

Chloroxiphite

Pb₃CuO₂Cl₂(OH)₂

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Crystal Data: Monoclinic. *Point Group:* $2/m$. As bladed crystals, often curved, to 4 cm, elongated along [010] and flattened on $\{\bar{1}01\}$, which is striated \parallel [010]; as subparallel groups.

Physical Properties: *Cleavage:* Perfect on $\{\bar{1}01\}$, distinct on {100}. *Tenacity:* Very brittle; friable. Hardness = 2.5 D(meas.) = 6.76–6.93 D(calc.) = 6.84

Optical Properties: Transparent. *Color:* Dull olive-green or pistachio-green. *Streak:* Pale yellowish green. *Luster:* Resinous to adamantine.

Optical Class: Biaxial (-). *Pleochroism:* Y = yellowish brown; Z = bright emerald-green.

Orientation: $Z = b$; $X \simeq \perp \{\bar{1}01\}$. *Dispersion:* $r > v$, medium to strong. $\alpha = 2.16$ $\beta = 2.24$ $\gamma = 2.25$ $2V(\text{meas.}) = \sim 70^\circ$

Cell Data: *Space Group:* $P2_1/m$. $a = 10.458(4)$ $b = 5.759(3)$ $c = 6.693(3)$
 $\beta = 97.79(4)^\circ$ $Z = 2$

X-ray Powder Pattern: Higher Pitts Farm, England. (ICDD 8-112).
2.86 (100), 10.3 (80), 3.84 (80), 2.80 (70), 5.90 (60), 2.68 (60), 2.06 (60)

Chemistry:	(1)	(2)	(3)
CuO	10.90	10.47	9.68
PbO	81.15	79.82	81.45
Cl	7.19	8.97	8.63
H ₂ O ⁺	2.56	2.52	2.19
-O = Cl ₂	1.62	2.03	1.95
Total	100.18	99.75	100.00

(1–2) Higher Pitts Farm, England; H₂O by loss on ignition. (3) Pb₃CuO₂Cl₂(OH)₂.

Occurrence: A secondary mineral associated with lead- and copper-bearing pods in Mn–Fe deposits developed along fissures in dolomitic conglomerate and limestone.

Association: Mendipite, diabolite, parkinsonite, wulfenite, cerussite, hydrocerussite.

Distribution: In England, at the Higher Pitts Farm, near Priddy, and in the Merehead quarry, near Shepton Mallet, Mendip Hills, Somerset.

Name: From the Greek for *green* and *blade* or *straight sword*, for the typical crystal habit.

Type Material: The Natural History Museum, London, England, 1923,712–717.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 84–85. (2) Spencer, L.J. and E.D. Mountain (1923) New lead-copper minerals from the Mendip Hills (Somerset). *Mineral. Mag.*, 20, 67–92. (3) Finney, J.J., E.J. Graeber, A. Rosenzweig, and R.D. Hamilton (1977) The structure of chloroxiphite, Pb₃CuO₂(OH)₂Cl₂. *Mineral. Mag.*, 41, 357–361. (4) Symes, R.F. and P.G. Embrey (1977) Mendipite and other rare oxychloride minerals from the Mendip Hills, Somerset, England. *Mineral. Record*, 8, 298–303.