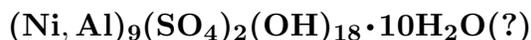


Carrboydite



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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)

Chemistry:	(1)
	SO ₃ 14.5
	CO ₂ 1.65
	SiO ₂ 2.6
	Al ₂ O ₃ 17.9
	NiO 38.2
	CuO 2.5
	H ₂ 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 CO₂, SiO₂, 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.