

Mimetite

Pb₅(AsO₄)₃Cl

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Crystal Data: Hexagonal. *Point Group:* 6/*m*. Crystals are usually prismatic to acicular || [0001], to 12 cm, may be tabular, showing {10 $\bar{1}$ 0}, {0001}, {10 $\bar{1}$ 1}, rarely {11 $\bar{2}$ 1}, {21 $\bar{3}$ 1}, others; rounded, barrel-shaped, mammillary, stalactitic, granular. *Twinning:* On {11 $\bar{2}$ 2}, very rare.

Physical Properties: *Cleavage:* On {10 $\bar{1}$ 1}, interrupted. *Fracture:* Uneven to subconchoidal. *Tenacity:* Brittle. Hardness = 3.5–4 D(meas.) = 7.24 D(calc.) = 7.26 Piezoelectric; may fluoresce reddish yellow under LW or SW UV.

Optical Properties: Transparent to translucent. *Color:* Pale to bright yellow, yellowish brown, yellow-orange, white, may be colorless; colorless or pale yellow in transmitted light. *Streak:* White. *Luster:* Resinous to subadamantine. *Optical Class:* Uniaxial (-), commonly anomalously biaxial (-), sectored. *Pleochroism:* Weak. *Absorption:* $O < E$. $\omega = 2.147$ $\epsilon = 2.128$

Cell Data: *Space Group:* P6₃/*m* (synthetic). $a = 10.250(2)$ $c = 7.454(1)$ $Z = 2$

X-ray Powder Pattern: Synthetic.
3.06 (100), 3.01 (90), 2.962 (66), 3.36 (38), 2.110 (30), 1.994 (22), 1.905 (20)

Chemistry:	(1)	(2)
P ₂ O ₅	0.14	
As ₂ O ₅	23.17	23.17
PbO	74.58	74.99
Cl	2.39	2.38
-O = Cl ₂	0.54	0.54
Total	99.74	100.00

(1) Phoenixville, Pennsylvania, USA. (2) Pb₅(AsO₄)₃Cl.

Polymorphism & Series: Dimorphous with clinomimetite.

Mineral Group: Apatite group.

Occurrence: A common secondary mineral in the oxidized zone of arsenic-bearing lead deposits.

Association: Cerussite, anglesite, smithsonite, willemite, pyromorphite, wulfenite.

Distribution: Many localities. A few for well-crystallized material include: Johanngeorgenstadt, Saxony, Germany. At Příbram, Czech Republic. In England, from a number of localities in Cornwall; fine examples from Dry Gill and other mines, Caldbeck Fells, Cumbria. From Leadhills, Lanarkshire, Scotland. Extraordinary crystals at Tsumeb, Namibia. From Gowde, Anarak district, Iran. In the USA, from Phoenixville, Chester Co., Pennsylvania; at the Mammoth-St. Anthony mine, Tiger, Pinal Co., and the Rowley mine, Maricopa Co., Arizona; from the Centennial Eureka mine, Tintic district, Juab Co., Utah. In Mexico, from Santa Eulalia and San Pedro Corallitos, Chihuahua; in the Ojuela mine, Mapimí, Durango. At Broken Hill, New South Wales; in the Mt. Bonnie mine, Grove Hill, Prices Station, Northern Territory, Australia. From Hat Yai, Thailand.

Name: From the Greek for *an imitator*, as it imitates pyromorphite.

Type Material: Mining Academy, Freiberg, Germany, 20225.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 889–895. (2) Dai, Y., J.M. Hughes, and P.B. Moore (1991) The crystal structures of mimetite and clinomimetite, Pb₅(AsO₄)₃Cl. *Can. Mineral.*, 29, 369–376. (3) Calos, N.J. and C.H.L. Kennard (1990) Crystal structure of mimetite, Pb₅(AsO₄)₃Cl. *Zeits. Krist.*, 191, 125–129. (4) Cockbain, A.G. (1968) Lead apatite solid-solution series. *Mineral. Mag.*, 36, 1171–1173. (5) Baker, W.E. (1966) An X-ray diffraction study of synthetic members of the pyromorphite series. *Amer. Mineral.*, 51, 1712–1721.

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