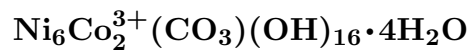


Comblainite



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Crystal Data: Hexagonal. *Point Group:* $\bar{3}2/m$, $3m$, 32 , $\bar{3}$, or 3 . As cryptocrystalline crusts.

Physical Properties: Hardness = $[\sim 2]$ D(meas.) = 3.05(2) D(calc.) = 3.16–3.31

Optical Properties: Semitransparent. *Color:* Turquoise-blue; yellow-green in transmitted light.

Optical Class: Uniaxial (-). $\omega = 1.690(2)$ (ω') $\epsilon = 1.684(2)$ (ϵ')

Cell Data: *Space Group:* $R\bar{3}m$, $R3m$, $R32$, $R\bar{3}$, or $R3$. $a = 3.038$ $c = 22.79$ $Z = [3/8]$

X-ray Powder Pattern: Shinkolobwe, Congo; very close to takovite.

7.64 (100), 2.567 (70), 3.808 (50), 2.278 (50), 1.934 (40), 1.489 (30), 1.519 (20)

Chemistry:

	(1)	(2)
UO ₃	4.24	5.20
Co ₂ O ₃	20.80	20.20
NiO	39.30	38.40
MgO	[0.30]	[0.37]
H ₂ O ⁺ + CO ₂	21.29	20.96
H ₂ O ⁻	11.59	8.69
H ₂ O	[1.07]	[1.31]
P ₂ O ₅	[1.05]	[1.29]
Total	[99.64]	[96.42]

(1) Shinkolobwe, Congo; Ni²⁺ and Co³⁺ valences by ESCA spectra; MgO, P₂O₅, and H₂O calculated from UO₃, known to be present as “metasaleeite” [Mg(UO₂)₂(PO₄)₂•8H₂O]; corresponding to Ni_{6.10}²⁺Co_{2.90}³⁺(CO₃)_{1.32}(OH)_{18.27}•6.7H₂O. (2) Do.; corresponding to Ni_{6.11}²⁺Co_{2.89}³⁺(CO₃)_{1.02}(OH)_{18.84}•9.92H₂O.

Mineral Group: Hydrotalcite group.

Occurrence: An alteration product of nickel and cobalt sulfides in the oxidized zone of a uranium deposit.

Association: Uraninite, “metasaleeite”, uranophane, becquerelite, curite, rutherfordine, heterogenite.

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

Name: For Gordon Comblain (1920–), Royal Museum of Central Africa, Tervuren, Belgium, who discovered the mineral.

Type Material: Royal Museum of Central Africa, Tervuren, Belgium, RGM2224; National Museum of Natural History, Washington, D.C., USA, 147188.

References: (1) Piret, P. and M. Deliens (1980) La comblainite, (Ni_x²⁺, Co_{1-x}³⁺)(OH)₂(CO₃)_{(1-x)/2}•yH₂O, nouveau minéral du groupe de la pyroaurite. Bull. Minéral., 103, 113–117 (in French with English abs.). (2) (1980) Amer. Mineral., 65, 1065–1066 (abs. ref. 1).