**Welinite**

$$(\text{Mn}^{2+}, \text{Mg})_3(\text{W}^{6+}, \text{Mn}^{3+})_{1-x}(\text{SiO}_4)(\text{O}, \text{OH})_3 \ (x = 1/3)$$

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**Crystal Data:** Hexagonal. **Point Group:** 3. As sections of crystals, to 2 cm.

**Physical Properties:** Cleavage: Poor to distinct on {001}. Tenacity: Brittle. Hardness = 4

\[D(\text{meas.}) = 4.47 \quad D(\text{calc.}) = 4.41\]


Optical Class: Uniaxial (+); anomalously biaxial. Absorption: $E > O$. $\omega = 1.864 \quad \epsilon = 1.88$

\[2V(\text{meas.}) = \text{Small.}\]

**Cell Data:** Space Group: $P3$. $a = 8.155(7) \quad c = 4.785(5) \quad Z = 2$

**X-ray Powder Pattern:** Längban, Sweden.

1.782 (100), 3.102 (80), 2.332 (80), 4.07 (60), 1.5438 (60), 7.00 (50), 2.840 (40)

**Chemistry:**

(1)

\[
\begin{align*}
\text{SiO}_2 & \quad 15.7 \\
\text{Fe}_2\text{O}_3 & \quad 0.8 \\
\text{WO}_3 & \quad 21.7 \\
\text{Sb}_2\text{O}_5 & \quad 1.6 \\
\text{As}_2\text{O}_5 & \quad 0.0 \\
\text{V}_2\text{O}_5 & \quad 0.0 \\
\text{MnO} & \quad 55.5 \\
\text{MgO} & \quad 2.5 \\
\text{H}_2\text{O}^+ & \quad 2.9 \\
\text{Total} & \quad 100.7 
\end{align*}
\]

(1) Längban, Sweden; by electron microprobe, H$_2$O by TGA; corresponds to Mn$^{2+}$W$^{6+}$

\[\text{Mg}_{0.24}\text{Sb}_{0.04}\text{Fe}_{0.04}\text{Si}_{1.00}(\text{O}, \text{OH})_7\Sigma = 7.\]

**Occurrence:** In small amounts, as fillings in fissures with other minerals cutting hausmannite ore (Längban, Sweden).

**Association:** Adelite, sarkinite, barite, cakite (Längban, Sweden).

**Distribution:** From Längban, Värmland, Sweden. In the Taguchi mine, ??, Japan.

**Name:** For Dr. Eric Welin, mineralogist and geochronologist, Swedish Museum of Natural History, Stockholm, Sweden.

**Type Material:** Swedish Museum of Natural History, Stockholm, Sweden, 532157; National Museum of Natural History, Washington, D.C., USA, 120067.

**References:**