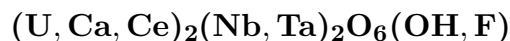


# Uranpyrochlore



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**Crystal Data:** Cubic; commonly metamict. *Point Group:*  $4/m\bar{3}2/m$ . Crystals are octahedra, modified by {001} and {113}; also massive. *Twining:* Rarely on {111}.

**Physical Properties:** *Fracture:* Subconchoidal. *Tenacity:* Brittle. Hardness = 4–5  
D(meas.) = 4.51–4.90 D(calc.) = [4.88] Radioactive.

**Optical Properties:** Transparent. *Color:* Black, yellowish brown, or amber-yellow; deep red-brown in transmitted light. *Luster:* Resinous to adamantine.

*Optical Class:* Isotropic.  $n = 1.89$ – $1.98$

**Cell Data:** *Space Group:*  $Fd\bar{3}m$ .  $a = 10.33$ – $10.44$   $Z = 8$

**X-ray Powder Pattern:** Berere, Madagascar.

3.01 (10), 1.84 (8), 1.575 (6), 7.3 (4), 2.61 (3), 1.202 (2), 1.168 (2)

Chemistry:	(1)	(2)	(1)	(2)
UO <sub>3</sub>	15.50		Fe <sub>2</sub> O <sub>3</sub>	0.64
Nb <sub>2</sub> O <sub>5</sub>	34.24	32.30	FeO	2.19
Ta <sub>2</sub> O <sub>5</sub>	29.83	15.76	PbO	trace
TiO <sub>2</sub>	1.61	9.27	MgO	0.15
ZrO <sub>2</sub>		0.28	CaO	8.87
SnO <sub>2</sub>	0.30		SrO	0.16
ThO <sub>2</sub>		0.07	Na <sub>2</sub> O	1.37
UO <sub>2</sub>		26.44	K <sub>2</sub> O	trace
Y <sub>2</sub> O <sub>3</sub>		0.17	F	0.19
La <sub>2</sub> O <sub>3</sub>		0.12	H <sub>2</sub> O	4.49
Ce <sub>2</sub> O <sub>3</sub>		0.21	–O = F <sub>2</sub>	[0.08]
			<hr/>	
			Total	98.55 [99.43]

(1) Mitchell Co., North Carolina, USA. (2) Near Kasenda, Uganda; by electron microprobe, total Fe as FeO, original total given as 99.51%; corresponding to  $(Na_{0.78}Ca_{0.70}U_{0.44}Ce_{0.01}Y_{0.01}Sr_{0.01})_{\Sigma=1.95}(Nb_{1.10}Ti_{0.53}Ta_{0.32}Fe_{0.04}Zr_{0.01})_{\Sigma=2.00}O_6(OH, F)$ .

**Mineral Group:** Pyrochlore group and subgroup;  $U_A > 20\%$ ;  $(Nb + Ta)_B > 2Ti_B$ ;  $Nb_B > Ta_B$ .

**Occurrence:** In cemented calcareous tuffs associated with carbonatite (near Kasenda, Uganda).

**Association:** Calcite, feldspars, quartz, magnetite, ilmenite, almandine, apatite, epidote, diopside, “hypersthene”, pyrite, rutile, anatase, pyrochlore, zircon, titanite, monazite (near Kasenda, Uganda).

**Distribution:** From Mitchell Co., North Carolina, USA. In the Antsakoa I pegmatite, Berere, 40 km northeast of Tsaratanana, Madagascar. Near Kasenda, Fort Portal area, Uganda. In Germany, from Hagendorf, Bavaria.

**Name:** As a member of the *pyrochlore* subgroup with significant *uranium* content.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1944) Dana’s system of mineralogy, (7th edition), v. I, 748–757 [pyrochlore, part]. (2) Hogarth, D.D. (1977) Classification and nomenclature of the pyrochlore group. *Amer. Mineral.*, 62, 403–410. (3) Mücke, A. and H. Strunz (1978) Petscheckite and liandratite, two new pegmatite minerals from Madagascar. *Amer. Mineral.*, 63, 941–946. (4) Hogarth, D.D. and J.E.T. Horne (1989) Non-metamict uranoan pyrochlore and uranpyrochlore from tuff near Ndale, Fort Portal area, Uganda. *Mineral. Mag.*, 53, 257–262.