

# Tychite



**Crystal Data:** Cubic. *Point Group:*  $2/m\bar{3}$ . Crystals, to 8 mm, display {111}, perhaps modified by small {100}.

**Physical Properties:** *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 3.5-4  
D(meas.) = 2.367-2.743 D(calc.) = 2.58

**Optical Properties:** Transparent to translucent. *Color:* White; colorless in transmitted light.

*Luster:* Vitreous.

*Optical Class:* Isotropic.  $n = 1.508-1.510$

**Cell Data:** *Space Group:*  $Fd\bar{3}$ .  $a = 13.9038(2)$   $Z = 8$

**X-ray Powder Pattern:** Searles Lake, California, USA.

2.674 (100), 4.18 (76), 2.459 (40), 3.190 (24), 1.605 (24), 2.006 (17), 1.736 (17)

Chemistry:	(1)	(2)
SO <sub>3</sub>	15.07	15.32
CO <sub>2</sub>	33.50	33.68
MgO	15.80	15.42
Na <sub>2</sub> O	35.57	35.58
Total	99.94	100.00

(1) Searles Lake, California, USA; average of two analyses. (2) Na<sub>6</sub>Mg<sub>2</sub>(CO<sub>3</sub>)<sub>4</sub>(SO<sub>4</sub>).

**Polymorphism & Series:** Forms series with ferrotychite and manganotychite.

**Mineral Group:** Northupite group.

**Occurrence:** Uncommon in lake-bed evaporite deposits.

**Association:** Northupite, gaylussite, thénardite, schairerite, pirssonite (Searles Lake, California, USA); northupite (Katwe Lake, Uganda).

**Distribution:** In the USA, from Searles Lake, San Bernardino Co., California; and in the Green River Formation, Northern Piceance Creek Basin, Colorado. At Lake Katwe, western Uganda.

**Name:** From the Greek for *good fortune*, as the first and one of the last ten crystals examined were of this species, from a lot of about 5000 examined.

**Type Material:** Yale University, New Haven, Connecticut, USA (3.1634).

**References:** (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 294-295. (2) Mwanje, J. and Y. Kaahwa (1977) Observations on Uganda tychite. *Mineral. Record*, 8, 396. (3) Keester, K.L., G.J. Johnson, Jr., and V. Vand (1969) New data on tychite. *Amer. Mineral.*, 54, 302-305. (4) Schmidt, G.R., J. Reynard, H. Yang, and R.T. Downs (2006) Tychite, Na<sub>6</sub>Mg<sub>2</sub>(SO<sub>4</sub>)(CO<sub>3</sub>)<sub>4</sub>: structure analysis and Raman spectroscopic data. *Acta Crystallogr.*, E62, i207-i209. (5) (2007) *Amer. Mineral.*, 92(4), 707 (abs. ref. 4).