

Ferrochiavennite**Ca₁₋₂FeSi₅Be₂O₁₃(OH)₂·2H₂O**

Crystal Data: Monoclinic. *Point Group:* 2/m. As spherules to ~2 mm; crystals, to 0.2 mm, are platy on {001} and spear-shaped along [100].

Physical Properties: *Cleavage:* None. *Fracture:* Uneven. *Tenacity:* Brittle. *Hardness* = ~3
D(meas.) = 2.67(2) D(calc.) = 2.709

Optical Properties: Translucent. *Color:* Beige to pale-yellow, pale-green. *Streak:* White.
Luster: Vitreous.

Optical Class: Biaxial (+). $\alpha = 1.583(1)$ $\beta = 1.589(1)$ $\gamma = 1.602(1)$ $2V(\text{meas.}) = 62(4)^\circ$
 $2V(\text{calc.}) = 69^\circ$ *Orientation:* $X \approx a$, $Y \approx c$, $Z \approx b$.

Cell Data: *Space Group:* P2₁/c. $a = 8.7499(5)$ $b = 4.9160(3)$ $c = 31.431(2)$
 $\beta = 90.1574(9)^\circ$ $Z = 4$

X-ray Powder Pattern: Blåfjell, Langangen, Telemark, Norway.
15.555 (100), 3.251 (66), 2.884 (64), 3.909 (60), 3.938 (36), 3.820 (30), 4.104 (29)

Chemistry:	(1)	(2)
SiO ₂	46.00	46.61
Al ₂ O ₃	4.64	2.76
FeO	5.29	9.94
MnO	4.04	3.53
MgO	0.13	-
CaO	17.62	12.23
Na ₂ O	0.73	1.00
K ₂ O	0.02	0.02
BeO	[10.37]	[9.91]
H ₂ O	[9.81]	[9.44]
Total	98.65	95.24

(1) Blåfjell, Norway; average of 10 electron microprobe analyses, H₂O and BeO calculated from structure analysis; corresponding to (Ca_{1.73}Na_{0.13})_{Σ=1.86}(Fe_{0.41}Mn_{0.31}Mg_{0.02})_{Σ=0.74}(Si_{4.22}Al_{0.50}Be_{2.28})_{Σ=7.00}O₁₃(OH)₂·2H₂O. (2) AS Granit larvikite quarry, Norway; average of 7 electron microprobe analyses, H₂O and BeO calculated from structure analysis; corresponding to (Ca_{1.25}Na_{0.19}Mn_{0.08})_{Σ=1.52}(Fe_{0.79}Mn_{0.21})_{Σ=1.00}(Si_{4.42}Al_{0.31}Be_{2.27})_{Σ=7.00}O₁₃(OH)₂·2H₂O

Occurrence: A late hydrothermal stage mineral in alkaline syenite pegmatite.

Association: Albite, magnetite, fayalite, with minor amounts of zircon, nepheline, analcime, pyrite, hambergite (Blåfjell); tvedalite, apophyllite-(KF), natrolite, gonnardite, chiavennite, epididymite, behoite, calcite, chlorite, aegirine, catapleiite, gaidonnayite, neotocite, fluorite, molybdenite (AS Granit quarry).

Distribution: From Norway at Blåfjell, Langangen, Telemark, and the AS Granit larvikite quarry, Tvedalen, Vestfold.

Name: As the iron (*ferro*) analog of *chiavennite*.

Type Material: Canadian Museum of Nature, Ottawa, Canada (CMNMC 86554), and the Department of Geology, Natural History Museum, University of Oslo, Norway (# 42108).

References: (1) Grice, J.D., R. Kristiansen, H. Friis, R. Rowe, G.G. Poirier, R.S. Selbekk, M.A. Cooper, and A.O. Larsen (2013) Ferrochiavennite, a new beryllium silicate zeolite from syenite pegmatites in the Larvik Plutonic Complex, Oslo region, Southern Norway. *Can. Mineral.*, 51, 285-296. (2) (2014) *Amer. Mineral.*, 99, 2439 (abs. ref. 1).