

Aerinite $(\text{Ca},\text{Na})_6(\text{Fe}^{3+},\text{Fe}^{2+},\text{Mg},\text{Al})_4(\text{Al},\text{Mg})_6\text{Si}_{12}\text{O}_{36}(\text{OH})_{12}(\text{CO}_3)\cdot 12\text{H}_2\text{O}$

Crystal Data: Hexagonal. *Point Group:* 3m. As masses of cryptocrystalline fibers; earthy, compact.

Physical Properties: Hardness = ~3 D(meas.) = 2.48(2) D(calc.) = 2.52

Optical Properties: Semitransparent. *Color:* Blue to blue-green, rarely brown.

Optical Class: Biaxial (-). $\alpha = 1.510(5)$ $\beta = 1.560(5)$ $\gamma = 1.580(5)$ $2V(\text{calc.}) = 63^\circ$

Pleochroism: Intense; X = bright blue; Y = Z = pale beige.

Cell Data: *Space Group:* P3c1. $a = 16.8820(9)$ $c = 5.2251(3)$ $Z = 1$

X-ray Powder Pattern: Saint-Pandelon, France.

14.65 (100), 4.050 (80), 2.721 (75), 2.812 (50), 3.798 (35), 3.651 (35), 2.135 (35)

Chemistry:	(1)	(2)
SiO ₂	36.91	37.87
TiO ₂	trace	
Al ₂ O ₃	17.20	18.64
Fe ₂ O ₃	7.31	
FeO	3.47	7.00
MnO	0.10	
MgO	3.15	6.
CaO	12.03	11.93
Na ₂ O	0.27	2.70
K ₂ O	0.04	0.12
H ₂ O	17.79	15.45
CO ₂	2.30	
<u>P₂O₅</u>	<u>0.71</u>	<u> </u>
Total	101.28	99.71

(1) Saint-Pandelon, France; H₂O by TGA, CO₂ by chromatography; corresponding to $(\text{Ca}_{4.04}\text{Na}_{0.16}\text{K}_{0.02})_{\Sigma=4.22}(\text{Al}_{6.36}\text{Fe}^{3+}_{1.72}\text{Mg}_{1.47}\text{Fe}^{2+}_{0.91}\text{Mn}_{0.03})_{\Sigma=10.49}(\text{Si}_{11.59}\text{P}_{0.19})_{\Sigma=11.78}\text{O}_{35.21}(\text{OH})_{12.11}(\text{CO}_3)_{0.99}\cdot 12.54\text{H}_2\text{O}$.
(2) Morocco.

Occurrence: A hydrothermal mineral of the zeolite facies, formed at relatively low temperature, in fractures cutting mafic igneous rocks (Saint-Pandelon, France).

Association: Prehnite, scolecite, mesolite (Saint-Pandelon, France).

Distribution: At Caserras, Juseu, and Estopiñan, Huesca Province; Tartaren, Lerida Province; and other less-well-defined localities in Spain. From Saint-Pandelon, Landes, France. In Morocco, at Ourika. From the Gunsight Mountains, Pima Co., Arizona, USA.

Name: From the Greek for *sky blue* for its distinctive color.

Type Material: Wroclaw University, Poland, II-8890; National School of Mines, Paris, France.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 1025. (2) Termier, H. and G. Termier (1946) Sur la presence d'aérinite au Maroc. *Compt. Rend. Soc. Géol. France*, 78-80 (in French). (3) (1948) *Chem. Abs.*, 42, 7204 (abs. ref. 2). (4) Azambre, B. and P. Monchoux (1988) Précisions minéralogiques sur l'aérinite: nouvelle occurrence à Saint-Pandelon (Landes, France). *Bull. Minéral.*, 111, 39-47 (in French with English abs.) (5) Rius, J., E. Elkaim, and X. Torrelles (2004) Structure determination of the blue mineral pigment aerinite from synchrotron powder diffraction data: The solution of an old riddle. *Eur. J. Mineral.*, 16, 127-134. (6) (2004) *Amer. Mineral.*, 89(12), 1833 (abs. ref. 5). (7) Crespi, A., O. Vallcorba, I. Šics, and J. Rius (2019) First identification and compositional study of brown aerinite directly on polished thin-sections by synchrotron through-the-substrate microdiffraction. *Eur. J. Mineral.*, 31, 999-1005.