

Babefphite

BaBe(PO₄)F

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Crystal Data: Triclinic, pseudotetragonal. *Point Group:* 1. As anhedral, equant to flattened grains, to 1.5 mm; may be in aggregates.

Physical Properties: *Tenacity:* Very brittle. *Hardness* = [3.5] *VHN* = 140–200
D(meas.) = 4.31 *D*(calc.) = 4.325

Optical Properties: Transparent. *Color:* White. *Luster:* Vitreous to greasy.
Optical Class: Biaxial; pseuduniaxial (+). *Orientation:* Negative elongation. $\omega = 1.629(2)$
 $\epsilon = 1.632(2)$

Cell Data: *Space Group:* *P*1. $a = 6.889(3)$ $b = 16.814(7)$ $c = 6.902(3)$ $\alpha = 90.01(3)^\circ$
 $\beta = 89.99(3)^\circ$ $\gamma = 90.32(3)^\circ$ $Z = 8$

X-ray Powder Pattern: Aunik deposit, Russia.
3.190 (10), 2.163 (10), 1.516 (10), 2.760 (8), 2.440 (7), 2.033 (7), 1.135 (7b)

Chemistry:

	(1)	(2)
P ₂ O ₅	26.55	27.26
Fe ₂ O ₃	0.3	
BeO	11.63	9.61
CaO	0.00	
BaO	56.50	58.90
F	7.27	7.30
H ₂ O	[0.64]	
–O = F ₂	3.05	3.07
Total	[99.84]	100.00

(1) Aunik deposit, Russia; by microchemical analysis, with (OH)^{1–} for charge balance, corresponds to Ba_{0.99}Be_{1.20}(PO₄)_{1.00}[F_{1.02}(OH)_{0.36}] _{$\Sigma=1.38$} . (2) BaBe(PO₄)F.

Occurrence: In eluvium directly above rare-metal skarn deposits associated with alkaline intrusions.

Association: Zircon, ilmenorutile, fluorite, phenakite, scheelite, bertrandite, albite, microcline, quartz.

Distribution: Occurs in the Aunik fluorite-rare metals deposit, Buryatia, Siberia, Russia.

Name: For BArium, BEryllium, Fluorine, and PHosphorous in the composition.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 72021.

References: (1) Nazarova, A.S., N.N. Kuznetsova, and D.P. Shashkin (1966) Babefphite, a barium-beryllium fluoride-phosphate. *Doklady Acad. Nauk SSSR*, 167, 895–897 (in Russian). (2) (1966) *Amer. Mineral.*, 51, 1547 (abs. ref. 1). (3) Simonov, M.A., Y.K. Yegorov-Tismenko, and N.V. Belov (1980) Use of modern X-ray equipment to solve fine problems of structural mineralogy by the example of the crystal structure of babefphite BaBe(PO₄)F. *Kristallografiya* (Sov. Phys. Crystal.), 25, 28–30.