

Crystal Data: Hexagonal. *Point Group:* 6/m. Anhedronal, granular, to 8 mm, or massive.

Physical Properties: *Cleavage:* Distinct on {1010}. *Tenacity:* Brittle. Hardness = ~ 4.5
D(meas.) = 3.68(3) D(calc.) = 3.73 Fluoresces medium pinkish orange under SW UV; exhibits pale pink cathodoluminescence.

Optical Properties: Translucent. *Color:* Grayish white; colorless in thin section. *Streak:* White.
Luster: Adamantine to greasy on fracture surfaces, vitreous on cleavage surfaces.
Optical Class: Uniaxial (-). $\omega = 1.687\text{--}1.716$ $\varepsilon = 1.684\text{--}1.698$

Cell Data: *Space Group:* [P63/m] (by analogy to the apatite group). $a = 9.70\text{--}9.80$ $c = 6.93\text{--}6.97$
Z = 2

X-ray Powder Pattern: Franklin, New Jersey, USA.

2.895 (100), 2.820 (70), 2.798 (70), 3.98 (50), 3.47 (50), 2.683 (45), 1.879 (45)

Chemistry:	(1)	(2)
P ₂ O ₅	1.7	
As ₂ O ₅	52.2	54.28
FeO	0.2	
MgO	0.1	
CaO	43.5	44.14
F	0.2	1.50
Cl	0.1	
H ₂ O	1.3	0.71
<u>-O = (F, Cl)₂</u>	<u>0.1</u>	<u>0.63</u>
Total	99.2	100.00

(1) Franklin, New Jersey, USA; by electron microprobe, H₂O by DTA-TGA; corresponding to (Ca_{4.86}Fe_{0.02}Mg_{0.02}) $\Sigma=4.90$ [(As_{0.95}P_{0.05}) $\Sigma=1.00$ O_{3.99}]₃[(OH)_{0.90}F_{0.06}Cl_{0.02}] $\Sigma=0.98$.

(2) Ca₅(AsO₄)₃(OH, F) with OH:F = 1:1.

Mineral Group: Apatite group.

Occurrence: A very rare mineral, part of a metamorphic skarn assemblage in a metamorphosed stratiform zinc orebody (Franklin, New Jersey, USA).

Association: Yeatmanite, diopside, andradite, franklinite, copper, roméite (Franklin, New Jersey, USA); tilasite (Långban, Sweden).

Distribution: From Franklin and Sterling Hill, Ogdensburg, Sussex Co., New Jersey, USA. In Russia, at undisclosed deposits in the Ural Mountains and Siberia [Novofrolovskoye copper deposit, Turinsk district, near Krasnoturinsk, Northern Ural Mountains; Yuliya Svintsovaya Pb-Zn deposit, 20 km east-northeast of Son railway station, western Siberia]. At Långban, Värmland, Sweden.

Name: Honors John L. Baum (1916–), Hamburg, New Jersey, USA, Curator of the Franklin Mineral Museum, and collector of the first specimen containing the mineral.

Type Material: Royal Ontario Museum, Toronto, Canada; The Natural History Museum, London, England; Harvard University, Cambridge, Massachusetts, 116461; National Museum of Natural History, Washington, D.C., USA, 144444.

References: (1) Dunn, P.J., D.R. Peacor, and N. Newberry (1980) Johnbaumite, a new member of the apatite group from Franklin, New Jersey. *Amer. Mineral.*, 65, 1143–1145. (2) Malinko, S.V., G.S. Romyantsev, and G.A. Sidorenko (1966) Svabite [= johnbaumite] from contact-metamorphic deposits of Siberia and the Urals. *Doklady Acad. Nauk SSSR*, 166, 1195–1198 (in Russian).