

Wheatleyite

Na₂Cu(C₂O₄)₂·2H₂O

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Crystal Data: Triclinic. *Point Group:* $\bar{1}$. Thin acicular crystals, to 2 mm, in aggregates.
Twining: Observed on an undetermined law.

Physical Properties: *Cleavage:* Perfect on {100}; two additionally observed optically.
Tenacity: Very brittle. Hardness = 1–2 D(meas.) = 2.27(4) D(calc.) = 2.250 Soluble in H₂O.

Optical Properties: Semitransparent. *Color:* Bright blue. *Streak:* Pale blue.
Luster: Vitreous.

Optical Class: Biaxial (+). *Pleochroism:* X = colorless; Y = very pale blue; Z = intense dark blue. *Dispersion:* $r < v$, moderate. *Absorption:* $Z > Y > X$. $\alpha = 1.400(4)$ $\beta = 1.499(2)$
 $\gamma = 1.667(2)$ $2V(\text{meas.}) = 83(5)^\circ$

Cell Data: *Space Group:* $P\bar{1}$. $a = 7.559(3)$ $b = 9.665(4)$ $c = 3.589(1)$ $\alpha = 76.65(2)^\circ$
 $\beta = 103.67(2)^\circ$ $\gamma = 109.10(2)^\circ$ $Z = 1$

X-ray Powder Pattern: Wheatley mine, Pennsylvania, USA.
6.539 (10), 3.169 (9), 7.04 (100), 3.655 (5), 2.799 (4), 2.538 (3), 2.497 (3)

Chemistry:	(1)	(2)
C ₂ O ₃		44.79
CuO	27.	24.73
Na ₂ O	20.	19.27
H ₂ O		11.21
Total		100.00

(1) Wheatley mine, Pennsylvania, USA; partial analysis by electron microprobe, presence of C, H, and O confirmed by ion microprobe, (C₂O₄)²⁻ confirmed by qualitative testing.

(2) Na₂Cu(C₂O₄)₂·2H₂O.

Occurrence: Very rare, on a specimen found on the mine dumps of a Pb–Zn vein deposit.

Association: Sphalerite, galena, cerussite, quartz.

Distribution: From the Wheatley mine, near Phoenixville, Chester Co., Pennsylvania, USA.

Name: For the type locality, the Wheatley mine, Pennsylvania, USA.

Type Material: Canadian Museum of Nature, Ottawa, Canada, 80196; National Museum of Natural History, Washington, D.C., USA, 162531.

References: (1) Rouse, R.C., D.R. Peacor, P.J. Dunn, W.B. Simmons, and D. Newbury (1986) Wheatleyite, Na₂Cu(C₂O₄)₂·2H₂O, a natural sodium copper salt of oxalic acid. *Amer. Mineral.*, 71, 1240–1242. (2) Chananont, P., P.E. Nixon, J.M. Waters, and T.N. Waters (1980) The structure of disodium *catena*-bis(μ -oxalato)-cuprate (II) dihydrate. *Acta Cryst.*, 36, 2145–2147. (3) Gleizes, A., F. Maury, and J. Galy (1980) Crystal structure and magnetism of sodium bis(oxalato)cuprate(II) dihydrate, Na₂Cu(C₂O₄)₂·2H₂O. *Inorganic Chemistry*, 19, 2074–2078.