

Ferropargasite

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Crystal Data: Monoclinic. *Point Group:* $2/m$. As homoaxial intergrowths with grunerite.
Twinning: [Simple or multiple twinning $\parallel \{100\}$.]

Physical Properties: *Cleavage:* [Perfect on $\{110\}$, with intersections at $\sim 56^\circ$ and $\sim 124^\circ$; partings on $\{100\}$, $\{001\}$.] *Tenacity:* [Brittle.] *Hardness* = 5–6 *D*(meas.) = n.d.
D(calc.) = 3.44 (synthetic ferro-pargasite).

Optical Properties: Semitransparent. *Color:* Bluish green in thin section.

Luster: [Vitreous.]

Optical Class: Biaxial (–). *Pleochroism:* Moderate. $\alpha = 1.700$ $\beta = 1.713$ $\gamma = 1.718$
2V(meas.) = n.d.

Cell Data: *Space Group:* $C2/m$. $a = 9.953(5)$ (synthetic ferro-pargasite). $b = 18.152(3)$
 $c = 5.330(2)$ $\beta = 105.3(1)^\circ$ $Z = 2$

X-ray Powder Pattern: Synthetic ferro-pargasite.

8.50 (100), 3.15 (80), 2.718 (60), 2.607 (40), 2.57 (35), 3.40 (25), 2.36 (25)

Chemistry:

	(1)
SiO ₂	38.65
Al ₂ O ₃	16.50
FeO	27.75
MnO	0.39
MgO	2.03
CaO	10.30
Na ₂ O	1.80
K ₂ O	0.50
Total	97.92

(1) Flowerdale, Scotland; by electron microprobe, corresponds to $(\text{Na}_{0.55}\text{K}_{0.10})_{\Sigma=0.65}\text{Ca}_{1.73}$
 $(\text{Fe}_{3.65}^{2+}\text{Mg}_{0.48}\text{Mn}_{0.05})_{\Sigma=4.18}\text{Al}_{1.13}(\text{Si}_{6.07}\text{Al}_{1.93})_{\Sigma=8.00}\text{O}_{22}(\text{OH})_2$.

Polymorphism & Series: Forms a series with pargasite.

Mineral Group: Amphibole (calcic) group: $\text{Mg}/(\text{Mg} + \text{Fe}^{2+}) < 0.3$; Fe^{3+} Al^{vi} ; $(\text{Na} + \text{K})_{\text{A}} \geq 0.5$; $\text{Na}_{\text{B}} < 0.67$; $(\text{Ca} + \text{Na})_{\text{B}} \geq 1.34$; $\text{Si} < 6.25$; $\text{Ti} < 0.5$.

Occurrence: In an amphibolite facies metamorphosed banded iron formation.

Association: Grunerite, almandine, biotite, ferroan clinochlore, magnetite, quartz.

Distribution: From Flowerdale, near Gairloch, Scotland.

Name: For its high *ferrous* iron content and relation to *pargasite*.

Type Material: n.d.

References: (1) Williams, P.J. (1986) Petrology and origin of iron-rich silicate-magnetite-quartz rocks from Flowerdale near Gairloch, Wester Ross. *Scottish J. Geol.*, 22, 1–12. (2) Gilbert, M.C. (1966) Synthesis and stability relationships of ferropargasite. *Amer. J. Sci.*, 264, 698–742. (3) Charles, R.W. (1980) Amphiboles on the join pargasite-ferropargasite. *Amer. Mineral.*, 65, 996–1001.