

# Otwayite

# Ni<sub>2</sub>(CO<sub>3</sub>)(OH)<sub>2</sub>•H<sub>2</sub>O

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**Crystal Data:** Orthorhombic (?). *Point Group:* n.d. Fiber bundles, to several hundred μm, in divergent interlocking sprays perpendicular to veinlet walls; as spherules, claylike coatings.

**Physical Properties:** Hardness = n.d. VHN = 130–360 (5 g load). D(meas.) = 3.41  
D(calc.) = 3.346

**Optical Properties:** Opaque to translucent. *Color:* Bright green; pale green in transmitted light. *Luster:* Silky to waxy.

*Optical Class:* Biaxial. *Pleochroism:* Weak; deepest color ⊥ fiber axis. *Orientation:* Parallel extinction, length-fast. α = 1.65 β = n.d. γ = 1.72 2V(meas.) = n.d.

**Cell Data:** *Space Group:* n.d. a = 10.18 b = 27.4 c = 3.22 Z = 8

**X-ray Powder Pattern:** Otway deposit, Western Australia.  
6.84 (10), 5.67 (8), 2.737 (6), 3.022 (5), 2.529 (5), 2.24 (5), 2.370 (4)

Chemistry:	(1)	(2)
CO <sub>2</sub>	19.57	19.18
NiO	62.87	65.11
MgO	1.14	
H <sub>2</sub> O	16.42	15.71
Total	100.00	100.00

(1) Otway deposit, Western Australia; by AA, colorimetry, and direct determination of C and H, recalculated to 100% from an original total of 99.01% after deduction of SiO<sub>2</sub> 0.28% as pecoraite; then corresponding to (Ni<sub>1.90</sub>Mg<sub>0.06</sub>)<sub>Σ=1.96</sub>(CO<sub>3</sub>)<sub>1.01</sub>(OH)<sub>1.92</sub>•1.10H<sub>2</sub>O.

(2) Ni<sub>2</sub>(CO<sub>3</sub>)(OH)<sub>2</sub>•H<sub>2</sub>O. (3) Lord Brassey mine, Tasmania, Australia; average of 14 analyses, (CO<sub>3</sub>)<sup>2-</sup>, (SO<sub>4</sub>)<sup>2-</sup>, (OH)<sup>1-</sup>, and H<sub>2</sub>O confirmed by IR; stated to correspond to Ni<sub>2</sub>[(CO<sub>3</sub>)<sub>0.84</sub>(SO<sub>4</sub>)<sub>0.16</sub>]<sub>Σ=1.00</sub>(OH)<sub>2</sub>•2H<sub>2</sub>O.

**Occurrence:** In veinlets in serpentinite (Otway prospect, Western Australia; Lord Brassey mine, Tasmania, Australia).

**Association:** Magnesite, pecoraite, gaspéite, paraotwayite, millerite, polydymite, nickeloan chrysotile, apatite (Otway deposit, Western Australia); theophrastite, hellyerite, zaratite, magnetite (Lord Brassey mine, Tasmania, Australia).

**Distribution:** In Australia, from the Otway nickel deposit, near Spinnaway, Nullagine district, and in the 132 North nickel mine, 4 km southwest of Widgiemooltha, Western Australia; at the Lord Brassey mine, near Heazlewood, Tasmania.

**Name:** To honor Charles Albert Otway (1922– ), prospector of Gosnells, Western Australia, owner of the Otway prospect.

**Type Material:** Western Australian Museum, Perth, Australia, M.60.1991; National Museum of Natural History, Washington, D.C., USA, 142804.

**References:** (1) Nickel, E.H., B.W. Robinson, and R.D. MacDonald (1977) Otwayite, a new nickel mineral from Western Australia. *Amer. Mineral.*, 62, 999–1002. (2) Henry, D.A. and W.D. Birch (1992) Otwayite and theophrastite from the Lord Brassey mine, Tasmania. *Mineral. Mag.*, 56, 252–255.