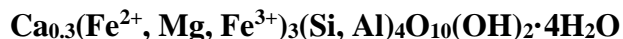


Ferrosaponite

Crystal Data: Monoclinic. *Point Group:* n.d. As spherulites, to 2 mm, and as radial columnar aggregates within calcite.

Physical Properties: *Cleavage:* Perfect on {001}. *Fracture:* Uneven. *Tenacity:* Sectile. Hardness = 2 D(meas.) = 2.49(5) D(calc.) = 2.435

Optical Properties: Translucent. *Color:* Dark green, brownish on oxidation. *Streak:* Green. *Luster:* Vitreous.

Optical Class: Biaxial (-). $\alpha(\text{calc.}) = 1.448$ $\beta = 1.641(2)$ $\gamma = 1.642(2)$ $2V(\text{meas.}) = 5(3)^\circ$

Pleochroism: Brownish. *Absorption:* $Z > Y$. *Orientation:* $X \approx c$.

Cell Data: *Space Group:* n.d. $a = 5.365(2)$ $b = 9.337(4)$ $c = 14.65(2)$ $\beta = 94.9(1)^\circ$ $Z = 2$

X-ray Powder Pattern: Levoberezhye "Iceland spar" deposit, Evenkiya, Siberia, Russia. 3.03 (100), 7.37 (90), 4.72 (90), 2.585 (90), 2.429 (90), 1.549 (90), 3.80 (80), 14.61 (40) - (expands to 17.9 after glycolation).

Chemistry:	(1)
Na ₂ O	0.21
K ₂ O	0.07
CaO	3.31
MgO	6.62
FeO	21.23
Fe ₂ O ₃	8.78
Al ₂ O ₃	9.95
SiO ₂	33.15
<u>H₂O</u>	<u>17.92</u>
Total	101.24

(1) Levoberezhye "Iceland spar" deposit, Evenkiya, Siberia, Russia; average electron microprobe analysis, H₂O by TGA, Fe²⁺:Fe³⁺ by Mössbauer spectroscopy; corresponds to $\text{Ca}_{0.31}\text{Na}_{0.04}\text{K}_{0.01}(\text{Fe}^{2+}_{1.56}\text{Mg}_{0.87}\text{Fe}^{3+}_{0.52})_{\Sigma=2.95}[(\text{Si}_{2.91}\text{Al}_{1.03}\text{Fe}^{3+}_{0.06})_{\Sigma=4}\text{O}_{10}](\text{OH})_2 \cdot 4.24\text{H}_2\text{O}$.

Polymorphism & Series: Member of the annite-phlogopite series.

Mineral Group: Smectite group.

Occurrence: A hydrothermal mineral associated with pillow basalts.

Association: Calcite, pyrite, quartz, mordenite, heulandite-Ca, stilbite-Ca.

Distribution: From the Levoberezhye "Iceland spar" deposit, near the Nizhnyaya Tunguska River, Evenkiya, Siberia, Russia.

Name: Prefix, *ferro*, denotes the Fe²⁺-dominant analog of *saponite*.

Type Material: Freiberg University of Mining and Technology, Germany.

References: (1) Chukanov, N.V., I.V. Pekov, A.E. Zadov, V.N. Chukanova, and S. Mökkel (2003) Ferrosaponite $\text{Ca}_{0.3}(\text{Fe}^{2+}, \text{Mg}, \text{Fe}^{3+})_3(\text{Si}, \text{Al})_4\text{O}_{10}(\text{OH})_2 \cdot 4\text{H}_2\text{O}$, a new trioctahedral smectite (from Evenkiya). *Zap. Vseross. Mineral. Obshch.*, 132(2), 68-74 (in Russian, English abs.). (2) (2004) *Amer. Mineral.*, 89(2), 467 (abs. ref. 1). (3) (2004) *Can. Mineral.*, 42(1), 225 (abs. ref. 1).