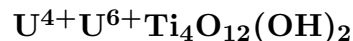


# Orthobrannerite



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**Crystal Data:** Orthorhombic; metamict. *Point Group:* n.d. As prismatic crystals, to 1.2 cm, showing {001}, {120}, {021}, {110}, {140}, rarely {210}, {180}, striated || [001].

**Physical Properties:** *Fracture:* Conchoidal. Hardness = n.d. VHN = 515–532 (100–250 g load). D(meas.) = 5.46 D(calc.) = 5.46 Strongly radioactive.

**Optical Properties:** Semitransparent. *Color:* Black; in reflected light, grayish white with reddish brown internal reflections. *Streak:* Dark brown to black. *Luster:* Adamantine. *Optical Class:* Isotropic.  $n = 2.328$

R: 15–17

**Cell Data:** *Space Group:* n.d.  $a = 7.37$   $b = 11.67$   $c = 6.33$   $Z = 2$

**X-ray Powder Pattern:** China; after heating at 1000 °C. 3.17 (10), 2.45 (9), 1.659 (9), 3.89 (8), 4.87 (7), 1.203 (6), 2.29 (5)

<b>Chemistry:</b>	(1)	(2)		(1)	(2)
UO <sub>3</sub>	31.08	32.01	RE <sub>2</sub> O <sub>3</sub>	0.28	
Nb <sub>2</sub> O <sub>5</sub>	0.19		Fe <sub>2</sub> O <sub>3</sub>	0.40	
Ta <sub>2</sub> O <sub>5</sub>	0.01		PbO	0.17	
SiO <sub>2</sub>	0.65		CaO	0.44	
TiO <sub>2</sub>	35.35	35.75	H <sub>2</sub> O <sup>+</sup>	1.11	2.02
ThO <sub>2</sub>	1.03		H <sub>2</sub> O <sup>-</sup>	0.76	
UO <sub>2</sub>	28.75	30.22	Total	100.22	100.00

(1) China; corresponds to  $(\text{U}_{0.48}^{6+}\text{U}_{0.47}^{4+}\text{Ca}_{0.04}\text{Th}_{0.02}\text{RE}_{0.01})_{\Sigma=1.02}(\text{Ti}_{1.97}\text{Fe}_{0.02}\text{Nb}_{0.01})_{\Sigma=2.00}\text{O}_{6.01}(\text{OH})_{0.93}$ . (2)  $\text{U}^{4+}\text{U}^{6+}\text{Ti}_4\text{O}_{12}(\text{OH})_2$ .

**Polymorphism & Series:** Dimorphous with brannerite (?).

**Occurrence:** In weathered biotite pyroxene syenite (Yunan, China); in an alkalic lamprophyre (Szechwan, China).

**Association:** n.d.

**Distribution:** From undefined localities in Yunan and Szechwan Provinces, China.

**Name:** As an ORTHOrhombic dimorph of *brannerite*.

**Type Material:** n.d.

**References:** (1) X-ray Laboratory, Peking Institute of Uranium Geology and X-ray Laboratory, Wuhan Geological College (1978) Orthobrannerite – a new mineral of the brannerite group. Acta Geol. Sinica, 52(3), 241–251 (in Chinese with English abs.). (2) (1979) Amer. Mineral., 64, 656 (abs. ref. 1).