

Crystal Data: Isometric. *Point Group:* $\bar{4} 3m$. As encrustations of isolated or interpenetrating cubes, to 0.5 mm.

Physical Properties: *Cleavage:* Imperfect, {001}. *Fracture:* Irregular. *Tenacity:* Brittle. Hardness = 3.5 VHN = 165-327 (245.75 mN load). D(meas.) = n.d. D(calc.) = 2.580

Optical Properties: Transparent to translucent. *Color:* Colorless to pale yellow, deep blue internal reflections in reflected light. *Streak:* White.

Luster: Adamantine.

Optical Class: Isotropic. $n = [1.573]$

Cell Data: *Space Group:* $P\bar{4} 3m$. $a = 7.742(4)$ $Z = 1$

X-ray Powder Pattern: Cap Garonne, Var, France.

7.759 (100), 5.485 (27), 3.878 (27), 4.454 (18), 3.159 (16), 2.738 (16), 3.456 (14)

Chemistry:	(1)
K ₂ O	0.07
BaO	11.35
CuO	0.35
Al ₂ O ₃	27.89
Fe ₂ O ₃	0.19
As ₂ O ₅	47.28
<u>H₂O</u>	<u>14.58</u>
Total	101.71

(1) Cap Garonne, Var, France; average of 16 electron microprobe analyses, H₂O and OH⁻ confirmed by crystal structure analysis, corresponding to

$(\text{Ba}_{0.54}\text{Cu}_{0.03}\text{K}_{0.01})_{\Sigma=0.58}(\text{Al}_{3.99}\text{Fe}_{0.02})_{\Sigma=4.01}(\text{AsO}_4)_{3.00}(\text{OH})_{3.85}\text{O}_{0.15} \cdot 4\text{H}_2\text{O}$.

Group & Series: Pharmacosiderite supergroup; pharmacoalumite group.

Occurrence: A secondary mineral coating fractures and cavities in tetrahedrite-tennantite bearing rocks undergoing near-surface weathering.

Association: Mansfieldite, philipsbornite, beudantite, carminite, duftite, mimetite, scorodite, olivenite, arsentsumebite, lavendulan, foretite (Cap Garonne mines, France); bariopharmacosiderite, quartz, chalcedony, goethite (Mina Grande, Chile).

Distribution: From the Cap Garonne mines, near Le Pradet, Var, France; at Mina Grande, Chile; from the Gambatesa mine, Val Graveglia, Liguria, Italy.

Name: Recognizes the species as the barium dominant analogue of *pharmacoalumite*.

Type Material: Natural History Museum, London, England (BM 2010,82).

References: (1) Mills, S.J., M.S. Rumsey, G. Favreau, J. Spratt, M. Raudsepp, and M. Dini (2011) Bariopharmacoalumite, a new mineral species from Cap Garonne, France, and Mina Grande, Chile. *Mineral. Mag.*, 75, 135–144. (2) (2013) *Amer. Mineral.*, 98, 279-280 (abs. ref. 1).