

**Crystal Data:** Orthorhombic. *Point Group:*  $2/m\ 2/m\ 2/m$ . As platy crystals with rhombic outline, to 75  $\mu\text{m}$ , in radiating aggregates; commonly earthy to pulverulent, massive.

**Physical Properties:** *Cleavage:* {001}, perfect; {110}, imperfect. Hardness = 2.5  
D(meas.) = 5.517 D(calc.) = 5.78

**Optical Properties:** Transparent. *Color:* Bright yellow, golden yellow, dark yellow-orange, yellowish green; yellow in transmitted light. *Luster:* Resinous, pearly on cleavages.  
*Optical Class:* Biaxial (-). *Pleochroism:* X = colorless; Y = Z = deep yellow. *Orientation:* X = c; Y = b. *Dispersion:*  $r < v$ , rather strong. *Absorption:* Strong;  $Z < Y < X$  or  $X > Y > Z$ .  
 $\alpha = 2.09(2)$   $\beta = 2.24(2)$   $\gamma = 2.26(2)$   $2V(\text{meas.}) = 26^\circ\text{--}27^\circ$

**Cell Data:** *Space Group:*  $Pmnb$ .  $a = 5.249(2)$   $b = 10.711(5)$   $c = 5.133(2)$   $Z = 4$

**X-ray Powder Pattern:** Kootenay Belle mine, Canada.  
3.463 (100), 5.36 (80), 2.556 (50), 1.731 (45), 2.616 (40), 1.851 (40), 1.634 (40)

Chemistry:	(1)	(2)	(3)
WO <sub>3</sub>	86.20	91.30	92.79
SiO <sub>2</sub>		0.96	
Fe <sub>2</sub> O <sub>3</sub>	4.14	0.18	
FeO	1.21		
CaO	0.54		
H <sub>2</sub> O	7.72	7.46	7.21
Total	99.81	99.90	100.00

(1) Kootenay Belle mine, Canada. (2) Calacalani mine, Bolivia. (3) WO<sub>3</sub>·H<sub>2</sub>O.

**Occurrence:** An alteration product of tungsten minerals, especially wolframite and ferberite, in hydrothermal tungsten-bearing deposits.

**Association:** Hydrotungstite, ferritungstite, wolframite, ferberite, scheelite.

**Distribution:** In the USA, from Lane's bismuth mine, Monroe, north of Trumbull, Fairfield Co., Connecticut; in the Borianna mine, Mohave Co., and the Black Pearl mine, Camp Wood district, Yavapai Co., Arizona. From the San Alberto mine, near Alamos, Sonora, Mexico. In Canada, in the Kootenay Belle mine, Salmo, British Columbia; at Marlow, Quebec; and elsewhere. At La Vilate, near Chanteloube, Haute-Vienne, France. From Panasqueira, Portugal. In the Calacalani mine, near Colquiri, the Juliani mine, Conde-Auqui district, Tazna, and the San Antonio mines, La Paz, Oruro, Bolivia. At Kingsgate, New South Wales, Australia. In the Kirwa mine, Ubale, Uganda. From Nzombe, Kivu Province, Congo (Zaire). Other localities have been reported but require modern confirmation.

**Name:** For TUNGSTen in the composition.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 605–606. (2) Kerr, P.F. and F. Young (1944) Hydrotungstite, a new mineral from Oruro, Bolivia. *Amer. Mineral.*, 29, 192–210. (3) Roberts, A.C. (1981) The X-ray crystallography of tungstite. *Geol. Surv. Canada Paper* 81-1C, 82. (4) Szymański, J.T. and A.C. Roberts (1984) The crystal structure of tungstite, WO<sub>3</sub>·H<sub>2</sub>O. *Can. Mineral.*, 22, 681–688.