

O'danielite**H₂Na(Zn, Mg)₃(AsO₄)₃**

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Crystal Data: Monoclinic. *Point Group:* 2/*m*. Anhedral crystalline grains, flattened on {100}, elongated along [001], as intergrown blades, to 3 mm.

Physical Properties: *Cleavage:* {010}, {100}, perfect; {001}, observable. Hardness = ~3 D(meas.) = > 4.24 D(calc.) = 4.49

Optical Properties: Transparent. *Color:* Pale violet. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Biaxial (+). *Orientation:* Z = b; Y ∧ c = 18°. α = 1.745(4) β = 1.753(4) γ = 1.778(4) 2V(meas.) = ~60(5)°

Cell Data: *Space Group:* C2/c. a = 12.113(3) b = 12.445(4) c = 6.793(1) β = 112.87(1)° Z = 4

X-ray Powder Pattern: Tsumeb, Namibia.

6.22 (10), 3.26 (10), 2.78 (8b), 2.72 (8), 3.56 (7), 1.687 (7), 1.664 (6)

Chemistry:

	(1)
As ₂ O ₅	54.4
FeO	0.2
MnO	0.6
ZnO	33.8
MgO	2.9
CaO	0.3
Na ₂ O	4.7
H ₂ O	2.8
Total	99.7

(1) Tsumeb, Namibia; by electron microprobe, H₂O by TGA; corresponding to H_{1.96}(Na_{0.95}Ca_{0.03})_{Σ=0.98}(Zn_{2.60}Mg_{0.45}Mn_{0.05}Fe_{0.02})_{Σ=3.12}(As_{0.99}O₄)₃.

Occurrence: A rare secondary mineral in the oxidized zone of a dolostone-hosted hydrothermal polymetallic ore deposit.

Association: Tennantite, chalcocite, cuprian adamite, stranskiite, lavendulan, köttigite, tsumcorite, koritnigite, prosperite.

Distribution: From Tsumeb, Namibia.

Name: To honor Dr. Herbert O'Daniel (1903–1977), Professor of Mineralogy, University of Munich, Munich, Germany, and Editor of Neues Jahrbuch für Mineralogie.

Type Material: University of Stuttgart, Stuttgart, Germany, NM09; National Museum of Natural History, Washington, D.C., USA, 145966.

References: (1) Keller, P., H. Hess, P.J. Dunn, and D. Newbury (1981) O'Danielite, NaZn₃H₂(AsO₄)₃, a new mineral from Tsumeb, Namibia. Neues Jahrb. Mineral., Monatsh., 155–160. (2) (1981) Amer. Mineral., 66, 1276 (abs. ref. 1). (3) Keller, P. and H. Hess (1988) Die Kristallstrukturen von O'Danielit, Na(Zn, Mg)₃H₂(AsO₄)₃, und Johillerit, Na(Mg, Zn)₃Cu(AsO₄)₃. Neues Jahrb. Mineral., Monatsh., 395–404 (in German with English abs.).