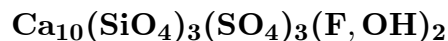


Fluorellestadite

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Crystal Data: Hexagonal. *Point Group:* 6/*m*. As acicular or hexagonal prismatic, poorly-terminated crystals, to 3 mm, and as fine-grained aggregates.

Physical Properties: *Fracture:* Conchoidal. Hardness = 4.5 D(meas.) = 3.03(1)
D(calc.) = 3.090

Optical Properties: Transparent to translucent. *Color:* Blue to pale bluish green; colorless in thin section. *Streak:* White with weak bluish tint. *Luster:* Vitreous to greasy.
Optical Class: Uniaxial (-). $\omega = 1.638(2)$ $\epsilon = 1.632(2)$

Cell Data: *Space Group:* $P6_3/m$. $a = 9.485(2)$ $c = 6.916(2)$ $Z = 4$

X-ray Powder Pattern: Kopeysk, Russia.
2.84 (100), 2.74 (90), 1.852 (80), 1.954 (70), 1.729 (70), 2.80 (60), 2.28 (60)

Chemistry:

	(1)
SiO ₂	15.30
Al ₂ O ₃	1.84
Fe ₂ O ₃	0.11
MnO	0.18
MgO	1.38
CaO	55.00
Na ₂ O	0.33
K ₂ O	0.1
F	3.60
H ₂ O ⁺	0.30
CO ₂	0.66
P ₂ O ₅	1.31
SO ₃	20.75
-O = F ₂	1.52
Total	[99.34]

(1) Kopeysk, Russia; after correction for impurities, MgO, Al₂O₃, 4% CaO, Fe₂O₃, Na₂O, and H₂O⁺, original total given as 99.24%; corresponds to $(\text{Ca}_{9.96}\text{Mn}_{0.04})_{\Sigma=10.00}[(\text{SO}_4)_{2.84}(\text{SiO}_4)_{2.80}(\text{PO}_4)_{0.20}(\text{CO}_3)_{0.16}]_{\Sigma=6.00}\text{F}_{2.08}$.

Polymorphism & Series: Forms a series with hydroxyllelestadite.

Occurrence: Formed in burned fragments of petrified wood in coal dumps (Kopeysk, Russia).

Association: Lime, periclase, magnesioferrite, hematite, srebrodolskite, anhydrite.

Distribution: From mines around Kopeysk, Chelyabinsk coal basin, Southern Ural Mountains, Russia. From the Bellerberg volcano, two km north of Mayen, Eifel district, Germany. At Crestmore, Riverside Co., California, and Franklin, Sussex Co., New Jersey, USA.

Name: For *fluorine* in the chemical composition and analogy to *ellestadite*.

Type Material: Mining Institute, St. Petersburg, 711/1; Il'menskii Preserve Museum, Miass, 5900; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia.

References: (1) Chesnokov, B.V., L.F. Bazhenova, and A.F. Bushmakina (1987) Fluorellestadite $\text{Ca}_{10}[(\text{SO}_4)_3(\text{SiO}_4)_3]\text{F}_2$ - a new mineral. Zap. Vses. Mineral. Obshch., 116, 743-746 (in Russian). (2) (1989) Amer. Mineral., 74, 502-503 (abs. ref. 1). (3) Rouse, R.C. and P.J. Dunn (1982) A contribution to the crystal chemistry of ellestadite and the silicate sulfate apatites. Amer. Mineral., 67, 90-96.

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