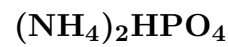


Phosphammite



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Crystal Data: Monoclinic (synthetic). *Point Group:* $2/m$. As crystals, to 0.5 mm; typically in crusts.

Physical Properties: Hardness = n.d. $D(\text{meas.}) = 1.61$ $D(\text{calc.}) = 1.61$

Optical Properties: Transparent. *Color:* Colorless.

Optical Class: Biaxial (+). *Orientation:* $Z = b$; $X \wedge a = 43.5^\circ$. $\alpha = 1.508$ $\beta = 1.518$
 $\gamma = 1.530$ $2V(\text{meas.}) = 80^\circ\text{--}85^\circ$ $2V(\text{calc.}) = 85^\circ$

Cell Data: *Space Group:* $P2_1/a$ (synthetic). $a = 8.03$ $b = 6.68$ $c = 11.02$ $\beta = 113^\circ 38'$
 $Z = 4$

X-ray Powder Pattern: Synthetic. (ICDD 29-111).

5.05 (100), 5.57 (75), 4.94 (65), 3.22 (65), 3.78 (50), 3.14 (45), 3.06 (45)

Chemistry: (1) Identification depends on the coincidence of the X-ray powder pattern and optical data with that of synthetic material.

Occurrence: Probably a crystallization product of the liquid fraction of guano.

Association: Ammonian apthitalite, urea, weddellite (Toppin Hill Cave, Western Australia); biphosphammite (Guañape Island, Peru).

Distribution: On Guañape Island, south of Trujillo, Peru. In Toppin Hill Cave, about 320 km northeast of Kalgoorlie, Western Australia. At San Pedro, Martin Island, Mexico.

Name: As a PHOSPHate of AMMonium.

Type Material: Western Australian Museum, Perth, Australia, S4688.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 807.

(2) Bridge, P.J. (1973) Urea, a new mineral, and neotype phosphammite from Western Australia. *Mineral. Mag.*, 39, 346–348. (3) Smith, J.P., L.R. Lehr, and W.E. Brown (1957) Crystallographic properties of diammonium phosphate, $(\text{NH}_4)_2\text{HPO}_4$. *Acta Cryst.*, 10, 709.