

Mooreite**Mg₉Zn₄Mn₂²⁺(SO₄)₂(OH)₂₆·8H₂O**

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Crystal Data: Monoclinic. *Point Group:* 2/*m*. Crystals are flat tabular to platy \perp [010], with large {010}, the edges modified by ten other forms, commonly distorted and etched, in subparallel aggregates, to 10 cm.

Physical Properties: *Cleavage:* On {010}, perfect. Hardness = 3 D(meas.) = 2.47(2)
D(calc.) = 2.444

Optical Properties: Transparent. *Color:* Pale yellowish brown; colorless in transmitted light. *Luster:* Vitreous.

Optical Class: Biaxial (-). *Orientation:* $X = b$; $Z \wedge c = 44^\circ$. *Dispersion:* $r > v$, perceptible.
 $\alpha = 1.533$ $\beta = 1.545$ $\gamma = 1.547$ $2V(\text{meas.}) = \sim 50^\circ$

Cell Data: *Space Group:* $P2_1/a$. $a = 11.147(3)$ $b = 20.350(6)$ $c = 8.202(3)$
 $\beta = 92.69(4)^\circ$ $Z = 2$

X-ray Powder Pattern: Sterling Hill, New Jersey, USA.
5.079 (100), 10.089 (78), 2.379 (78), 1.619 (58), 3.452 (51), 1.832 (47), 2.667 (40)

Chemistry:	(1)	(2)
SO ₃	10.99	11.60
MnO	11.93	9.76
ZnO	24.58	23.99
MgO	25.38	26.75
H ₂ O	27.12	[27.90]
Total	[100.00]	[100.00]

(1) Sterling Hill, New Jersey, USA; average of two analyses, totalling 99.77%, recalculated to 100% after deduction of SiO₂ 0.06% and CaCO₃ 0.89%; corresponds to Mg_{8.61}Zn_{4.11}Mn_{2.28}(SO₄)_{1.86}(OH)_{26.28}·7.47H₂O. (2) Do.; by electron microprobe, total Mn as MnO, H₂O by difference, (OH)¹⁻ calculated for charge balance, SO₃²⁻ and H₂O confirmed by IR; corresponds to Mg_{9.10}Zn_{4.04}Mn_{1.89}(SO₄)_{1.99}(OH)_{26.08}·8.21H₂O.

Occurrence: Rarely in cavities and veinlets in franklinite-willemite-calcite ore from a metamorphosed stratiform zinc orebody.

Association: Pyrochroite, rhodochrosite, zincite, torreyite, fluorborite, franklinite, willemite, calcite.

Distribution: From Sterling Hill, Ogdensburg, Sussex Co., New Jersey, USA.

Name: Honoring Dr. Gideon Emmet Moore (1842–1895), University of California, Berkeley, California, USA, American chemist, an early investigator of Franklin and Sterling Hill minerals.

Type Material: National Museum of Natural History, Washington, D.C., USA, 95985.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 574–575. (2) Hill, R.J. (1979) Crystal data for mooreite. Australian Mineralogist, no. 26, 126–128. (3) Hill, R.J. (1980) The structure of mooreite. Acta Cryst., 36, 1304–1311.