

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* = ~2 *D(meas.)* = 3.45(5) *D(calc.)* = 3.450 Dissolves in dilute HCl.

Optical Properties: Transparent to translucent. *Color:* Grass-green. *Streak:* White. *Luster:* Vitreous.

Optical Class: Biaxial (-). $\alpha = 1.693(2)$ $\beta = 1.721(2)$ $\gamma = 1.723(2)$ $2V(\text{meas.}) = 30(2)^\circ$ $2V(\text{calc.}) = 30^\circ$ *Pleochroism:* Strong, $X = Y = \text{blue-green}$, $Z = \text{yellow-green}$.

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

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

X-ray Powder Pattern: Silver Gill vein, Red Gill mine, Caldbeck Fells, Cumbria, England. 7.11 (100), 9.72 (90), 2.318 (50), 4.60 (30), 2.880 (30), 4.068 (20), 2.426 (15)

Chemistry:	(1)
CuO	68.9
<u>SO₃</u>	<u>11.6</u>
Total	80.5

(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 Llechweddhelyg 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.

Type Material: Manchester Museum, The University of Manchester, England (MANCH:18024).

References: (1) Pluth, J.J., I.M. Steele, A.R. Kampf, and D.I. Green (2005) Redgillite, $\text{Cu}_6(\text{OH})_{10}(\text{SO}_4)\cdot\text{H}_2\text{O}$, a new mineral from Caldbeck Fells, Cumbria, England: description and crystal structure. *Mineral. Mag.*, 69(6), 973-980. (2) (2006) *Amer. Mineral.*, 91, 1456-1457 (abs. ref. 1).