

**Crystal Data:** Monoclinic. *Point Group:* 2/m. Platy rhombic to pseudohexagonal crystals, flattened on {100}, elongated along [010] or [001], showing large {100}, {001}, {110}, {011}, {111}, to 3 mm; as a post-mine mammillary coating. *Twinning:* Contact twins on {100}, common.

**Physical Properties:** *Cleavage:* Perfect on {100}; indistinct on {001}. *Fracture:* Uneven. *Tenacity:* Sectile, flexible, inelastic. Hardness = ~3 D(meas.) = 2.09(1) D(calc.) = 2.098 Slightly to moderately soluble in H<sub>2</sub>O.

**Optical Properties:** Transparent. *Color:* Colorless to white; colorless in transmitted light. *Streak:* White. *Luster:* Subvitreous, pearly on cleavages. *Optical Class:* Biaxial (+). *Orientation:* Y = b; X ∧ a = 29°; Z ∧ c = -7°. *Dispersion:* r > v, weak. α = 1.500(3) β = 1.520(2) γ = 1.554(2) 2V(meas.) = n.d. 2V(calc.) = 76°

**Cell Data:** *Space Group:* P2<sub>1</sub>/a. a = 14.56(5) b = 8.016(20) c = 9.838(20) β = 111°45(10)' Z = 4

**X-ray Powder Pattern:** Near the De Bely mine, California, USA; strong preferred orientation due to platy {100} cleavage. 6.79 (100), 3.39 (31), 5.18 (9), 2.566 (9), 3.12 (7), 2.309 (7), 4.68 (5)

**Chemistry:**

	(1)	(2)
B <sub>2</sub> O <sub>3</sub>	60.80	61.98
Fe <sub>2</sub> O <sub>3</sub>	0.15	
CaO	16.96	16.64
SrO	0.11	
Na <sub>2</sub> O	0.26	
K <sub>2</sub> O	0.06	
Li <sub>2</sub> O	0.02	
H <sub>2</sub> O <sup>+</sup>	20.82	
H <sub>2</sub> O <sup>-</sup>	1.02	
H <sub>2</sub> O		21.38
insol.	0.08	
Total	100.28	100.00

(1) Near the De Bely mine, California, USA; SrO and alkalis by flame photometry, H<sub>2</sub>O by the Penfield method; corresponds to Ca<sub>1.01</sub>B<sub>5.84</sub>O<sub>9</sub>(OH)<sub>2</sub>•3H<sub>2</sub>O. (2) CaB<sub>6</sub>O<sub>9</sub>(OH)<sub>2</sub>•3H<sub>2</sub>O.

**Occurrence:** Typically a recent incrustation produced by weathering of colemanite and priceite veins in altered olivine basalt and basaltic clastic rocks (near the De Bely mine, California, USA).

**Association:** Colemanite, meyerhofferite, gowerite, ulexite, ginorite, sassolite, gypsum, manganese oxide (near the De Bely mine, California, USA).

**Distribution:** In the USA, in the Furnace Creek district, Death Valley, Inyo Co., California, from one km north-northwest of the De Bely mine, and several other places; coarsely crystalline in the Corkscrew mine. From the Sijes district, Salta Province, Argentina.

**Name:** To honor Dr. Levi Fatzinger Noble (1882–1965), geologist with the U.S. Geological Survey, who studied the Death Valley borate deposits.

**Type Material:** National Museum of Natural History, Washington, D.C., USA, 136416, 147960.

**References:** (1) Erd, R.C., J.F. McAllister, and A.C. Vlisidis (1961) Nobleite, another new hydrous calcium borate from the Death Valley region, California. *Amer. Mineral.*, 46, 560–571. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior written permission of Mineral Data Publishing.