Dypingite $Mg_5(CO_3)_4(OH)_2 \cdot 5H_2O$

Crystal Data: Monoclinic (?). *Point Group:* n.d. As reniform, botryoidal, oolitic, or globular aggregates of radially-divergent acicular to flaky crystals, to 0.5 mm.

Physical Properties: Hardness = n.d. D(meas.) = n.d. D(calc.) = 2.15 Fluoresces pale blue under SW and LW UV; some material also displays green phosphorescence.

Optical Properties: Semitransparent. *Color:* Snow-white to gray; colorless in transmitted light. *Luster:* Pearly.
Optical Class: Biaxial (+) or (–). *Orientation:* Elongated ∥ *Y*. α = 1.508–1.515 β = 1.510–1.521 γ = 1.516–1.522 2V(meas.) = n.d. 2V(calc.) = 44.5°

Cell Data: *Space Group:* n.d. Z = n.d.

X-ray Powder Pattern: Dypingdal, Norway.
10.6 (100), 5.86 (90), 6.34 (60), 2.53 (50), 2.17 (50), 3.16 (40), 3.07 (40)

Chemistry:

	(1)	(2)	(3)
CO_2	36.3	28.93	36.25
SiO_2		5.01	
Fe_2O_3	0.2	0.21	
MgO	38.3	38.38	41.49
CaO	< 0.2	0.12	
H_2O^+		20.90	
H_2O^-		6.39	
H_2O	22.7		22.26
insol.	2.0		
Total	99.5	99.94	100.00

(1) Dypingdal, Norway; total Fe by spectrophotometry, here given as Fe_2O_3, Mg by EDTA, Ca by AA, $(OH)^{1-}$, H_2O, and $(CO_3)^{2-}$ confirmed by IR; corresponds to $Mg_{4.60}(CO_3)_{4.00}(OH)_{1.20} \cdot 4.92H_2O$. (2) Yoshikawa, Japan; after deduction of SiO_2 due to chrysotile impurity, corresponds to $Mg_{5.09}(CO_3)_{4.04}(OH)_{2.10} \cdot 7.76H_2O$. (3) $Mg_5(CO_3)_4(OH)_2 \cdot 5H_2O$.

Occurrence: Coats fractures and exposed surfaces in serpentine; may be of recent formation on dump materials.

Association: Hydrotalcite, magnesite (Norway); brucite, brugnatellite, pyroaurite, artinite, hydromagnesite, nesquehonite (Yoshikawa, Japan).

Distribution: From Dypingdal, near Snarum, Modum, Norway. At Hagdale, Unst, Shetland Islands, Scotland. From Kraubath, Styria, Austria. In Japan, at Yoshikawa, Aichi Prefecture; Mashiki, Kumamoto Prefecture; and Naradani, Gifu Prefecture. In the Vestford Hills, east Antarctica. From the Rapid Creek–Big Fish River area, Yukon Territory, Canada. In the USA, at Sterling Hill, Ogdensburg, Sussex Co., New Jersey; from Robinson Gulch, Jefferson Co., Colorado; found at the Akers prospect, about six km south of Idria, San Benito Co., California.

Name: For the first-noted occurrence at Dypingdal, Norway.

Type Material: Mineralogical-Geological Museum, University of Oslo, Oslo, Norway, 21886, 21887.

References: (1) Raade, G. (1970) Dypingite, a new hydrous basic carbonate of magnesium, from Norway. Amer. Mineral., 55, 1457–1465. (2) Dunn, P.J. (1979) Contributions to the mineralogy of Franklin and Sterling Hill, New Jersey. Mineral. Record, 10, 160–165. (3) Suzuki, J. and M. Ito (1973) A new magnesium carbonate hydrate mineral, $Mg_5(CO_3)_4(OH)_2 \cdot 8H_2O$, from Yoshikawa, Aichi Prefecture, Japan. J. Japan. Assoc. Mineral. Petrol. Econ. Geol. 68, 353–361.