

Piretite**Ca(UO₂)₃(Se⁴⁺O₃)₂(OH)₄•4H₂O**

©2001-2005 Mineral Data Publishing, version 1

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$ or $mm2$. Crystals are tabular on {001}, to acicular, striated parallel to elongation, exhibiting an irregular outline with {100}, {010}, {001}, may be hollow, to 5 mm; in stacked and curved aggregates.

Physical Properties: *Cleavage:* On {001}, good. *Fracture:* Uneven. *Tenacity:* "Weak". Hardness = 2.5 D(meas.) = 4.00 D(calc.) = 3.87 Radioactive.

Optical Properties: Transparent to translucent. *Color:* Lemon-yellow. *Luster:* Pearly. *Optical Class:* Biaxial (-). *Orientation:* $X = c$; $Y = a$; $Z = b$. *Dispersion:* $r > v$, weak. $\alpha = [1.54]$ $\beta = 1.73(1)$ $\gamma = 1.75(1)$ $2V(\text{meas.}) = 33(5)^\circ$

Cell Data: *Space Group:* $Pmnm$ or $Pmn2_1$. $a = 7.010(3)$ $b = 17.135(7)$ $c = 17.606(4)$ $Z = 4$

X-ray Powder Pattern: Shinkolobwe, Congo. 3.50 (100), 3.033 (100), 8.80 (80), 3.095 (50), 8.57 (40), 1.924 (40), 4.29 (30)

Chemistry:	(1)	(2)
UO ₃	72.0	68.96
SeO ₂	19.3	17.84
CaO	3.57	4.51
H ₂ O	8.00	8.69
Total	102.9	100.00

(1) Shinkolobwe, Congo; by electron microprobe, average of five analyses, H₂O by TGA, IR confirms the presence of (UO₂)²⁺, (SeO₃)²⁻, H₂O; corresponds to Ca_{0.76}(UO₂)_{3.02}(SeO₃)_{2.09}(OH)_{3.38}•3.64H₂O. (2) Ca(UO₂)₃(SeO₃)₂(OH)₄•4H₂O.

Occurrence: A rare secondary mineral in the oxidized zone of a uranium deposit in limestone.

Association: Uraninite.

Distribution: From Shinkolobwe, Katanga Province, Congo (Shaba Province, Zaire).

Name: To honor Professor Paul Piret (1932–1999), crystallographer, Catholic University of Louvain, Louvain, Belgium, who described numerous new mineral species.

Type Material: Royal Belgian Institute of Natural Sciences, Brussels, Belgium, RC 4717.

References: (1) Vochten, R., N. Blaton, O. Peeters, and M. Deliens (1996) Piretite, Ca(UO₂)₃(SeO₃)₂(OH)₄•4H₂O, a new calcium uranyl selenite from Shinkolobwe, Shaba, Zaire. *Can. Mineral.*, 34, 1315–1322. (2) (1997) *Amer. Mineral.*, 82, 1040 (abs. ref. 1).