

Holfertite $\text{U}^{6+}_{1.75}\text{Ti}^{4+}\text{Ca}_{0.25}\text{O}_{7.5}(\text{H}_2\text{O})_3$ or $\text{U}^{6+}_{1.75}\text{Ti}^{4+}\text{Ca}_{0.25}\text{O}_{7.17}(\text{OH})_{0.67}(\text{H}_2\text{O})_3$

Crystal Data: Hexagonal. *Point Group:* 3. As hollow prismatic crystals, to 5 mm, in isolation or as sprays.

Physical Properties: *Cleavage:* Perfect on {110}. *Fracture:* Uneven to conchoidal.
Tenacity: Brittle. Hardness = 4 D(meas.) = > 4.22 D(calc.) = 4.22-4.26

Optical Properties: Transparent to translucent. *Color:* Canary-yellow to orange-yellow, colorless in transmitted light. *Streak:* Pale yellow. *Luster:* Adamantine.
Optical Class: Uniaxial (+). $\omega = 1.815(8)$ $\varepsilon = 1.910(8)$

Cell Data: *Space Group:* P3. $a = 10.824(2)$ $c = 7.549(2)$ $Z = 3$

X-ray Powder Pattern: Starvation Canyon, Thomas Range, Utah, USA.
4.60 (10), 2.90 (8), 1.87 (3), 1.747 (3), 1.211 (3), 3.05 (2), 1.531 (2)

Chemistry:	(1)	(2)
CaO	3.01	2.29
UO ₃	75.97	76.03
TiO ₂	13.02	11.89
Fe ₂ O ₃	0.47	0.44
K ₂ O	0.31	0.30
H ₂ O	8.59	8.27
Total	101.34	99.22

(1) Starvation Canyon, Thomas Range, Utah, USA; average of 10 electron microprobe analyses supplemented by spectroscopy, H₂O by LOI; corresponds to $\text{U}^{6+}_{1.68}\text{Ti}^{4+}_{1.03}\text{Ca}_{0.34}\text{Fe}^{3+}_{0.04}\text{K}_{0.04}\text{O}_{7.5}(\text{H}_2\text{O})_3$ or $\text{U}^{6+}_{1.68}\text{Ti}^{4+}_{1.03}\text{Ca}_{0.34}\text{Fe}^{3+}_{0.04}\text{K}_{0.04}\text{O}_{7.17}(\text{OH})_{0.67}(\text{H}_2\text{O})_3$.

(2) Starvation Canyon, Thomas Range, Utah, USA; average of 14 electron microprobe analyses supplemented by spectroscopy, H₂O by LOI; corresponds to $\text{U}^{6+}_{1.74}\text{Ti}^{4+}_{0.97}\text{Ca}_{0.27}\text{Fe}^{3+}_{0.04}\text{K}_{0.04}\text{O}_{7.5}(\text{H}_2\text{O})_3$ or $\text{U}^{6+}_{1.74}\text{Ti}^{4+}_{0.97}\text{Ca}_{0.27}\text{Fe}^{3+}_{0.04}\text{K}_{0.04}\text{O}_{7.17}(\text{OH})_{0.67}(\text{H}_2\text{O})_3$.

Occurrence: A pneumatolytic phase in rhyolite.

Association: Hematite, bixbyite, fluorite, topaz, beryl, calcite.

Distribution: From Starvation (formerly Searle) Canyon, Thomas Range, Utah, USA.

Name: Honors John W. Holfert (b. 1949) for his contributions to understanding the mineral occurrences in the Thomas Range, Utah, USA.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (#91374).

References: (1) Belakovskiy, D.I., L.A. Pautov, E. Sokolova, F.C. Hawthorne, and A.V. Mokhov (2006) Holfertite, a new hydroxyl-hydrated uranium titanate from Starvation Canyon, Thomas Range, Utah. *Mineral. Record*, 37(4), 311-317. (2) Sokolova, E., F.C. Hawthorne, D.I. Belakovskiy, and L.A. Pautov (2005) The OD (order-disorder) structure of holfertite, a hydrated uranyl titanate mineral from Searle Canyon, Thomas Range, Utah, U.S.A. *Can. Mineral.*, 73, 1545-1552. (3) (2006) *Amer. Mineral.*, 91, 1951-1952 (abs. ref. 1). (4) (2006) *Amer. Mineral.*, 91, 1204 (abs. ref. 2).