Tachyhydrite  

$\text{CaMg}_2\text{Cl}_6\cdot12\text{H}_2\text{O}$

Crystal Data: Hexagonal.  
Point Group: \( \overline{3} \).  
In rounded masses.

Physical Properties: Cleavage: \{10\overline{1}1\}, perfect.  
Hardness = 2  
D(meas.) = 1.667  
D(calc.) = 1.673  
Very deliquescent; tastes sharp and bitter.

Optical Properties: Transparent.  
Color: Wax-yellow to honey-yellow, may be colorless;  
colorless to pale yellow in transmitted light.  
Luster: Vitreous.

Optical Class: Uniaxial (−).  
\( \omega = 1.520 \)  
\( \epsilon = 1.512 \)

Cell Data:  
Space Group: \( \text{R} \overline{3} \) (synthetic).  
\( a = 10.136(1) \)  
\( c = 17.318(2) \)  
\( Z = 3 \)

X-ray Powder Pattern: Synthetic.  
2.884 (100), 5.77 (35), 2.609 (25), 1.443 (25), 1.983 (20), 5.07 (12), 3.097 (10)

Chemistry:

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mg</td>
<td>9.97</td>
<td>9.71</td>
<td>9.39</td>
</tr>
<tr>
<td>Ca</td>
<td>7.16</td>
<td>7.72</td>
<td>7.74</td>
</tr>
<tr>
<td>Cl</td>
<td>40.85</td>
<td>40.89</td>
<td>41.10</td>
</tr>
<tr>
<td>H(_2)O</td>
<td>42.50</td>
<td>42.20</td>
<td>41.77</td>
</tr>
<tr>
<td>Total</td>
<td>100.48</td>
<td>100.52</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Stassfurt, Germany; average of two analyses.  
(2) Krügershall, Germany.  
(3) $\text{CaMg}_2\text{Cl}_6\cdot12\text{H}_2\text{O}$.

Occurrence: A rare mineral in bedded salt deposits of oceanic origin.

Association: Kainite, carnallite, sylvite, halite, kieserite, bischofite, anhydrite.

Distribution: In Germany, from Stassfurt, 34 km south of Magdeburg, Saxony-Anhalt, at Krügershall-Teutschenthal, near Halle, and from Vienenburg, Lower Saxony.  
In the Santa Rosa de Lima and Taquari Basins, Sergipe, Brazil, with reserves estimated at 4 billion t.  
On the Khorat Plateau, Thailand, also massive reserves.

Name: From the Greek for quick and water, remarking on its deliquescence.

References:

(2) Erd, R.C., M.A. Clynne, J.R. Clark, and R.W. Potter II (1979)  
Crystal data for tachyhydrite, $\text{CaMg}_2\text{Cl}_6\cdot12\text{H}_2\text{O}$.  
J. Applied Crystallography, 12, 481–482.  