Lennilenapeite

\[\text{K}_{6-7} \text{(Mg, Mn}^{2+}, \text{Fe}^{2+}, \text{Zn})_{48} \]

\[\text{(Si, Al}_{72} \text{(O, OH)}_{216} \cdot 16\text{H}_2\text{O}}\]

Crystal Data: Triclinic. Point Group: n.d. As platy crystals forming dense aggregates, to 1 cm; as drusy coatings.

Physical Properties: Cleavage: Perfect on \{001\}, imperfect on \{hk0\}. Tenacity: Brittle. Hardness = \(~3\) D(meas.) = 2.72 D(calc.) = n.d.

Optical Properties: Translucent. Color: Dark brown, light green; black in aggregates. Streak: Brown. Luster: Vitreous to resinous. Optical Class: Biaxial (-); pseudouniaxial (-). Pleochroism: Strong; \(X = \) light brown to colorless; \(Y = Z = \) dark brown. Absorption: \(Y = Z > X\). \(\alpha = 1.553(2)\) \(\beta = 1.594(4)\) \(\gamma = 1.594(4)\) \(2V(\text{meas.}) = 0^\circ\)

Cell Data: Space Group: n.d. \(a = 21.9(1)\) \(b = \) n.d. \(c = \) n.d. \(\alpha = \) n.d. \(\beta = \) n.d. \(\gamma = \) n.d. \(Z = 1\)

X-ray Powder Pattern: Franklin, New Jersey, USA.

12.11 (100), 2.582 (40), 2.734 (30), 2.365 (30), 1.593 (30), 1.578 (30), 4.07 (20)

Chemistry:

\[
\begin{array}{ll}
\text{SiO}_2 & 44.5 \quad 45.11 \\
\text{Al}_2\text{O}_3 & 5.4 \quad 4.79 \\
\text{Fe}_2\text{O}_3 & 5.9 \quad 7.15 \\
\text{FeO} & 6.4 \quad 7.32 \\
\text{MnO} & 11.6 \quad 6.22 \\
\text{ZnO} & 6.3 \quad 4.92 \\
\text{MgO} & 7.0 \quad 11.39 \\
\text{CaO} & \text{trace} \quad 0.59 \\
\text{BaO} & 1.3 \quad 0.91 \\
\text{K}_2\text{O} & 3.0 \quad 2.76 \\
\text{Na}_2\text{O} & 0.2 \quad 0.38 \\
\text{H}_2\text{O} & 8.4 \quad [8.46] \\
\hline
\text{Total} & 100.0 \quad [100.00]
\end{array}
\]

(1) Franklin, New Jersey, USA; by electron microprobe, \(\text{Fe}^{2+}:\text{Fe}^{3+}\) and \(\text{H}_2\text{O}\) separately determined, total recalculated to 100.0% from 102.2%; corresponds to \((\text{K}_{5.36}\text{Ba}_{0.71}\text{Na}_{0.54})\Sigma=6.61(\text{Mg}_{14.63}\text{Mn}_{13.78}\text{Fe}^{2+}_{7.50}\text{Zn}_{6.52}\text{Fe}^{3+}_{5.57})\Sigma=48.00(\text{Si}_{62.42}\text{Al}_{8.93}\text{Fe}^{3+}_{6.05})\Sigma=72.00\)

\[\text{[O}_{17.19}(\text{OH})_{4.47}]\Sigma=216.00 \cdot 16.94\text{H}_2\text{O}\).

(2) \(\text{Ba}\) by difference, corresponds to \((\text{K}_{4.79}\text{Na}_{1.01}\text{Ca}_{0.86}\text{Ba}_{0.48})\Sigma=7.14(\text{Mg}_{23.12}\text{Fe}_{2.33}\text{Mn}_{7.17}\text{Zn}_{4.91}\text{Fe}_{4.43})\Sigma=48.00(\text{Si}_{61.42}\text{Al}_{7.69}\text{Fe}_{3.89})\Sigma=72.00\)

\[\text{[O}_{17.33}(\text{OH})_{4.57}]\Sigma=216.00 \cdot 15.57\text{H}_2\text{O}\).

Polymorphism & Series: Forms a series with franklinphilite.

Occurrence: Apparently as both a primary and a late-stage low-temperature hydrothermal mineral in a metamorphosed stratiform zinc deposit.

Association: Nelenite, tirodite, franklinite, willemite, sphalerite, dolomite.

Distribution: From Franklin, Sussex Co., New Jersey, USA.

Name: For the Lenni Lenape Indians (original people in the Algonquin Indian language) who inhabited the Franklin area.

Type Material: Harvard University, Cambridge, Massachusetts, 105542; National Museum of Natural History, Washington, D.C., USA, R582, 140297.


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