Reaphookhillite $MgZn_2(PO_4)_2 \cdot 4H_2O$

Crystal Data: Triclinic. *Point Group*: $\bar{1}$. As bladed to thin tabular crystals to 0.6 mm as overgrowths on parahopeite crystals.

Physical Properties: *Cleavage*: Perfect on {010}. *Tenacity*: Brittle. *Fracture*: Irregular. Hardness = ~4 (by analogy to parahopeite). D(meas.) = n.d. D(calc.) = 3.03

Optical Properties: Transparent. *Color*: Colorless. *Streak*: n.d. *Luster*: Vitreous. *Optical Class*: Biaxial (+). α = 1.583(3) β = 1.596(3) γ = 1.611(3) 2V(calc.) = 88.7° Non-pleochroic.

Cell Data: *Space Group: P*$\bar{1}$. a = 5.7588(12) b = 7.5341(15) c = 5.2786(11) α = 93.44(3)° β = 91.27(3)° γ = 91.30(3)° Z = 1

X-Ray Diffraction Pattern: Reaphook Hill, Flinders Ranges, South Australia, Australia. 7.577 (100), 2.982 (32), 2.880 (27), 4.461 (24), 3.771 (14), 2.775 (14), 3.158 (13)

Chemistry:

	(1)	(2)
ZnO	41.57	39.02
MgO	7.96	9.66
MnO	0.40	
P_2O_5	33.72	34.03
H_2O	[16.92]	17.28
Total	100.57	100.00

(1) Reaphook Hill, Flinders Ranges, South Australia, Australia, average electron microprobe and FTIR spectroscopic analyses; corresponds to $Mg_{0.83}Zn_{2.16}Mn^{2+}_{0.02}(PO_4)_{2.01} \cdot 3.97H_2O$.
(2) $MgZn_2(PO_4)_2 \cdot 4H_2O$.

Mineral Group: The magnesium-analogue of parahopeite.

Occurrence: In unmetamorphosed, poorly sorted, argillaceous siltstones with conglomerate lenses, by groundwater causing near-surface enrichment of manganese, iron, zinc, and phosphorus.

Association: Scholzite, leucophosphite, chalcophanite.

Distribution From Reaphook Hill, Martins Well, Flinders Ranges, South Australia, Australia.

Name: For the locality where the studied material was collected.

Type Material: South Australian Museum, Adelaide, South Australia, Australia (G34798).

References: (1) Elliott, P. (2022) Reaphookhillite, $MgZn_2(PO_4)_2 \cdot 4H_2O$, the Mg analogue of parahopeite from Reaphook Hill, South Australia. Mineral. Mag., 86(4), 525-530.