Takovite

\[ \text{Ni}_6\text{Al}_2(\text{CO}_3, \text{OH})(\text{OH})_{16} \cdot 4\text{H}_2\text{O} \]

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**Crystal Data:** Hexagonal. Point Group: \( \text{[3} 2/m \text{ or 3]} \) (by analogy to the hydrotalcite group). Microcrystalline, platy, to 1 \( \mu \)m; commonly in veinlets and massive.

**Physical Properties:** Hardness = \( \sim 2 \) D(meas.) = 2.80 D(calc.) = 2.95


**Cell Data:** Space Group: \( \text{[R}3\text{m or R}] \) (by analogy to the hydrotalcite group).
\[ \text{a} = 3.025–3.028 \quad \text{c} = 22.45–22.595 \quad Z = 3/8 \]

**X-ray Powder Pattern:** Takovo, Serbia; very close to comblainite.
7.566 (10), 3.767 (9), 2.552 (9), 1.917 (9), 2.264 (8), 1.510 (8), 1.481 (8)

**Chemistry:**

\[
\begin{align*}
\text{SiO}_2 & : 10.17 & 6.2 & \text{Na}_3\text{O} & : 0.46 \\
\text{Al}_2\text{O}_3 & : 20.16 & 16.0 & 12.58 & \text{K}_2\text{O} & : 0.09 \\
\text{Fe}_2\text{O}_3 & : 1.78 & 1.16 & \text{H}_2\text{O}^+ & : 26.60 \\
\text{NiO} & : 37.24 & 41.15 & 55.31 & \text{H}_2\text{O}^- & : 3.48 \\
\text{ZnO} & : 0.03 & & & \text{H}_2\text{O} & : 25.38 & 26.68 \\
\text{MgO} & : 0.45 & & \text{CO}_2 & : \text{n.d.} & 11.14 & 5.43 \\
\text{CaO} & : 0.47 & 0.11 & & & & \\
\text{Total} & & & & & 100.45 & 101.62 & 100.00
\end{align*}
\]

(1) Takovo, Serbia; quartz 10.17%, goethite 2%, and calcite 0.8% considered as impurities.
(2) Agnew, Australia; after deduction of SiO\(_2\) impurity, corresponds to \((\text{Ni}_{4.94}\text{Fe}_{0.13}\text{Mg}_{0.10}\text{Ca}_{0.02}\text{Al}_{2.81})\Sigma=8.00(\text{OH})_{14.42}(\text{CO}_3)_{2.27} \cdot 5.42\text{H}_2\text{O}\). (3) \(\text{Ni}_6\text{Al}_2(\text{OH})_{16}\text{CO}_3 \cdot 4\text{H}_2\text{O}\).

**Mineral Group:** Hydrotalcite group.

**Occurrence:** In a karstitic bauxite at the contact of limestone and metamorphosed serpentinite (Takovo, Serbia); an alteration product of nickel sulfides (Western Australia).

**Association:** Gibbsite, allophane (Takovo, Serbia); glaukospaerite, n´epouite, gaspéite, paratacamite, nickeloth magnesite, gypsum, (Kambalda, Australia).

**Distribution:** From Takovo, Serbia. In the Blangvette West mine, Le Thoronet, Var, France. On Mueo, New Caledonia. In Western Australia, at the Carr Boyd Rocks nickel mine; the Agnew nickel deposit, north of Kalgoorlie; from Kambalda, 56 km south of Kalgoorlie; and the Dordie North nickel deposit. In the USA, at Wells Canyon, Oquirrh Mountains, Utah Co., Utah, and at the Alpine mine, Clear Creek, San Benito Co., California.

**Name:** For Takovo, Serbia, from which it was first described.

**Type Material:** National Museum of Natural History, Washington, D.C., USA, 136981.