## 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.

**Name:** Honors Arthur Richard Alderman (1901–1980), Professor of Geology and Mineralogy, University of Adelaide, Adelaide, Australia.

**Type Material:** C.S.I.R.O. Division of Mineral Chemistry, Melbourne, M636; Museum Victoria, Melbourne, Australia, M34778.

**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).