**Hilgardite**

\[
\text{Ca}_2\text{B}_5\text{O}_9\text{Cl} \cdot \text{H}_2\text{O}
\]

**Crystal Data:** Monoclinic or triclinic. **Point Group:** m or 1. Distorted triangular crystals are tabular on \{010\} and hemimorphic, to 2 cm, with 18 forms described.

**Physical Properties:** *Cleavage:* On \{010\}, perfect; on \{100\}, good. *Fracture:* Conchoidal. *Hardness = 5* \(D(\text{meas.}) = 2.67–2.71\) \(D(\text{calc.}) = 2.688–2.694\*\ Piezoelectric.


**Optical Class:** Biaxial (+). *Orientation:* \(Y = b; Z \wedge c = 1.5^\circ\). *Dispersion:* \(r > v\), moderate. \(\alpha = 1.623–1.630\) \(\beta = 1.628–1.636\) \(\gamma = 1.656–1.664\) 2V(meas. = 34(2)°

**Cell Data:** *Space Group:* Aa (4M polytype), with \(a = 11.438(2)\) \(b = 11.318(2)\) \(c = 6.318(1)\) \(\beta = 90.06(1)^\circ\) \(Z = 4\), or *Space Group:* P1 (1A polytype), with \(a = 6.452(1)\) \(b = 6.559(1)\) \(c = 6.286(1)\) \(\alpha = 61.60(1)^\circ\) \(\beta = 118.72(1)^\circ\) \(\gamma = 105.86(1)^\circ\) \(Z = 1\)

**X-ray Powder Pattern:** Choctaw salt dome, Louisiana, USA (4M polytype). 2.859 (100), 2.839 (100), 2.113 (80), 2.109 (80), 2.096 (80b), 1.985 (80), 2.755 (60) 2.859 (100), 2.839 (100), 2.113 (80), 2.109 (80), 2.096 (80b), 1.985 (80), 2.755 (60)

**X-ray Powder Pattern:** Choctaw salt dome, Louisiana, USA (1A polytype). 2.87 (100), 2.83 (100), 2.755 (80), 2.12 (80), 2.033 (80), 5.7 (60), 3.14 (60)

**Chemistry:**

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<th>(3)</th>
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<td>31.3</td>
<td>33.81</td>
<td>(\text{H}_2\text{O})</td>
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<td>[98.2]</td>
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(1) Choctaw salt dome, Louisiana, USA; recalculated to 100% after removal of insoluble 1.89%; corresponds to \(\text{Ca}_2\text{B}_2\text{O}_4\text{Cl}\cdot\text{H}_2\text{O}\) (2) New Brunswick, Canada; by electron microprobe, B and \(\text{H}_2\text{O}\) calculated for stoichiometry. (3) \(\text{Ca}_2\text{B}_5\text{O}_9\text{Cl}\cdot\text{H}_2\text{O}\).

**Polymorphism & Series:** 4M, 1Tc, 3Tc, and 1A polytypes are known.

**Occurrence:** In marine evaporite deposits.

**Association:** Boracite, anhydrite, danburite, dolomite, magnesite, pyrite, hauerite, calcite, quartz, sulfur, gypsum (Choctaw salt dome, Louisiana, USA); boracite, szaibelyite (New Brunswick, Canada).

**Distribution:** In the USA, from the Choctaw salt dome, Iberville Parish, Louisiana, and in Wayne Co., Mississippi; in the Louann Salt Formation, Clarke Co., Alabama. From the Penobsquis and Salt Springs evaporite deposits, near Sussex, New Brunswick, Canada. At the Königshall-Hindenburg potash mine, Reyershausen, near Göttingen, Lower Saxony, Germany. In the Boulby potash mine, northwest of Whitby, Yorkshire, England. In the Chelkar salt dome, Ak-saı Valley, Uralsk district, Kazakhstan. From the Ilga Basin, eastern Siberia, Russia. In the Sedom Formation, on Mount Sedom, Dead Sea, Israel.

**Name:** Honors Eugene Woldemar Hilgard (1833–1916), German–American geologist, one of the first to study the Louisiana salt diapir deposits.

**Type Material:** Harvard University, Cambridge, Massachusetts, 100899, 100947, 106583; National Museum of Natural History, Washington, D.C., USA, R7822.


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