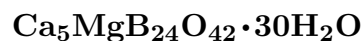


Wardsmithite



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Crystal Data: Monoclinic, pseudohexagonal (?). *Point Group:* n.d. Subhedral to anhedral crystals, thin platy with hexagonal outline, to 15 μm ; in fine-grained clots and nodules, and irregular coatings.

Physical Properties: *Cleavage:* {001}, good. Hardness = 2.5 $D(\text{meas.}) = 1.85\text{--}1.88$
 $D(\text{calc.}) = \text{n.d.}$

Optical Properties: Transparent. *Color:* White; colorless in transmitted light.
Luster: Vitreous.

Optical Class: Uniaxial (–) or biaxial. $\omega = 1.490(2)$ $\epsilon = 1.476(2)$ $2V(\text{meas.}) = \text{Small}$.

Cell Data: *Space Group:* n.d. $Z = \text{n.d.}$

X-ray Powder Pattern: Death Valley, California, USA.

13.5 (100), 12.3 (62), 6.12 (55), 4.721 (42), 2.744 (26), 7.73 (22), 2.918 (20)

Chemistry:

	(1)	(2)
B ₂ O ₃	48.58	49.24
MgO	2.26	2.38
CaO	16.50	16.53
H ₂ O	32.44	31.85
R ₂ O ₃	0.30	
insol.	0.20	
Total	100.28	100.00

(1) Hard Scramble Claim, California, USA; H₂O by TGA, estimated to contain gowerite 3%; after correction corresponds to Ca_{5.02}Mg_{0.98}B_{23.62}O₄₂•30.88H₂O. (2) Ca₅MgB₂₄O₄₂•30H₂O.

Occurrence: A rare weathering product of priceite and colemanite.

Association: Gowerite, ulexite, nobleite, colemanite (Death Valley, California, USA).

Distribution: From the Hard Scramble claim, Black Mountains, 3 km north-northwest of Ryan, and on the Oliver Consolidated claim, 3 km west of Ryan, Death Valley, Inyo Co., California, USA. From about 15 km northwest of Tubutama, Sonora, Mexico.

Name: In honor of Ward Cromwell Smith (1906–1998), geologist with the U.S. Geological Survey, Menlo Park, California, USA, who studied southwestern U.S. borate occurrences.

Type Material: National Museum of Natural History, Washington, D.C., USA, 136414, 147955, 147956.

References: (1) Erd, R.C., J.F. McAllister, and A.C. Vlisidis (1970) Wardsmithite, 5CaO•MgO•12B₂O₃•30H₂O, a new borate mineral from the Death Valley region, California. *Amer. Mineral.*, 55, 349–357.