(_3\) & 1.02 & 15.42 \\
Gd\(_2\)O\(_3\) & 0.06 & 0.15 \\
Th\(_2\)O\(_3\) & 0.04 & 0.04 \\
Dy\(_2\)O\(_3\) & 1.23 & 3.86 \\
Ho\(_2\)O\(_3\) & 0.65 & 1.23 \\
Er\(_2\)O\(_3\) & 6.24 & 9.85 \\
Tm\(_2\)O\(_3\) & 3.10 & 3.19 \\
Yb\(_2\)O\(_3\) & 55.06 & 34.57 \\
Lu\(_2\)O\(_3\) & 8.97 & 5.22 \\
FeO & 0.00 & 0.09 \\
CaO & 0.03 & 0.07 \\
\end{tabular}

Total 99.87 100.40

(1–2) Mt. Ploskaya, Russia; by electron microprobe; when averaged with three other intermediate analyses, corresponds to \((\text{Yb}_{1.43}\text{Lu}_{0.23}\text{Er}_{0.17}\text{Tm}_{0.08}\text{Y}_{0.05}\text{Dy}_{0.03}\text{Ho}_{0.02})_{\Sigma=2.01}\text{Si}_{1.99}\text{O}_7\).

Polymorphism & Series: Forms a series with keiviite-(Y).

Occurrence: In microcline-bearing pegmatites; two generations of the mineral are present.

Association: Fluorite, bastnäsite, hingganite, wulfenite.

Distribution: From Mt. Ploskaya, Keivy massif, Kola Peninsula, Russia.

Name: For Keivy on the Kola Peninsula, Russia, and ytterbium in its composition.

Type Material: Geology Museum, Kola Branch, Academy of Sciences, Apatity, 5769; Mining Institute, St. Petersburg, 1343/1; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 82998.


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