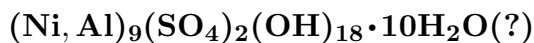


# Carrboydite



©2001-2005 Mineral Data Publishing, version 1

**Crystal Data:** Hexagonal. *Point Group:* n.d. As spherical felted aggregates of platy crystals, to 1 mm, and as amorphous-appearing coatings; massive in thin veins and fracture fillings.

**Physical Properties:** Hardness = n.d.  $D(\text{meas.}) = 2.50(5)$ , on porous impure material.  $D(\text{calc.}) = 2.692$

**Optical Properties:** Translucent. *Luster:* Dull to waxy. *Color:* Yellowish green, greenish yellow, blue-green, pale green, greenish blue; pale blue-green in transmitted light.

*Optical Class:* Uniaxial (-), may be biaxial (-). *Orientation:* Length-slow.  $\omega = \sim 1.56$   
 $\epsilon = \sim 1.54$   $2V(\text{meas.}) = \text{Small}$ .

**Cell Data:** *Space Group:* n.d.  $a = 9.14$   $c = 10.34$   $Z = [1]$

**X-ray Powder Pattern:** Carr Boyd Rocks mine, Australia.  
10.5 (vs), 5.25 (s), 2.55 (ms), 3.48 (m), 1.51 (m), 2.62 (w), 2.36 (wb)

<b>Chemistry:</b>	(1)
	SO <sub>3</sub> 14.5
	CO <sub>2</sub> 1.65
	SiO <sub>2</sub> 2.6
	Al <sub>2</sub> O <sub>3</sub> 17.9
	NiO 38.2
	CuO 2.5
	H <sub>2</sub> O 20.55
	<hr/>
	Total 97.9

(1) Carr Boyd Rocks mine, Australia; by electron microprobe, C and H by microanalysis, here recalculated to oxides; after deduction of CO<sub>2</sub>, SiO<sub>2</sub>, and CuO, corresponds to  $(\text{Ni}_{5.7}\text{Al}_{3.9})_{\Sigma=9.6}(\text{SO}_4)_{2.0}(\text{OH})_{19.1} \cdot 3.0\text{H}_2\text{O}$ .

**Occurrence:** A rare secondary mineral in the oxidized zone of nickel sulfide deposits.

**Association:** Malachite, azurite, paratacamite, brochantite, glaukosphaerite, takovite, nickeloan magnesite, chalconatronite, georgeite, halloysite, chabazite, gypsum, epsomite (Carr Boyd Rocks mine, Western Australia).

**Distribution:** In Australia, from the Carr Boyd Rocks nickel mine, Yerilla district, 80 km north-northeast of Kalgoorlie, and at the 132 North nickel mine, 4 km southwest of Widgiemooltha, Western Australia.

**Name:** For the Carr Boyd Rocks mine, Australia, the first known locality.

**Type Material:** Western Australian Museum, Perth, Australia, M.74.1991; National Museum of Natural History, Washington, D.C., USA, 135930.

**References:** (1) Nickel, E.H. and R.M. Clarke (1976) Carrboydite, a hydrated sulfate of nickel and aluminum: a new mineral from Western Australia. *Amer. Mineral.*, 61, 366–372.