

# Torreyite



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**Crystal Data:** Monoclinic. *Point Group:*  $2/m$ . Rare blocky crystals, to 1 mm, in parallel growth; foliated, fine-grained granular to massive. *Twinning:* Ubiquitous microscopic polysynthetic twinning on a twin plane in [010].

**Physical Properties:** *Cleavage:* {010}, good. *Tenacity:* Somewhat brittle. Hardness = 3  
D(meas.) = 2.665 D(calc.) = 2.65

**Optical Properties:** Translucent. *Color:* Bluish white to colorless; colorless in transmitted light. *Luster:* Vitreous to almost pearly, dull.

*Optical Class:* Biaxial (-). *Orientation:*  $X = b$ .  $\alpha = 1.570$   $\beta = 1.584$   $\gamma = 1.585$   
 $2V(\text{meas.}) = \sim 40^\circ$

**Cell Data:** *Space Group:*  $P2_1/a$ .  $a = 10.522$   $b = 9.433$   $c = 16.443$   $\beta = 94.91^\circ$   $Z = 2$

**X-ray Powder Pattern:** Sterling Hill, New Jersey, USA.

10.2 (100), 5.16 (50), 1.566 (50), 3.84 (40), 2.729 (40), 6.10 (30), 4.52 (20)

## Chemistry:

	(1)
SO <sub>3</sub>	11.64
SiO <sub>2</sub>	0.08
MnO	17.98
ZnO	26.30
MgO	17.27
H <sub>2</sub> O	26.39
Total	99.66

(1) Sterling Hill, New Jersey, USA; deducting SiO<sub>2</sub>, corresponds to  $(\text{Mg}_{5.60}\text{Mn}_{3.31})_{\Sigma=8.91}\text{Zn}_{4.22}(\text{SO}_4)_{1.90}(\text{OH})_{22.46} \cdot 7.928\text{H}_2\text{O}$ .

**Occurrence:** Very rare, in veinlets cutting calcite–franklinite–willemite ore in a metamorphosed stratiform zinc orebody.

**Association:** Mooreite, fluoborite, pyrochroite, sussexite, rhodochrosite, zincite, franklinite, willemite, calcite.

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

**Name:** Honors Dr. John Torrey (1796–1873), American naturalist who early studied Franklin, New Jersey, USA minerals.

**Type Material:** Harvard University, Cambridge, Massachusetts, USA, 113732.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 575–576. (2) Dunn, P., D.R. Peacor, and B.D. Sturman (1979) Lawsonbauerite, a new mineral from the Sterling Hill mine, New Jersey, and new data for torreyite. *Amer. Mineral.*, 64, 949–952. (3) Treiman, A.H. and D.R. Peacor (1982) The crystal structure of lawsonbauerite,  $(\text{Mn}, \text{Mg})_9\text{Zn}_4(\text{SO}_4)_2(\text{OH})_{22} \cdot 8\text{H}_2\text{O}$ , and its relation to mooreite. *Amer. Mineral.*, 67, 1029–1034. (4) Dunn, P.J. (1995) Franklin and Sterling Hill, New Jersey. No publisher, n.p., 639–640.