Aldermanite $Mg_5Al_{12}(PO_4)_8(OH)_{22}\cdot 32H_2O$

Crystal Data: Orthorhombic. *Point Group:* n.d. As talclike flakes, to 0.1 mm.

Physical Properties: Hardness = ∼2 D(meas.) = n.d. D(calc.) = 2.0–2.15

Optical Properties: Translucent. *Color:* Colorless in transmitted light. *Luster:* Pearly. *Optical Class:* Biaxial; very low birefringence. $n = 1.500(5)$

Cell Data: *Space Group:* n.d. $a = 15.000(7)$ $b = 8.330(6)$ $c = 26.60(1)$ $Z = 2$

X-ray Powder Pattern: Moculta quarry, Australia.
13.40 (100), 7.98 (80), 5.55 (60), 2.841 (50), 5.70 (30), 4.96 (30), 2.660 (30)

Chemistry:

	(1)	(2)
P_2O_5	25.9	26.34
Al_2O_3	28.4	28.38
MgO	8.4	9.35
CaO	1.2	
H_2O	36.1	35.93
Total	100.0	100.00

(1) Moculta quarry, Australia; by electron microprobe, average of several analyses, H_2O by loss on ignition; corresponds to $(Mg_{4.53}Ca_{0.47})_{\Sigma=5.00}Al_{12.12}(PO_4)_{7.94}(OH)_{22.5}\cdot 31H_2O$. (2) $Mg_5Al_{12}(PO_4)_8(OH)_{22}\cdot 32H_2O$.

Occurrence: As a secondary mineral in cavities in a brecciated metamorphosed sedimentary phosphate deposit, formed by the alteration of fluellite (Moculta quarry, Australia).

Association: Fluellite.

Distribution: At the Moculta phosphate quarry, northeast of Angaston, South Australia.

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References: (1) Harrowfield, I.R., E.R. Segnit, and J.A. Watts (1981) Aldermanite, a new magnesium aluminium phosphate. Mineral. Mag., 44, 59–62. (2) (1981) Amer. Mineral., 66, 1099 (abs. ref. 1).