

Zinc-melanterite**(Zn, Cu, Fe²⁺)SO₄·7H₂O**

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Crystal Data: Monoclinic. *Point Group:* 2/m. Crystals are short prismatic, to 1.8 mm; in stalactites, crusts, granular and massive columnar aggregates.

Physical Properties: *Fracture:* Uneven. Hardness = 2–2.5 D(meas.) = 2.02–2.03 D(calc.) = 1.93 Dehydrates readily under ambient conditions.

Optical Properties: Transparent. *Color:* Yellowish green, greenish blue, apple-green; very pale blue-green in transmitted light. *Streak:* White. *Luster:* Vitreous to resinous.

Optical Class: Biaxial (+). *Orientation:* Y ∧ elongation ≈ 34°. *Dispersion:* Slight. α = 1.477–1.479 β = 1.483–1.487 γ = 1.488–1.489 2V(meas.) = 80°–90° 2V(calc.) = 78.7°

Cell Data: *Space Group:* [P2₁/c] (by analogy with the melanterite group). Z = 4

X-ray Powder Pattern: n.d.

Chemistry:

	(1)	(2)	(3)
SO ₃	28.78	28.66	27.93
FeO	2.14	8.86	
CuO	12.37	< 0.01	13.88
ZnO	12.89	16.35	14.20
MgO		1.40	
CaO		0.14	
H ₂ O	42.61	44.58	43.99
insol.	1.11		
Total	99.90	99.99	100.00

(1) Vulcan, Colorado, USA; corresponds to (Zn_{0.46}Cu_{0.45}Fe_{0.09})_{Σ=1.00}(SO₄)_{1.04}·6.87H₂O.

(2) Leh-Yang Co., China; average of two analyses; corresponds to (Zn_{0.57}Fe_{0.35}Mg_{0.10}Ca_{0.02})_{Σ=1.04}(SO₄)_{0.99}·6.88H₂O. (3) (Zn, Cu)SO₄·7H₂O with Zn:Cu = 1:1.

Mineral Group: Melanterite group.

Occurrence: A rare mineral formed in the oxidation zone of pyritic ore deposits.

Association: Sphalerite, chalcopyrite, pyrite.

Distribution: In the USA, from the Good Hope and Vulcan mines, Vulcan, Gunnison Co., Colorado. In Leh-Yang Co., southern Shaanxi Province, China.

Name: As the *zinc*-dominant member of the *melanterite* group.

Type Material: National Museum of Natural History, Washington, D.C., USA, 93244.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 508. (2) Tiegeng Liu, Guohong Gong, and Lin Ye (1995) Discovery and investigation of zinc-melanterite in nature. Acta Mineralogica Sinica, 15(3), 286–290 (in Chinese with English abs.).