Mineralogical Society of America  
Handbook of Mineralogy  
Revised 7/12/2015

Redgillite

\[ \text{Cu}_6(\text{OH})_{10}(\text{SO}_4)\cdot\text{H}_2\text{O} \]

Crystal Data: Monoclinic.  
Point Group: 2/\(m\).  
As blades with squared-off or tapering terminations to 0.15 mm and in radiating groups.

Physical Properties: Cleavage: Perfect on \{001\}, good on \{100\} and \{010\}.  
Fracture: Uneven.  
Tenacity: Brittle, slightly flexible, non-elastic.  
Hardness = \(\approx 2\)     
\(D(\text{meas.}) = 3.45(5)\)  
\(D(\text{calc.}) = 3.450\)  
Dissolves in dilute HCl.

Optical Properties: Transparent to translucent.  
Color: Grass-green.  
Streak: White.  
Luster: Vitreous.  
Optical Class: Biaxial (-).  
\(\alpha = 1.693(2)\)  \(\beta = 1.721(2)\)  \(\gamma = 1.723(2)\)  
\(2V(\text{calc.}) = 30^\circ\)  
Pleochroism: Strong, \(X = Y =\) blue-green, \(Z =\) yellow-green.

Absorption: \(Y > X > Z\).  
Dispersion: Moderate, \(r > v\).  
Orientation: \(X \approx c, Y = b, Z \approx a\).

Cell Data: Space Group: \(P2_1/c\).  
\(a = 3.155(3)\)  \(b = 10.441(8)\)  \(c = 19.436(16)\)  
\(\beta = 90.089(13)^\circ\)  
\(Z = 2\)

7.11 (100), 9.72 (90), 2.318 (50), 4.60 (30), 2.880 (30), 4.068 (20), 2.426 (15)

Chemistry:  
(1)

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<table>
<thead>
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<tbody>
<tr>
<td>CuO</td>
<td>68.9</td>
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<tr>
<td>SO₃</td>
<td>11.6</td>
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<td>Total</td>
<td>80.5</td>
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(1) Silver Gill vein, Red Gill mine, Caldbeck Fells, England; electron microprobe analysis, H₂O confirmed from structure analysis; corresponds to \(\text{Cu}_{5.995}(\text{OH})_{9.991}(\text{SO}_4)_{1.003}\cdot\text{H}_2\text{O}\).

Occurrence: A secondary weathering mineral in oxidized copper sulfide veins and post-mining environments.

Association: Langite, malachite, cuprite, connellite, brochantite.

Distribution: From the Golden Hugh level of the Silver Gill vein and the No. 2 Level (Old Dutch Level) mine dump at the Red Gill mine, Caldbeck Fells, Cumbria, England. Also in England at the Penberthy Croft mine, St. Hilary, Cornwall; in Wales at the Frongoch mine, Devil’s Bridge, the Bwlchrhennaid mine, Goginan, the Nant y cagle (Eaglebrook) and Darren mines, Talybont, and the Llechweddleyg mine, Bontgoch. From the Sheefry mine, Co. Mayo, Ireland.

Name: For the Red Gill Mine, England, the locality from which the mineral is best known.
