

Uranalcarite**Ca(UO₂)₃(CO₃)(OH)₆•3H₂O**

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Crystal Data: Orthorhombic. *Point Group:* 2/m 2/m 2/m or mm2. Acicular crystals, elongated along [001] and flattened on {100}, showing {100}, {010}, and {001}, in radiating aggregates, to 4 mm.

Physical Properties: Hardness = 2–3 D(meas.) = 4.03 D(calc.) = 4.10 Radioactive.

Optical Properties: Transparent. *Color:* Bright yellow. *Luster:* Vitreous.
Optical Class: Biaxial (-). *Pleochroism:* X = pale yellow; Y = Z = bright yellow. *Orientation:* X = a; Y = b; Z = c. $\alpha = 1.660(3)$ $\beta = 1.712(2)$ $\gamma = 1.736(2)$ 2V(calc.) = 66.6°

Cell Data: *Space Group:* Pbnm or Pbn2₁. a = 15.42(3) b = 16.08(4) c = 6.970(6)
Z = 4

X-ray Powder Pattern: Shinkolobwe, Congo.
8.06 (100), 4.02 (80), 3.488 (70), 3.193 (50), 2.101 (50), 2.829 (40), 7.00 (30)

| Chemistry: | (1) | (2) | (3) |
|-------------------------------|--------------|--------------|---------------|
| UO ₃ | 78.68 | 76.16 | 80.47 |
| P ₂ O ₅ | | 0.10 | |
| SiO ₂ | | 0.80 | |
| CO ₂ | 4.93 | 4.29 | 4.13 |
| MnO | | 0.08 | |
| PbO | | 0.13 | |
| CaO | 4.36 | 4.66 | 5.26 |
| Na ₂ O | | 0.10 | |
| K ₂ O | | 0.35 | |
| H ₂ O | 10.61 | 13.27 | 10.14 |
| Total | 98.58 | 99.94 | 100.00 |

(1) Shinkolobwe, Congo; by electron microprobe, average of six analyses, CO₂ by gas chromatography, CO₂+H₂O by TGA; corresponds to Ca_{0.83}(UO₂)_{2.93}(CO₃)_{1.19}(OH)_{5.14}•3.70H₂O. (2) Hunan Province, China; CO₂ and H₂O determined on a separate sample. (3) Ca(UO₂)₃(CO₃)(OH)₆•3H₂O.

Occurrence: In the oxidation zone of uranium deposits.

Association: Uraninite, uranophane, wyartite, masuyite (Shinkolobwe, Congo); fourmarierite, vandendriesscheite, studtite, uranophane-beta, rutherfordine (Hunan Province, China).

Distribution: From Shinkolobwe, Katanga Province, Congo [Shaba Province, Zaire]. Found at an undisclosed locality in Hunan Province, China.

Name: For URANIum, CALcium, and CARbonate in the composition.

Type Material: Royal Museum of Central Africa, Tervuren, Belgium, RGM13995.

References: (1) Deliens, M. and P. Piret (1984) L'uranalcarite, Ca(UO₂)₃(CO₃)(OH)₆•3H₂O, nouveau minéral de Shinkolobwe, Shaba, Zaire. Bull. Minéral., 107, 21–24 (in French with English abs.). (2) (1985) Amer. Mineral., 70, 438–439 (abs. ref. 1). (3) Wang Aizhen (1992) The first discovery of uranalcarite in China. Acta Mineral. Sinica, 12(1), 78–82 (in Chinese with English abs.).