Widenmannite

\[ \text{Pb}_2(\text{UO}_2)(\text{CO}_3)_3 \]

Crystal Data: Orthorhombic. Point Group: 2/m 2/m 2/m, mm2, or 2 2 2. Lathlike crystals, tabular on \{010\}, elongated along \{001\}, to 100 \(\mu\)m, showing \{100\}, \{010\}, \{001\}, \{101\}; aggregated in tufts and mats.


Optical Properties: Transparent to translucent. Color: Colorless, very pale greenish yellow, yellow. Streak: Pale yellow. Luster: Pearly to silky. Optical Class: Biaxial (-). Orientation: \(X = b; Y = a; Z = c\). \(\alpha = 1.803(5)\) \(\beta = 1.905(5)\) \(\gamma = 1.945(5)\) 2V(meas.) = 63°

Cell Data: Space Group: \(P\text{nmm}\), \(P\text{nm2}\), or \(P2_212_1\). \(a = 8.971–8.99\) \(b = 9.36–9.381\) \(c = 4.95–5.002\) \(Z = 2\)

X-ray Powder Pattern: Michael mine, Germany. 4.16 (10), 2.34 (10), 3.19 (8b), 3.34 (7), 1.911 (5), 1.869 (5), 1.473 (5b)

Chemistry:

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\text{CO}_2)</td>
<td>16.5</td>
<td>16.1</td>
<td>15.27</td>
</tr>
<tr>
<td>(\text{UO}_3)</td>
<td>34.2</td>
<td>31.8</td>
<td>33.09</td>
</tr>
<tr>
<td>(\text{PbO})</td>
<td>48.3</td>
<td>51.7</td>
<td>51.64</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>99.0</td>
<td>99.6</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Michael mine, Germany; by electron microprobe. (2) Loe Warren zawn, England; by electron microprobe, here recalculated to oxides. (3) \(\text{Pb}_2(\text{UO}_2)(\text{CO}_3)_3\).

Occurrence: A rare secondary mineral in the oxidized zone of a hydrothermal As–Pb-bearing deposit (Michael mine, Germany); an alteration product of sulfides by sea water (Loe Warren zawn, England).

Association: Hügelite, hallimondite, cerussite, galena, quartz (Michael mine, Germany); dewindtite, uraninite (Loe Warren zawn, England).

Distribution: From the Michael mine, Weiler, near Lahr, Black Forest, Germany. At Jáchymov (Joachimsthal), Czech Republic. From Loe Warren zawn, 0.75 km west of Botallack, St. Just, Cornwall, England.

Name: To honor Johann Friedrich Wilhelm Widenmann (1764–1798), German mineralogist who discovered uranium in the Black Forest.

Type Material: [University of Strassburg, Strassburg, France.]