

Shabaite-(Nd)**Ca(Nd, Y, Sm)₂(UO₂)(CO₃)₄(OH)₂·6H₂O**

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Crystal Data: Monoclinic. *Point Group:* $2/m$, m or 2 . Crystals are rounded micaceous plates, flattened on {010} and elongated along [100], in rosettes, to 5 mm. *Twinning:* On {001}.

Physical Properties: *Cleavage:* Perfect on {010}. Hardness = 2.5 D(meas.) = 3.13(10) D(calc.) = 3.23 Radioactive.

Optical Properties: Translucent to opaque. *Color:* Pale greenish yellow, pale green; very pale yellow in transmitted light. *Luster:* Pearly.

Optical Class: Biaxial (-). *Orientation:* $Y = b$; $Z \wedge a = 3^\circ\text{--}4^\circ$. $\alpha = 1.534(2)$ $\beta = [1.590(4)]$ $\gamma = 1.600(2)$ $2V(\text{meas.}) = 44^\circ$

Cell Data: *Space Group:* $P2/m$, Pm , or $P2$. $a = 9.208(5)$ $b = 32.09(3)$ $c = 8.335(4)$ $\beta = 90.3(1)^\circ$ $Z = 5$

X-ray Powder Pattern: Kamoto-East mine, Congo.

15.9 (100), 7.31 (70), 4.17 (70), 3.072 (60b), 4.58 (50), 4.01 (30), 9.20 (20)

Chemistry:

| | |
|--------------------------------|--------|
| | (1) |
| UO ₃ | 30.32 |
| CO ₂ | 18.92 |
| Y ₂ O ₃ | 4.91 |
| La ₂ O ₃ | 1.50 |
| Ce ₂ O ₃ | 0.50 |
| Pr ₂ O ₃ | 2.36 |
| Nd ₂ O ₃ | 13.58 |
| Sm ₂ O ₃ | 5.54 |
| Dy ₂ O ₃ | 2.96 |
| CaO | 5.99 |
| H ₂ O | 13.49 |
| Total | 100.07 |

(1) Kamoto-East mine, Congo; by electron microprobe, average of ten analyses, CO₂, H₂O by gas chromatography; corresponds to Ca_{1.01}(Nd_{0.76}Y_{0.42}Sm_{0.30}Dy_{0.14}Pr_{0.14}La_{0.08}Ce_{0.04})_{Σ=1.88}(UO₂)_{1.00}(CO₃)_{4.08}(OH)_{1.50}·5.57H₂O.

Occurrence: A very rare secondary mineral in the oxidized zone of a uranium-bearing Cu–Co deposit.

Association: Uraninite, uranophane, kamotoite-(Y), astrocyanite-(Ce), françoisite-(Nd), schuilingite-(Nd), masuyite.

Distribution: From the Kamoto-East Cu–Co mine, five km west of Kolwezi, Katanga Province, Congo (Shaba Province, Zaire).

Name: For Shaba, a former name of Katanga Province, Congo.

Type Material: Royal Belgian Institute of Natural Sciences, Brussels, Belgium, RC3511.

References: (1) Deliens, M. and P. Piret (1989) La shabaïte-(Nd), Ca(TR)₂(UO₂)(CO₃)₄(OH)₂·6H₂O, nouvelle espèce minérale de Kamoto, Shaba, Zaïre. Eur. J. Mineral., 1, 85–88 (in French with English abs.). (2) (1990) Amer. Mineral., 75, 433–434 (abs. ref. 1).