

Otwayite

$\text{Ni}_2(\text{CO}_3)(\text{OH})_2 \cdot \text{H}_2\text{O}$

©2001-2005 Mineral Data Publishing, version 1

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). $D(\text{meas.}) = 3.41$
 $D(\text{calc.}) = 3.346$

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

Optical Class: Biaxial. *Pleochroism:* Weak; deepest color \perp fiber axis. *Orientation:* Parallel extinction, length-fast. $\alpha = 1.65$ $\beta = \text{n.d.}$ $\gamma = 1.72$ $2V(\text{meas.}) = \text{n.d.}$

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_2	19.57	19.18
NiO	62.87	65.11
MgO	1.14	
H_2O	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_2 0.28% as pecoraite; then corresponding to $(\text{Ni}_{1.90}\text{Mg}_{0.06})_{\Sigma=1.96}(\text{CO}_3)_{1.01}(\text{OH})_{1.92} \cdot 1.10\text{H}_2\text{O}$.

(2) $\text{Ni}_2(\text{CO}_3)(\text{OH})_2 \cdot \text{H}_2\text{O}$. (3) Lord Brassey mine, Tasmania, Australia; average of 14 analyses, $(\text{CO}_3)^{2-}$, $(\text{SO}_4)^{2-}$, $(\text{OH})^{1-}$, and H_2O confirmed by IR; stated to correspond to $\text{Ni}_2[(\text{CO}_3)_{0.84}(\text{SO}_4)_{0.16}]_{\Sigma=1.00}(\text{OH})_2 \cdot 2\text{H}_2\text{O}$.

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.