

**Tunisite****NaCa<sub>2</sub>Al<sub>4</sub>(CO<sub>3</sub>)<sub>4</sub>Cl(OH)<sub>8</sub>**

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**Crystal Data:** Tetragonal. *Point Group:*  $4/m\ 2/m\ 2/m$ . Crystals are tabular {001}, modified by {010}, {110}, and numerous vicinal forms, to 8 mm; as booklike subparallel to random aggregates and powdery coatings.

**Physical Properties:** *Cleavage:* Perfect on {001}; another on {hk0}. Hardness = 4.5  
D(meas.) = 2.51(2) D(calc.) = [2.51]

**Optical Properties:** Semitransparent. *Color:* White, colorless.  
*Optical Class:* Uniaxial (+).  $\omega = 1.573(1)$   $\epsilon = 1.599(1)$

**Cell Data:** *Space Group:*  $P4/nmm$ .  $a = 11.1983(11)$   $c = 6.5637(7)$   $Z = 2$

**X-ray Powder Pattern:** Sakiet Sidi Yousseff mine, Tunisia.  
5.615 (10), 2.592 (9), 3.551 (8), 3.288 (7), 2.754 (7), 2.526 (7), 5.070 (6)

<b>Chemistry:</b>	(1)	(2)	(3)
CO <sub>2</sub>	28.66	26.8	28.27
Al <sub>2</sub> O <sub>3</sub>	32.56	35.0	32.75
CaO	18.08	20.3	18.01
Na <sub>2</sub> O	4.77	4.6	4.98
K <sub>2</sub> O	0.35		
Cl	n.d.	4.9	5.69
H <sub>2</sub> O <sup>+</sup>	15.04		
H <sub>2</sub> O <sup>-</sup>	0.51		
H <sub>2</sub> O		10.7	11.57
-O = Cl <sub>2</sub>		1.1	1.27
<b>Total</b>	<b>99.97</b>	<b>101.2</b>	<b>100.00</b>

(1) Sakiet Sidi Yousseff mine, Tunisia; CO<sub>2</sub> by volumetric-absorption gas analysis, alkalis by flame photometry, H<sub>2</sub>O by the Penfield method. (2) Do.; by neutron activation.

(3) NaCa<sub>2</sub>Al<sub>4</sub>(CO<sub>3</sub>)<sub>4</sub>Cl(OH)<sub>8</sub>.

**Occurrence:** A very rare hydrothermal mineral, filling cavities in calcite (Sakiet Sidi Yousseff mine, Tunisia).

**Association:** Calcite (Sakiet Sidi Yousseff mine, Tunisia); celestine, calcite, pyrite, chalcopyrite, gypsum, whewellite (Condorcet, France).

**Distribution:** From the Sakiet Sidi Yousseff Pb-Zn mine, between Le Kef and Souk Ahras, Tunisia. In the Slavyansk salt deposit, Dnieprovsk-Donets Basin, Ukraine. From Condorcet, Drôme, France.

**Name:** For Tunisia, the country in which it was first found to occur.

**Type Material:** National Museum, Prague, Czech Republic, 53823; National School of Mines, Paris, France.

**References:** (1) Johan, Z., P. Povondra, and E. Slánský (1969) Tunisite, a new carbonate from Tunisia. *Amer. Mineral.*, 54, 1–13. (2) Martin, R., J. Mullis, W. Nungässer, and J. von Raumer (1979) La tunisite des “Terres Noires” de la Drôme (France). *Schweiz. Mineral. Petrog. Mitt.*, 59, 223–228 (in French). (3) Effenberger, H., F. Kluger, F. Pertlik, and J. Zemmann (1981) Tunisit: Kristallstruktur und Revision der chemischen Formel. *Tschermaks Mineral. Petrog. Mitt.*, 28, 65–77 (in German with English abs.).