

Clinoferrosilite



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Crystal Data: Monoclinic. *Point Group:* $2/m$. As acicular crystals lacking terminal faces. *Twinning:* On {100}.

Physical Properties: *Cleavage:* [Good on {110}, (110) \wedge (1 $\bar{1}$ 0) $\sim 87^\circ$] (by analogy to ferrosilite). *Hardness* = [5–6] *D*(meas.) = n.d. *D*(calc.) = 4.068

Optical Properties: Semitransparent. *Color:* Colorless with slight amber tint. *Optical Class:* Biaxial (+). *Orientation:* $Z \wedge c = 31^\circ$. $\alpha = 1.764(2)$ (synthetic $\text{Fe}_2\text{Si}_2\text{O}_6$). $\beta = 1.767(2)$ $\gamma = 1.792(2)$ $2V$ (meas.) = $25(5)^\circ$

Cell Data: *Space Group:* $P2_1/c$ (synthetic $\text{Fe}_2\text{Si}_2\text{O}_6$). $a = 9.7085$ $b = 9.0872$ $c = 5.2284$
 $\beta = 108.432^\circ$ $Z = 4$

X-ray Powder Pattern: Synthetic $\text{Fe}_2\text{Si}_2\text{O}_6$.
3.035 (100), 2.603 (63), 2.909 (55), 2.408 (53), 2.161 (51), 4.605 (49), 3.234 (40)

Chemistry: (1) Material from Lake Naivasha, Kenya, approximates $(\text{Fe}_{1.90}\text{Mn}_{0.10})_{\Sigma=2.00}\text{Si}_2\text{O}_6$, with Mg, Al, Ca, Ti, V, Cr, Co, and Ni absent.

Polymorphism & Series: Dimorphous with ferrosilite; forms a series with clinoenstatite.

Mineral Group: Pyroxene group.

Occurrence: As acicular crystals in lithophysae in obsidian (Lake Naivasha, Kenya).

Association: Anorthoclase, magnetite, cristobalite, fayalite, biotite (Lake Naivasha, Kenya).

Distribution: From near Lake Naivasha, Rift Valley, Kenya. In the USA, from the Coso Mountains, Inyo Co., California; and at Obsidian Cliffs, Yellowstone National Park, Wyoming. From Hrafninnuhryggur, Iceland.

Name: For its monoclinic crystal system and chemical identity with *ferrosilite*.

Type Material: National Museum of Natural History, Washington, D.C., USA, 102793.

References: (1) Deer, W.A., R.A. Howie, and J. Zussman (1978) Rock-forming minerals, (2nd edition), v. 2A, single-chain silicates, 20–161. (2) Bowen, N.L. (1935) Ferrosilite as a natural mineral. *Amer. J. Sci.*, 30, 481–494. (3) (1936) *Amer. Mineral.*, 21, 678 (abs. ref. 2). (4) Lindsley, D.H., B.T.C. Davis, and I.D. MacGregor (1964) Ferrosilite (FeSiO_3): synthesis at high pressures and temperatures. *Science*, 144, 73–74. (5) Bown, M.G. (1965) Re-investigation of clinoferrosilite from Lake Naivasha, Kenya. *Mineral. Mag.*, 34, 66–70.