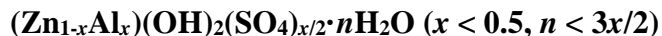


Zincowoodwardite

Crystal Data: Hexagonal. *Point Group:* $\bar{3}$ for 1T; $\bar{3} 2/m$ for 3R. As botryoidal crusts of tabular crystals with hexagonal outline, to 10 μm .

Physical Properties: *Cleavage:* None. *Fracture:* n.d. *Tenacity:* Sectile.
Hardness = 1 D(meas.) = 2.66 for 3R polytype D(calc.) = 2.71

Optical Properties: Translucent. *Color:* Pale blue to bluish white. *Streak:* White to bluish white.
Luster: Waxy.

Optical Class: Uniaxial. $\omega = 1.5636(5)$ for 3R; $n(\text{max}) = 1.558(2)$ for 1T

Cell Data: Space Group: $R\bar{3}m$. $a = 3.065(1)$ $c = 25.42(2)$ for 3R Z = 3
 $P\bar{3}$. $a = 3.064(4)$ $c = 8.85(2)$ for 1T Z = 1

X-ray Powder Pattern: Greece.

8.50 (100), 4.248 (33), 2.600 (5), 2.354 (4), 2.039 (3) 3R polytype

8.81 (100), 4.406 (21), 2.654 (4), 2.545 (5) 1T polytype

Chemistry:	(1)
	CuO 10.4
	ZnO 33.3
	Al ₂ O ₃ 17.2
	SO ₃ 12.6
	<u>H₂O</u> 25.1
	Total 98.6

(1) Laurion (Lavriion, Laurium), Greece; wet-chemical analysis, H₂O by TGA; corresponds to [Zn_{0.47}Cu_{0.15}Al_{0.38}(OH)_{2.00}][(SO₄)_{0.18}O_{0.01}(H₂O)_{0.59}].

Polymorphism & Series: Polytypes 3R and 1T.

Mineral Group: Hydrotalcite supergroup, woodwardite group.

Occurrence: n.d.

Association: The 3R and 1T polytypes commonly are intergrown. Serpierite, hemimorphite (Christiana mine); glaucocerinite, natroglaucocerinite, zaccagnaite (Hilarion mine); glaucocerinite (Laurion).

Distribution: From Laurion (Lavriion, Laurium) and the Hilarion and Christiana mines at Kamariza, near Laurion, Attica, Greece.

Name: The *zinc* analog of *woodwardite*.

Type Material: The Mineral Collection, Bergakademie, Freiberg, Germany, and the Natural History Museum, Vienna, Austria (H 858, G 2172).

References: (1) Witzke, T. and G. Raade (2000) Zincowoodwardite, [Zn_{1-x}Al_x(OH)₂][(SO₄)_{x/2}(H₂O)_n], a new mineral of the hydrotalcite group. Neues Jahrb. Mineral. Mon., 455-465. (2) (2001) Amer. Mineral., 86, 769 (abs. ref. 1). (3) Mills, S.J., A.G. Christy, J.-M.R. Génin, T. Kameda, and F. Colombo (2012) Nomenclature of the hydrotalcite supergroup: natural layered double hydroxides. Mineral. Mag., 76(5), 1289-1336.