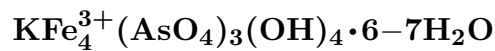


Pharmacosiderite



©2001-2005 Mineral Data Publishing, version 1

Crystal Data: Cubic. *Point Group:* $\bar{4}3m$. Commonly in good crystals, dominantly cubic, striated diagonally, with minor {111}, $\{\bar{1}11\}$, {011}, {122}, to 2 cm. May be granular or earthy. *Twinning:* Lamellar, visible optically; rarely as twinned tetrahedra.

Physical Properties: *Cleavage:* On {001}, good to imperfect. *Fracture:* Uneven. *Tenacity:* Somewhat sectile. Hardness = 2.5 D(meas.) = 2.797 D(calc.) = 2.90 Weakly piezoelectric and pyroelectric.

Optical Properties: Transparent to translucent. *Color:* Olive-green, grass-green, emerald-green, honey-yellow, yellowish brown, dark brown; less commonly hyacinth-red, brownish red; in transmitted light, green, yellow, pale brown, biaxially sectored. *Luster:* Adamantine to greasy.

Optical Class: Isotropic; commonly anomalously biaxial (+) or biaxial (-), with weak birefringence, perhaps showing six biaxial sectors. *Dispersion:* $r > v$ or $r < v$, strong. $n = 1.687-1.704$ $\alpha = 1.660-1.697$ $\beta = 1.661-1.700$ $\gamma = 1.663-1.704$ $2V(\text{meas.}) = \text{Large}$.

Cell Data: *Space Group:* $P\bar{4}3m$. $a = 7.93-7.98$ $Z = 1$

X-ray Powder Pattern: Pednandrea mine, Cornwall, England. (ICDD 34-155). 4.61 (100), 8.0 (90), 2.408 (80), 3.259 (70), 2.822 (65), 1.7844 (65), 1.5959 (60)

Chemistry:	(1)	(2)
P ₂ O ₅	1.20	
As ₂ O ₅	37.16	39.88
Fe ₂ O ₃	37.58	36.95
K ₂ O	4.54	5.45
H ₂ O	18.85	17.72
Total	99.33	100.00

(1) Cornwall, England; K is exchangeable for H, Ba, Na, etc. (2) $\text{KFe}_4(\text{AsO}_4)_3(\text{OH})_4 \cdot 6.5\text{H}_2\text{O}$

Occurrence: An oxidation product of arsenic-bearing sulfides.

Association: Scorodite, beudantite, carminite, arseniosiderite, symplectite, jarosite, "limonite".

Distribution: Many localities, in small amounts. In England, in Cornwall, from the Carharrack and Tincroft mines and Wheals Gorland and Unity, Gwennap, and a number of other localities; at many mines in Caldbeck Fells, Cumbria. From Vaulry, Haute-Vienne, and at the Cap Garonne mine, near le Pradet, Var, France. In Germany, from Dernbach and Horhausen, Rhineland-Palatinate; at the Clara mine, near Oberwolfach, and elsewhere in the Black Forest; from Schneeberg, Saxony, Germany. From Nova Bana, near Baňská Štiavnica (Schemnitz), Slovakia. In the USA, in the Mammoth mine, Tintic district, Juab Co., Utah; from the Northumberland mine, Nye Co., and as large crystals at the Majuba Hill mine, Antelope district, Pershing Co., Nevada. From Tsumeb, Namibia. At Broken Hill, New South Wales, Australia.

Name: From the Greek for *poison*, for the arsenic content, and *iron* in the composition.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 995-997. (2) Buerger, M.J., W.A. Dollase, and I. Garaycochea-Wittke (1967) The structure and composition of the mineral pharmacosiderite. *Zeits. Krist.*, 125, 92-108. (3) Greis, O., G. Mutter, and W. Eysel (1981) Pulverröntgenographische Untersuchungen an verschiedenen Pharmakosideriten $\text{A}[\text{Fe}_4(\text{OH})_4(\text{AsO}_4)_3] \cdot (5-7)\text{H}_2\text{O}$. *Zeits. Krist.*, 156, 48-49 (in German). (4) Mutter, G., W. Eysel, O. Greis, and K. Schmetzer (1984) Crystal chemistry of natural and ion-exchanged pharmacosiderites. *Neues Jahrb. Mineral., Monatsh.*, 183-192.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior written permission of Mineral Data Publishing.