

Eylettersite**(Th, Pb)_{1-x}Al₃(PO₄, SiO₄)₂(OH)₆(?)**

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Crystal Data: Hexagonal. *Point Group:* $\bar{3} 2/m$. In pulverulent nodules.**Physical Properties:** Hardness = n.d. D(meas.) = 3.38–3.44 D(calc.) = 3.44–3.50
Radioactive; fluoresces greenish yellow in SW UV, weak cream-brown in LW UV.**Optical Properties:** Semitransparent. *Color:* White to cream-white; colorless in transmitted light.*Optical Class:* Uniaxial (-), probable; sensibly isotropic, with very low birefringence.
 $n = 1.615\text{--}1.66$ **Cell Data:** *Space Group:* $R\bar{3}m$. $a = 6.98\text{--}6.99$ $c = 16.66\text{--}16.70$ $Z = [3]$ **X-ray Powder Pattern:** Kobokobo pegmatite, Congo.

2.95 (100), 3.51 (60), 5.70 (55), 2.187 (40), 1.899 (30), 1.748 (20), 2.848 (15)

Chemistry:

	(1)	(2)
UO ₃	2.09	2.42
SiO ₂	1.56	1.03
ThO ₂	19.18	20.72
CO ₂	0.21	0.10
P ₂ O ₅	18.38	19.98
Al ₂ O ₃	37.13	35.98
PbO	4.80	3.21
CaO	0.11	0.26
SrO	0.11	0.21
BaO	1.51	1.96
H ₂ O	15.18	14.51
Total	100.26	100.38

(1) Kobokobo pegmatite, Congo; adjusted to original total after deduction of “autunite 1.8%–1.9%, fluorapatite 0.9%, limonite 0.1%”; stated then to correspond to $(\text{Th}_{0.36}\text{Pb}_{0.11}\text{Ba}_{0.05}\text{U}_{0.04}\text{Ca}_{0.01}\text{Sr}_{0.01}\text{H}_{0.17})_{\Sigma=0.75}\text{Al}_{3.58}[(\text{PO}_4)_{1.27}(\text{SiO}_4)_{0.13}(\text{CO}_3)_{0.02}(\text{H}_4\text{O}_4)_{0.58}]_{\Sigma=2.00}(\text{OH})_{6.10}$.

(2) Do.; adjusted to original total after deduction of “autunite 1.3%, fluorapatite 0.4%”; stated then to correspond to $(\text{Th}_{0.39}\text{Pb}_{0.07}\text{Ba}_{0.06}\text{U}_{0.04}\text{Ca}_{0.02}\text{Sr}_{0.01}\text{H}_{0.17})_{\Sigma=0.76}\text{Al}_{3.50}[(\text{PO}_4)_{1.39}(\text{SiO}_4)_{0.09}(\text{CO}_3)_{0.01}(\text{H}_4\text{O}_4)_{0.51}]_{\Sigma=2.00}(\text{OH})_{6.09}$.

Mineral Group: Crandallite group.**Occurrence:** An alteration product of thorian crandallite in a phosphate-rich granite pegmatite.**Association:** Autunite, phosphuranylite, fluorapatite, “limonite”, feldspar, “cyrtolite”.**Distribution:** In the Kobokobo pegmatite, Lusungu River district, Kivu Province, Congo (Zaire).**Name:** For the wife of the discoverer, Mme. Van Wambeke.**Type Material:** Euratom, Ispra, Italy; National Museum of Natural History, Washington, D.C., USA, 136443.**References:** (1) Van Wambeke, L. (1972) Eylettersite, un nouveau phosphate de thorium appartenant à la série de la crandallite. Bull. Soc. fr. Minéral., 95, 98–105 (in French with English abs.). (2) (1974) Amer. Mineral., 59, 208 (abs. ref. 1).