Gowerite

\( \text{CaB}_6\text{O}_8(\text{OH})_4\cdot3\text{H}_2\text{O} \)

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Crystal Data: Monoclinic. **Point Group:** 2/m. Prismatic to acicular crystals, striated and elongated along [001], to 1.5 mm; typically as globular clusters of divergent bladed crystals.

Physical Properties: **Cleavage:** \{001\}, distinct; \{100\}, imperfect. **Fracture:** Uneven. **Tenacity:** Brittle. **Hardness = 3** D(meas.) = 2.00(1) D(calc.) = 2.003 Slowly soluble in \( \text{H}_2\text{O} \).

Optical Properties: **Transparent.** **Color:** Colorless, white in aggregates; colorless in transmitted light. **Streak:** White. **Luster:** Vitreous. **Optical Class:** Biaxial (+). **Orientation:** \( Y = b; Z \wedge c = 27° \). **Dispersion:** \( r > v \), slight. \( \alpha = 1.484(2) \) \( \beta = 1.501(2) \) \( \gamma = 1.550(2) \) 2V(meas.) = n.d. 2V(calc.) = 63°

Cell Data: **Space Group:** \( P2_1/\alpha \). \( a = 12.882(4) \) \( b = 16.360(7) \) \( c = 6.558(4) \) \( \beta = 121.62(5)° \) \( Z = 4 \)

X-ray Powder Pattern: Death Valley, California, USA.
8.23 (100), 9.20 (25), 4.094 (20), 3.88 (10b), 3.345 (10), 6.57 (5), 5.37 (5)

Chemistry:

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
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</thead>
<tbody>
<tr>
<td>( \text{B}_2\text{O}_3 )</td>
<td>58.10</td>
<td>58.83</td>
</tr>
<tr>
<td>( \text{CaO} )</td>
<td>15.50</td>
<td>15.80</td>
</tr>
<tr>
<td>( \text{SrO} )</td>
<td>0.71</td>
<td></td>
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<tr>
<td>( \text{H}_2\text{O} )</td>
<td>25.76</td>
<td>25.37</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.07</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Death Valley, California, USA; average of two analyses, Sr by flame photometry, \( \text{H}_2\text{O} \) by TGA; corresponds to \( \text{Ca}_{1.00}\text{B}_{5.90}\text{O}_8(\text{OH})_4\cdot3.05\text{H}_2\text{O} \). (2) \( \text{CaB}_6\text{O}_8(\text{OH})_4\cdot3\text{H}_2\text{O} \).

Occurrence: A rare weathering product of colemanite and priceite.

Association: Meyerhofferite, nobleite, hydroboracite, ulexite, ginorite, gypsum.

Distribution: From the Hard Scramble claim, the Mott colemanite prospect, and two other nearby occurrences south of Furnace Creek Wash, Death Valley, Inyo Co., California, USA.

Name: To honor Harrison Preston Gower (1890–1967), Mining Manager, U.S. Borax and Chemical Company, for his assistance to scientific studies of Death Valley borate deposits.


(2) Christ, C.L. and J.R. Clark (1960) X-ray crystallography and crystal chemistry of gowerite, \( \text{CaO}\cdot3\text{B}_2\text{O}_3\cdot5\text{H}_2\text{O} \). Amer. Mineral., 45, 230–234.

(3) Konnert, J.A., J.R. Clark, and C.L. Christ (1972) Gowerite, \( \text{CaB}_5\text{O}_8(\text{OH})_3\cdot3\text{H}_2\text{O} \): crystal structure and comparison with related borates. Amer. Mineral., 57, 381–396.