

Foggite**CaAl(PO₄)(OH)₂·H₂O**

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Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. As thin prismatic crystals, tabular {010}, slightly elongated [001], to 0.4 mm; in fanlike and radial aggregates.

Physical Properties: *Cleavage:* {010}, perfect; {100}, good. Hardness = ~ 4
D(meas.) = 2.78(1) D(calc.) = 2.77

Optical Properties: Semitransparent. *Color:* Colorless to snow-white.
Optical Class: Biaxial (+). *Orientation:* $X = c; Y = b; Z = a$. $\alpha = 1.610(2)$ $\beta = 1.610(2)$
 $\gamma = 1.611(2)$ $2V(\text{meas.}) = 40^\circ\text{--}45^\circ$

Cell Data: *Space Group:* $A2_122$. $a = 9.270(2)$ $b = 21.324(7)$ $c = 5.190(2)$ $Z = 8$

X-ray Powder Pattern: Palermo #1 mine, New Hampshire, USA.
4.24 (10), 2.693 (8), 3.109 (7), 6.96 (5), 4.20 (5), 2.505 (5), 10.67 (4)

Chemistry:	(1)	(2)
P ₂ O ₅	32.3	33.15
Al ₂ O ₃	22.9	23.82
CaO	25.1	26.20
H ₂ O		16.83
Total		100.00

(1) Palermo #1 mine, New Hampshire, USA; by electron microprobe.

(2) CaAl(PO₄)(OH)₂·H₂O.

Occurrence: A secondary mineral, probably formed at $< 300^\circ\text{C}$, in complex granite pegmatites.

Association: Carbonate-apatite, childrenite, whitlockite, montebrasite, siderite, quartz.

Distribution: From the Palermo #1 mine, near North Groton, Grafton Co., New Hampshire, USA. On Milgun Station, Western Australia.

Name: To honor Forrest F. Fogg (1920–), mineral collector of Penacook, New Hampshire, USA, who provided the first material.

Type Material: National Museum of Natural History, Washington, D.C., USA, 128068.

References: (1) Moore, P.B., A.J. Irving, and A.R. Kampf (1975) Foggite, CaAl(OH)₂(H₂O)[PO₄]; goedkenite, (Sr, Ca)₂Al(OH)[PO₄]₂; and samuelsonite, (Ca, Ba)Fe²⁺₂Mn²⁺₂Ca₃Al₂(OH)₂[PO₄]₁₀; three new species from the Palermo No. 1 pegmatite, North Groton, New Hampshire. Amer. Mineral., 60, 957–964. (2) Moore, P.B., A.R. Kampf, and T. Araki (1975) Foggite, Ca(H₂O)₂[CaAl₂(OH)₄(PO₄)₂]: its atomic arrangement and relationship to calcium Tschermak's pyroxene. Amer. Mineral., 60, 965–971.