Claraite $(Cu, Zn)_3(CO_3)(OH)_4 \cdot 4H_2O$

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Crystal Data: Triclinic, pseudohexagonal. *Point Group:* $\overline{1}$ or 1. As crusts and spherules composed of divergent tabular to pseudorhombohedral crystals, to 0.5 mm.

Physical Properties: *Cleavage:* On pseudo-$\{10\overline{1}0\}$, perfect. Hardness = ∼2
D(meas.) = 3.35(5) D(calc.) = 3.34

Optical Properties: Semitransparent. *Color:* Bluish green. *Luster:* Vitreous.
Optical Class: Uniaxial (–), may be weakly biaxial (–). *Pleochroism:* O = pale green to bluish green; E = colorless to pale green. *Dispersion:* $r \gg v$. $\omega = 1.751(2)$ $\epsilon = 1.645(2)$
2V(meas.) = n.d.

Cell Data: *Space Group:* $P\overline{1}$ or $P1$. $a = 14.28$ $b = 8.03$ $c = 7.27$ $\alpha = 79.16°$ $\beta = 107.90°$ $\gamma = 99.68°$ Z = 4

X-ray Powder Pattern: Clara mine, Germany.
13.47 (10), 7.84 (9), 3.65 (8), 5.17 (6), 2.96 (6), 3.24 (5), 2.72 (4)

Chemistry:

	(1)
CO_2	11.6
MnO	1.2
CuO	52.2
ZnO	8.0
H_2O	[27.0]
Total	[100.00]

(1) Clara mine, Germany; by electron microprobe, average of two analyses, H_2O by difference; corresponding to $(Cu_{2.56}Zn_{0.38}Mn_{0.06})_{\Sigma=3.00}(CO_3)_{1.03}(OH)_{3.94} \cdot 3.85H_2O$.

Occurrence: A rare secondary mineral in oxidized Cu–Zn deposits.

Association: Malachite, azurite, olivenite, barite, fluorite, quartz (Clara mine, Germany); malachite, devilline, gypsum (Rudabánya, Hungary).

Distribution: From the Clara mine, near Oberwolfach, Black Forest, Germany. At Rudabánya, Hungary.

Name: For the Clara mine, Germany, where the first specimens were collected.

Type Material: University of Stuttgart, Stuttgart, Germany; National Museum of Natural History, Washington, D.C., USA, 148464.

References: (1) Walenta, K. and P.J. Dunn (1982) Clarait, ein neues Karbonatmineral aus der Grube Clara (mittlerer Schwarzwald). Chem. Erde, 41, 97–102 (in German with English abs.). (2) (1983) Amer. Mineral., 68, 471 (abs. ref. 1). (3) Walenta, K. (1999) On the lattice constants of claraite. Der Erzgräber, 13, 20–22 (in German). (4) (2003) Amer. Mineral., 88, 254 (abs. ref. 3).

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