

# Marialite

# 3NaAlSi<sub>3</sub>O<sub>8</sub>•NaCl

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**Crystal Data:** Tetragonal. *Point Group:* 4/*m*. Crystals prismatic, typically with flat pyramidal terminations, striated || [001], to 1.5 m; granular, massive.

**Physical Properties:** *Cleavage:* {100}, {110}, distinct. *Fracture:* Uneven to conchoidal. *Tenacity:* Brittle. Hardness = 5.5–6 D(meas.) = 2.50–2.62 D(calc.) = [2.54] Commonly fluoresces orange to bright yellow or red under LW or SW UV or both.

**Optical Properties:** Transparent to opaque. *Color:* Colorless, white, grey; pink, violet, blue, yellow, brown, orange-brown; colorless in thin section. *Streak:* White. *Luster:* Vitreous, pearly, resinous.

*Optical Class:* Uniaxial (–).  $\omega = 1.539\text{--}1.550$   $\epsilon = 1.532\text{--}1.541$

**Cell Data:** *Space Group:* *I*4/*m*.  $a = 12.060(3)$   $c = 7.572(3)$   $Z = 2$

**X-ray Powder Pattern:** Kenya (?).

3.45 (10), 3.05 (9), 3.80 (8), 2.68 (7), 1.907 (7), 1.363 (6), 2.29 (5)

## Chemistry:

	(1)		(1)
SiO <sub>2</sub>	60.64	Na <sub>2</sub> O	12.29
Al <sub>2</sub> O <sub>3</sub>	19.56	K <sub>2</sub> O	0.90
FeO	0.06	Cl	3.9
MgO	0.00	SO <sub>3</sub>	0.18
CaO	2.66	–O = Cl <sub>2</sub>	0.88
		Total	99.31

(1) Kenya (?); by electron microprobe, corresponding to 3[(Na<sub>0.80</sub>Ca<sub>0.13</sub>K<sub>0.05</sub>)<sub>Σ=0.98</sub>Al<sub>1.07</sub>Si<sub>2.83</sub>O<sub>8</sub>]•(NaCl)<sub>0.92</sub>.

**Polymorphism & Series:** Forms a series with meionite; intermediate members are *P*4<sub>2</sub>/*n*.

**Mineral Group:** Scapolite group.

**Occurrence:** Typically in regionally metamorphosed rocks, especially marbles, calcareous gneisses, granulites, and greenschists. Also in skarns, some pegmatites, pneumatolytically or hydrothermally altered mafic igneous rocks, and ejected volcanic blocks.

**Association:** Plagioclase, garnet, pyroxenes, amphiboles, apatite, titanite, zircon.

**Distribution:** Most specimens are intermediate in the series, see also meionite; some localities for highly sodic materials include: at Pianura, west of Naples, Campania, Italy. From Russia, in the Slyudyanka region, near Lake Baikal, Siberia. In the USA, at Hamburg and Franklin, Sussex Co., New Jersey; at Natural Bridge, Jefferson Co., Macomb, St. Lawrence Co., and Olmsteadville, Essex Co., New York; from French Creek, Chester Co., Pennsylvania. In Canada, at Bear Lake, Pontiac Co., Quebec, and Bancroft, Ontario. From the La Panchita mine, near Ayoquezco, Oaxaca, Mexico. From Serra da Chibita, Rio Pardo, Minas Gerais, Brazil. At Tsarasaotra and Betroka, Madagascar. From Mpwapwa, Morogoro region, Dodoma, Tanzania. In the Mogok district, Myanmar (Burma).

**Name:** For Maria Rosa vom Rath, wife of Gerhard vom Rath, German mineralogist, who named the species.

**References:** (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 468–473.

(2) Deer, W.A., R.A. Howie, and J. Zussman (1963) Rock-forming minerals, v. 4, framework silicates, 321–337. (3) Papike, J.J., and T. Zoltai (1965) The crystal structure of a marialite scapolite. *Amer. Mineral.*, 50, 641–655. (4) Lin, S.B. and B.J. Burley (1973) Crystal structure of a sodium and chlorine-rich scapolite. *Acta Cryst.*, 29, 1272–1278. (5) Zwaan, P.C. (1979) More data on violet gem scapolite, probably from eastern Africa. *J. Gemmol.*, 16, 448–451.

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