

Fluoropargasite**NaCa₂(Mg₄Al)Si₆Al₂O₂₂F₂**

Crystal Data: Monoclinic. *Point Group:* 2/m. Crystals stubby prismatic to 13 cm.

Physical Properties: *Cleavage:* Perfect on {110}. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = ~6 D(meas.) = 3.18 D(calc.) = 3.20

Optical Properties: Transparent to translucent. *Color:* Black. *Streak:* Gray to greenish gray. *Luster:* Vitreous.

Optical Class: Biaxial (+). $\alpha = 1.634(2)$ $\beta = 1.642(2)$ $\gamma = 1.654(2)$ $2V(\text{meas.}) = 68^\circ$ $2V(\text{calc.}) = 79^\circ$ *Orientation:* $Y = b$, $Z \wedge c = 24^\circ$ (in β acute). *Pleochroism:* $X =$ colorless to light brown, $Y =$ light brown, $Z =$ brown. *Dispersion:* Weak, $r > v$.

Cell Data: *Space Group:* C2/m. $a = 9.8771(6)$ $b = 18.041(1)$ $c = 5.3092(3)$ $\beta = 105.133(1)^\circ$ $Z = 2$

X-ray Powder Pattern: Franklin Marble, at Edenville, Orange County, New York, USA. 8.44 (100), 3.13 (80), 3.28 (41), 2.345 (41), 2.810 (32), 2.385 (21), 3.38 (19)

Chemistry:	(1)		(1)
SiO ₂	43.30	K ₂ O	0.91
MgO	14.44	V ₂ O ₃	0.18
FeO	9.73	Cr ₂ O ₃	0.01
CaO	12.29	F	2.71
Al ₂ O ₃	12.11	Cl	0.12
Na ₂ O	2.88	-O = (F + Cl)	1.17
TiO ₂	0.90	H ₂ O	[0.71]
MnO	0.08	Total	99.20

(1) Franklin Marble, at Edenville, Orange County, New York, USA; average of 6 electron microprobe analyses, Fe³⁺ and OH calculated from stoichiometry; corresponding to (Na_{0.75}K_{0.17})_{Σ=0.92}(Ca_{1.94}Na_{0.06})_{Σ=2}(Mg_{3.18}Fe²⁺_{1.18}Al_{0.50}Ti_{0.10}Fe³⁺_{0.02}V_{0.02}Mn_{0.01})_{Σ=5}(Si_{6.39}Al_{1.61})_{Σ=8}O₂₂[F_{1.26}(OH)_{0.71}Cl_{0.03}]_{Σ=2}.

Mineral Group: Amphibole supergroup, calcium amphibole subgroup.

Occurrence: In granulite facies metacarbonate rocks.

Association: Calcite, actinolite, titanite, phlogopite, diopside.

Distribution: From the Franklin Marble, at Edenville, Orange County, and from Russell, St. Lawrence County, and Monroe, Orange County, New York, USA.

Name: Signifies an amphibole in the compositional range of *pargasite* with F > OH in the W structural site.

Type Material: New York State Museum, Albany, New York, USA (NYSM 338.92).

References: (1) Lupulescu, M.V., J. Rakovan, G.W. Robinson, and J.M. Hughes (2005) Fluoropargasite, a new member of the calcic amphiboles from Edenville, Orange County, New York. *Can. Mineral.*, 43, 1423-1428. (2) (2006) *Amer. Mineral.*, 91, 711 (abs. ref. 1). (3) Hawthorne, F.C., R. Oberti, G.E. Harlow, W.V. Maresch, R.F. Martin, J.C. Schumacher, and M.D. Welch (2012) Nomenclature of the amphibole supergroup. *Amer. Mineral.*, 97, 2031-2048.