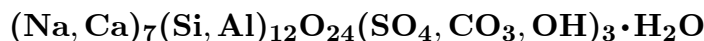


Franzinite

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Crystal Data: Hexagonal. *Point Group:* $\bar{3} 2/m, 3m$, or 32 . As squat prisms, to 1 cm, roughly hexagonal in shape, not of measurable quality.

Physical Properties: *Cleavage:* {0001}, distinct. Hardness = 5 D(meas.) = 2.46–2.52 D(calc.) = 2.52–2.57

Optical Properties: Transparent to opaque. *Color:* White to colorless. *Luster:* Pearly. *Optical Class:* Uniaxial (+). $\omega = 1.504\text{--}1.510$ $\epsilon = 1.506\text{--}1.512$

Cell Data: *Space Group:* $P\bar{3}m1$, $P3m1$, $P31m$, or $P321$. $a = 12.884(9)$ $c = 26.580(21)$ $Z = 1$

X-ray Powder Pattern: Pitigliano, Italy.

3.72 (100), 3.59 (43), 3.81 (42), 3.56 (39), 2.148 (29), 3.302 (17), 3.054 (16)

Chemistry:	(1)	(2)		(1)	(2)
SiO ₂	32.44	31.85	K ₂ O	4.24	7.23
Al ₂ O ₃	25.21	25.13	Cl	0.36	0.13
Fe ₂ O ₃	0.04	0.10	H ₂ O ⁺	1.88	1.70
MgO	0.14	0.26	CO ₂	1.54	1.98
CaO	12.08	10.44	SO ₃	10.65	10.22
Na ₂ O	11.50	10.99	—O = Cl ₂	0.08	0.03
			Total	[100.00]	[100.00]

(1) Pitigliano, Italy; by a variety of techniques including AA and XRF, recalculated to 100%; corresponding to $(\text{Na}_{4.31}\text{Ca}_{2.50}\text{Mg}_{0.04}\text{Fe}_{0.01})_{\Sigma=6.86}(\text{Si}_{6.26}\text{Al}_{5.74})_{\Sigma=12.00}\text{O}_{24}[(\text{SO}_4)_{1.54}(\text{OH})_{0.70}(\text{CO}_3)_{0.41}\text{Cl}_{0.12}]_{\Sigma=2.77} \cdot 0.86\text{H}_2\text{O}$. (2) Ariccia, Italy; methods as for (1), corresponding to $(\text{Na}_{4.16}\text{Ca}_{2.18}\text{Mg}_{0.08}\text{Fe}_{0.01})_{\Sigma=6.43}(\text{Si}_{6.22}\text{Al}_{5.78})_{\Sigma=12.00}\text{O}_{24}[(\text{SO}_4)_{1.50}(\text{OH})_{0.64}(\text{CO}_3)_{0.53}\text{Cl}_{0.04}]_{\Sigma=2.71} \cdot 0.79\text{H}_2\text{O}$.

Mineral Group: Cancrinite group.

Occurrence: In ejected metasomatized pumice blocks, thought to be the product of a syntectic process between a trachytic magma and carbonate rocks at the volcanic vent.

Association: Diopside, vesuvianite, afghanite, liottite (Pitigliano, Italy); calcite, leucite (Ariccia, Italy).

Distribution: In Italy, in the Pitigliano quarry, near Grosseto, Tuscany; and at Sacrofano and Ariccia, near Rome, Lazio.

Name: For Marco Franzini, Professor of Mineralogy, University of Pisa, Pisa, Italy.

Type Material: University of Pisa, Pisa, 3208; University of Modena, Modena, Italy.

References: (1) Merlino, S. and P. Orlandi (1977) Franzinite, a new mineral phase from Pitigliano (Italy). *Neues Jahrb. Mineral., Monatsh.*, 163–167. (2) (1977) *Amer. Mineral.*, 62, 1259 (abs. ref. 1). (3) Leoni, L., M. Mellini, S. Merlino, and P. Orlandi (1979) Cancrinite-like minerals: new data and crystal chemical considerations. *Rend. Soc. Ital. Mineral. Petrol.*, 35, 713–719.