Paraumbite

\[ K_3\text{Zr}_2\text{HSi}_6\text{O}_{18} \cdot n\text{H}_2\text{O} \]

Crystal Data: Orthorhombic. Point Group: \textit{mm}2. Equant crystals, to 1 mm; massive.

Physical Properties: Cleavage: \{010\}, perfect micaceous; \{100\} and \{110\}, less perfect. Fracture: Uneven. Hardness = \sim 4.5 \quad VHN = 280–504, 384 average. \( D(\text{meas.}) = 2.59 \quad D(\text{calc.}) = 2.92 \)

Optical Properties: Translucent to transparent. Color: Colorless to white, gray, pale green. Streak: White. Luster: Vitreous, pearly on cleavages. Optical Class: Biaxial (-). Orientation: \( X = c \); \( Y = b \); \( Z = a \). \( \alpha = 1.588(2) \quad \beta = 1.601(2) \quad \gamma = 1.610(2) \quad 2V(\text{meas.}) = 82^\circ \)

Cell Data: Space Group: \textit{P2}1\textit{cm}. \( a = 10.34–10.39 \quad b = 13.25–13.29 \quad c = 14.55–14.57 \quad Z = 4 \)

X-ray Powder Pattern: Khibiny massif, Russia. 5.95 (10b), 3.01 (9b), 6.46 (8), 3.47 (7), 2.90 (7), 2.56 (6), 4.06 (6b)

Chemistry:

\[
\begin{array}{c|c}
\text{SiO}_2 & 39.58 \\
\text{TiO}_2 & 0.89 \\
\text{ZrO}_2 & 27.87 \\
\text{HfO}_2 & 0.32 \\
\text{Fe}_2\text{O}_3 & 0.10 \\
\text{CaO} & 0.00 \\
\text{Na}_2\text{O} & 0.12 \\
\text{K}_2\text{O} & 15.39 \\
\text{H}_2\text{O} & [15.73] \\
\end{array}
\]

Total \[ [100.00] \]

(1) Khibiny massif, Russia; by electron microprobe, \( \text{H}_2\text{O} \) by difference; corresponds to (\( K_{2.92}\text{Na}_{0.03}\text{Si}_{5.89}\text{O}_{18}\text{H}_{0.94} \cdot 7.34\text{H}_2\text{O} \)).

Occurrence: Replacing wadeite in a pegmatite in a differentiated alkalic massif (Khibiny massif, Russia); in altered pegmatite and sodalite xenoliths in an intrusive alkalic gabbro-syenite complex (Mont Saint-Hilaire, Canada).

Association: Eudialyte, wadeite, gaidonnayite, natrolite, pectolite, potassic feldspar (Khibiny massif, Russia); gaidonnayite (Mont Saint-Hilaire, Canada).

Distribution: On Mt. Eveslogchorr, Khibiny massif, Kola Peninsula, Russia. At Mont Saint-Hilaire, Quebec, Canada.

Name: From the Greek \textit{para}, for near, and its relation to \textit{umbite}.

Type Material: Geology Museum, Kola Branch, Academy of Sciences, Apatity, 5842, 5843; Mineralogical Museum, St. Petersburg University, St. Petersburg, 17065; Mining Institute, St. Petersburg, 1630/1; Il’menskii Preserve Museum, Mias, 13095vr; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 82760, vis3464, vis4544, vis4545, vis5045.


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