Tunisite $NaCa_2Al_4(CO_3)_4Cl(OH)_8$

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)

Chemistry:

	(1)	(2)	(3)
CO_2	28.66	26.8	28.27
Al_2O_3	32.56	35.0	32.75
CaO	18.08	20.3	18.01
Na_2O	4.77	4.6	4.98
K_2O	0.35		
Cl	n.d.	4.9	5.69
H_2O^+	15.04		
H_2O^-	0.51		
H_2O		10.7	11.57
$-O = Cl_2$		1.1	1.27
Total	99.97	101.2	100.00

(1) Sakiet Sidi Yousseff mine, Tunisia; CO_2 by volumetric-absorption gas analysis, alkalies by flame photometry, H_2O by the Penfield method. (2) Do.; by neutron activation.
(3) $NaCa_2Al_4(CO_3)_4Cl(OH)_8$.

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. Slánsky (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. Zemann (1981) Tunisit: Kristallstruktur und Revision der chemischen Formel. Tschermaks Mineral. Petrog. Mitt., 28, 65–77 (in German with English abs.).