Zaratite \[ \text{Ni}_3(\text{CO}_3)(\text{OH})_4 \cdot 4\text{H}_2\text{O} \]


Optical Class: Biaxial, may be weakly birefringent, banded. Pleochroism: Emerald-green along fiber length; yellow-green perpendicular to fiber length. \[ n = 1.56–1.62 \quad \alpha = 1.597 \quad \beta = 1.602 \quad \gamma = 1.609 \quad 2V(\text{meas.}) = \text{n.d.} \]


X-ray Powder Pattern: Lancaster Co., Pennsylvania, USA or Heazlewood, Tasmania, Australia; diffuse pattern, probably of a mixture.
5.07 (vs), 8.93 (s), 2.45 (s), 2.73 (m), 2.00 (mw), 1.91 (w), 1.55 (w)

Chemistry:

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO(_2)</td>
<td>11.69</td>
<td>11.70</td>
</tr>
<tr>
<td>NiO</td>
<td>58.81</td>
<td>59.57</td>
</tr>
<tr>
<td>H(_2)O</td>
<td>29.50</td>
<td>28.73</td>
</tr>
<tr>
<td>Total</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Texas, Pennsylvania, USA. (2) \( \text{Ni}_3(\text{CO}_3)(\text{OH})_4 \cdot 4\text{H}_2\text{O} \).

Occurrence: An uncommon secondary mineral formed by alteration of chromite, pentlandite, pyrrhotite, and millerite in serpentinites and ultramafic rocks.

Association: Brucite, hydromagnesite, calcite, aragonite, dolomite.

Distribution: In the USA, in Pennsylvania, from Wood’s, Carter’s, and Low’s mines, Texas, Lancaster Co., and at Phillip’s chrome mine, West Nottingham, Chester Co. At Igdlokgungak, Greenland. In the Talnessi mine, 35 km west of Anarak, Iran. On Dun Mountain, Nelson, New Zealand. At the Lord Brassey mine, Heazlewood, Tasmania, Australia. In the Hagdale quarry, Unst, Shetland Islands, Scotland. On Cape Ortegal, Galicia, Spain. At Lillaz, Val d’Aosta, Piedmont, Italy. In Austria, at Kraubath, Styria, and in the Stubachtal, Tirol. From Vrapice and Dubi, near Kladno, Czech Republic. On Mabilikwe Hill, Cape Province, South Africa. A few additional minor occurrences are known.

Name: To honor Antonio Gil y Zarate (1793–1861), Spanish dramatist.