

Crystal Data: Isometric. *Point Group:* $\bar{4} 3m$. As a single elongated cubic crystal to 0.17 mm.

Physical Properties: *Cleavage:* On {001}. [By analogy with other pharmacosiderite group minerals.] *Fracture:* Irregular. *Tenacity:* Brittle. *D(meas.)* = n.d. *D(calc.)* = 2.559 *Hardness* = 2-3 [Determined on H₃O-exchanged pharmacosiderite.]

Optical Properties: Transparent. *Color:* Yellowish green. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Isotropic. Has anomalous birefringence. *n(min.)* = 1.690(2) *n(max.)* = 1.692(2)

Cell Data: *Space Group:* $P\bar{4} 3m$. *a* = 7.993(6) *Z* = 1

X-ray Powder Pattern: Cornwall, England.

8.050 (100), 3.265 (35), 2.412 (30), 2.830 (23), 4.628 (22), 2.528 (19), 4.005 (14)

Chemistry:	(1)
Na ₂ O	0.25
K ₂ O	2.84
Al ₂ O ₃	1.45
Fe ₂ O ₃	38.33
P ₂ O ₅	1.30
As ₂ O ₅	39.80
H ₂ O	[16.03]
Total	100.00

(1) Cornwall, England; average of 4 electron microprobe analyses, H₂O calculated; corresponding to $[(\text{H}_3\text{O})_{0.5}\text{K}_{0.48}\text{Na}_{0.06}]_{\Sigma=1.04}(\text{Fe}_{3.79}\text{Al}_{0.22})_{\Sigma=4.01}[(\text{As}_{2.73}\text{P}_{0.15})_{\Sigma=2.88}\text{O}_{12}](\text{OH})_4 \cdot 4\text{H}_{2.14}\text{O}$.

Mineral Group: Pharmacosiderite supergroup.

Occurrence: n.d.

Association: n.d.

Distribution: From Cornwall, England (probably the St. Day group of mines). At the Wendy pit, Tambo mine, Elqui Province, Coquimbo Region, Chile.

Name: Signifies the H₃O, *hydronium*, analog of *pharmacosiderite*.

Type Material: Harvard Mineralogical Museum, Cambridge, Massachusetts, USA (#142784).

References: (1) Mills, S.J., A.R. Kampf, P.A. Williams, P. Leverett, G. Poirier, M. Raudsepp, and C.A. Francis (2010) Hydroniumpharmacosiderite, a new member of the pharmacosiderite supergroup from Cornwall, U.K.: structure and description. *Mineral. Mag.*, 74(5), 863-869. (2) (2011) *Amer. Mineral.*, 96, 1655 (abs. ref. 1).