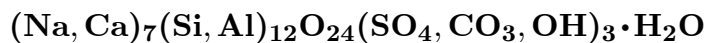


**Franzinite**

©2001 Mineral Data Publishing, version 1.2

**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  $D(\text{meas.}) = 2.46\text{--}2.52$   
 $D(\text{calc.}) = 2.52\text{--}2.57$

**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)

| <b>Chemistry:</b>              | (1)   | (2)   | (1)                           | (2)             |
|--------------------------------|-------|-------|-------------------------------|-----------------|
| SiO <sub>2</sub>               | 32.44 | 31.85 | K <sub>2</sub> O              | 4.24            |
| Al <sub>2</sub> O <sub>3</sub> | 25.21 | 25.13 | Cl                            | 0.36            |
| Fe <sub>2</sub> O <sub>3</sub> | 0.04  | 0.10  | H <sub>2</sub> O <sup>+</sup> | 1.88            |
| MgO                            | 0.14  | 0.26  | CO <sub>2</sub>               | 1.54            |
| CaO                            | 12.08 | 10.44 | SO <sub>3</sub>               | 10.65           |
| Na <sub>2</sub> O              | 11.50 | 10.99 | –O = Cl <sub>2</sub>          | 0.08            |
|                                |       |       | <b>Total</b>                  | <b>[100.00]</b> |
|                                |       |       |                               | <b>[100.00]</b> |

(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 syntectonic 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.