

Kidwellite**NaFe³⁺(PO₄)₆(OH)₁₀•5H₂O**

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Crystal Data: Monoclinic. *Point Group:* 2/m, m, or 2. Acicular crystals are elongated along [010] and flattened on {100}, to 50 μm; typically in mats, tufts, or rosettes of feathery crystals; as spheroidal to botryoidal masses and crusts.

Physical Properties: *Cleavage:* Perfect on {100}. *Hardness* = 3 *D*(meas.) = > 3.3 *D*(calc.) = 3.34

Optical Properties: Transparent to translucent. *Color:* Bright yellow to greenish yellow, pale chartreuse-green, greenish white; colorless in transmitted light. *Streak:* Yellow. *Luster:* Silky. *Optical Class:* Biaxial (-). *Orientation:* Y = b. α = 1.787(5) β = 1.800(5) γ = 1.805(5) 2*V*(meas.) = Large.

Cell Data: *Space Group:* A2/m, Am, or A2. a = 20.61(7) b = 5.15(1) c = 13.75(6) β = 112.64(15)° Z = 2

X-ray Powder Pattern: Fodderstack Mountain, Arkansas, USA. 9.41 (100), 3.413 (55), 3.813 (40), 3.193 (40), 4.017 (35), 3.173 (35), 6.43 (30)

Chemistry:	(1)	(2)
P ₂ O ₅	31.3	31.41
SiO ₂	0.27	
Al ₂ O ₃	0.98	
Fe ₂ O ₃	52.3	53.01
MnO	0.02	
MgO	0.01	
Na ₂ O	1.60	2.29
H ₂ O ⁺	13.3	
H ₂ O ⁻	0.3	
H ₂ O		13.29
Total	[100.08]	100.00

(1) Fodderstack Mountain, Arkansas, USA; original total given as 100.07%, corresponds to Na_{0.71}(Fe_{8.91}Al_{0.26})_{Σ=9.17}(PO₄)₆(OH)₁₀•5H₂O. (2) NaFe₉(PO₄)₆(OH)₁₀•5H₂O.

Occurrence: As a late-stage replacement of earlier phosphate minerals.

Association: Rockbridgeite, beraunite, strengite, laubmannite, dufrénite, chalcosiderite, goethite.

Distribution: In the USA, in Arkansas, from the Coon Creek and York mines, Polk Co; on Fodderstack Mountain, Montgomery Co.; and on Buckeye Mountain, at Three Oak Gap; in Alabama, from Indian Mountain, Cherokee Co.; at Irish Creek, Rockbridge Co., Virginia. In Germany, from the Rotläufchen mine, Waldgirmes, near Giessen, and the Eleonore mine, Hesse; and in the Clara mine, near Oberwolfach, Black Forest. At the Phoenix United mines, Linkinhorne, Cornwall, England. In Australia, from Broken Hill, New South Wales; in the Iron Monarch quarry, Iron Knob, South Australia; and at the Lake Boga granite quarry, near Swan Hill, Victoria. In the Okatjimukuju pegmatite, near Karibib, Namibia.

Name: Honors Albert Laws Kidwell (1919–), Houston, Texas, USA, for his study of Arkansas phosphate deposits.

Type Material: National Museum of Natural History, Washington, D.C., USA, 137024.

References: (1) Moore, P.B. and J. Ito (1978) Kidwellite, NaFe₉³⁺(OH)₁₀(PO₄)₆•5H₂O, a new species. *Mineral. Mag.*, 42, 137–140. (2) (1979) *Amer. Mineral.*, 64, 242–243 (abs. ref. 1). (3) Braithwaite, R.S.W. and H. Corke (1980) Kidwellite from Cornwall. *Mineral. Mag.*, 43, 952–953.

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