

Hemimorphite

Zn₄Si₂O₇(OH)₂•H₂O

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Crystal Data: Orthorhombic. *Point Group:* *mm*2. Commonly crystallized, thin tabular \perp {010}, striated \parallel [001], to 10 cm; doubly-terminated crystals show hemimorphism. Typically in sheaflike or fan-shaped aggregates; stalactitic, mammillary, botryoidal; as compact fibrous and chalky coatings. *Twinning:* On {001}, rare, with antilogous poles in contact.

Physical Properties: *Cleavage:* Perfect on {110}, poor on {101}; {001}, rare. *Fracture:* Uneven to subconchoidal. *Tenacity:* Brittle. Hardness = 4.5–5 D(meas.) = 3.475 D(calc.) = 3.484 Strongly pyroelectric; may fluoresce bluish under SW UV.

Optical Properties: Translucent, transparent in small crystals. *Color:* Colorless, white; pale blue, pale green, gray, brown from impurities. *Streak:* White. *Luster:* Vitreous, subpearly, adamantine, rarely silky.

Optical Class: Biaxial (+). *Orientation:* $X = b$; $Y = a$; $Z = c$. *Dispersion:* $r > v$, strong. $\alpha = 1.614$ $\beta = 1.617$ $\gamma = 1.636$ $2V(\text{meas.}) = 46^\circ$

Cell Data: *Space Group:* *Imm*2. $a = 8.367(5)$ $b = 10.730(6)$ $c = 5.155(3)$ $Z = 2$

X-ray Powder Pattern: Sterling Hill, New Jersey, USA.
3.104 (100), 6.60 (86), 3.288 (75), 3.296 (73), 5.36 (55), 2.400 (54), 2.559 (51)

Chemistry:

	(1)	(2)
SiO ₂	25.01	24.94
ZnO	67.42	67.58
H ₂ O	8.32	7.48
Total	100.75	100.00

(1) Pulaski Co., Virginia, USA. (2) Zn₄Si₂O₇(OH)₂•H₂O.

Occurrence: A secondary mineral typically found in the oxidized zone of zinc-bearing mineral deposits.

Association: Smithsonite, sphalerite, galena, cerussite, anglesite, calcite, aurichalcite, rosasite, hydrozincite, chrysocolla.

Distribution: Only a few localities for fine examples can be mentioned. From Băița (Rézbánya), Romania. At Banská Štiavnica (Schemnitz), Slovakia. From Caldbeck Fells, Cumbria, England. At Moresnet, Belgium. In Germany, at Freiberg and Altenberg, Saxony. In the Sa Duchessa mine, Oridda district, Sardinia, Italy. Large crystals from Nerchinsk, Siberia, Russia. At Tchah Kuh, Esfahan, Iran. In the USA, at Franklin and Sterling Hill, Ogdensburg, Sussex Co., New Jersey; in Arizona, from Bisbee, Cochise Co., and in the 79 mine, Gila Co.; in Utah, at the Emma mine, Little Cottonwood Canyon, Salt Lake Co.; in the Ibex and Wolftone mines, Leadville, Lake Co., Colorado; in the Elkhorn mine, Elkhorn district, Jefferson Co., Montana. In Mexico, large crystals from Santa Eulalia, Chihuahua, and in the Ojuela mine, Mapimí, Durango.

Name: In allusion to the mineral's *hemimorphic* morphology.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 546–549. (2) Hill, R.J., G.V. Gibbs, and J.R. Craig (1977) A neutron-diffraction study of hemimorphite. Zeits. Krist., 146, 241–259. (3) (1953) NBS Circ. 539, 2, 62.