

Fluornatropyrochlore**(Na,Pb,Ca,REE,U)₂Nb₂O₆F**

Crystal Data: Isometric. *Point Group:* $4/m\bar{3}2/m$. As grains to 0.25 mm.

Physical Properties: *Cleavage:* None. *Fracture:* Conchoidal. *Tenacity:* Brittle.
Hardness = 4-4.5 D(meas.) = n.d. D(calc.) = 5.275

Optical Properties: Translucent to transparent. *Color:* Brownish yellow to reddish orange.
Streak: Light yellow. *Luster:* Adamantine.
Optical Class: Isotropic. $n = 2.10(5)$

Cell Data: *Space Group:* $Fd\bar{3}m$. $a = 10.5053(10)$ $Z = 8$

X-ray Powder Pattern: Boziguoer REE deposit, Akesu, Xinjiang Autonomous Region, China.
3.042 (100), 2.628 (38), 1.859 (34), 1.582 (15), 1.515 (4), 6.074 (3), 1.2045 (3)

Chemistry:	(1)		(1)
Na ₂ O	6.80	UO ₂	5.81
K ₂ O	0.01	Ta ₂ O ₅	3.00
CaO	2.01	Nb ₂ O ₅	53.42
MgO	0.01	F	3.19
FeO	0.05	Cl	0.02
SrO	0.03	ThO ₂	0.48
PbO	16.17	Sb ₂ O ₅	0.01
Ce ₂ O ₃	4.29	ZrO ₂	0.01
La ₂ O ₃	1.65	MnO	0.04
Nd ₂ O ₃	0.41	SnO ₂	0.34
Y ₂ O ₃	0.42	<u>-O = (F,Cl)₂</u>	<u>1.35</u>
SiO ₂	0.03	Total	98.21
TiO ₂	1.36		

(1) Boziguoer REE deposit, Akesu, Xinjiang Autonomous Region, China; average of 10 electron microprobe analyses supplemented by FTIR spectroscopy; corresponding to (Na_{1.03}Pb_{0.34}Ca_{0.17}U_{0.10}Th_{0.01}Ce_{0.12}La_{0.05}Y_{0.02}Nd_{0.01})_{Σ=1.85}(Nb_{1.88}Ti_{0.08}Ta_{0.06}Sn_{0.01})_{Σ=2.03}O_{6.21}F_{0.79}.

Mineral Group: Pyrochlore supergroup.

Occurrence: An accessory phase in niobium-tantalum-rich alkali syenite.

Association: Microcline, albite, aegirine, sodic amphibole, biotite, zircon, rutile, thorite, fluorite, fluocerite-(Ce), columbite-(Fe), xenotime-(Y), astrophyllite, chevkinite-(Ce), fergusonite-(Y).

Distribution: From the Boziguoer REE deposit, 43 km north of Baicheng County City, Baicheng County, Akesu, Xinjiang Autonomous Region, China.

Name: As a member of the pyrochlore supergroup with dominant fluorine in the Y site and sodium in the A site.

Type Material: Geological Museum of China, Beijing, China (M12183).

References: (1) Yin, J., G. Li, G. Yang, X. Ge, H. Xu, and J. Wang (2015) Fluornatropyrochlore, a new pyrochlore supergroup mineral from the Boziguoer rare earth element deposit, Baicheng County, Akesu, Xinjiang, China. *Can. Mineral.*, 53(3), 455-460. (2) (2016) *Amer. Mineral.*, 101, 2357-2358 (abs. ref. 1).