

Zeophyllite



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Crystal Data: Hexagonal. *Point Group:* $\bar{3}$. As radiating platy crystals, to 1 cm; in hemispherical and spherical aggregates, or as botryoidal and spherulitic crusts.

Physical Properties: *Cleavage:* {0001}, perfect. *Hardness* = 3 *D*(meas.) = 2.747–2.764 *D*(calc.) = [2.75]

Optical Properties: Translucent. *Color:* White; in transmitted light, colorless.

Luster: Pearly.

Optical Class: Uniaxial (-); anomalously biaxial. $\omega = 1.565\text{--}1.577$ $\epsilon = 1.560\text{--}1.569$ $2V$ (meas.) = $0^\circ\text{--}10^\circ$

Cell Data: *Space Group:* $R\bar{3}$. $a = 9.36$ $c = 36.48$ $Z = [9]$

X-ray Powder Pattern: Litoměřice, Czech Republic.

12.0 (100), 3.03 (80), 6.09 (60), 2.946 (60), 3.71 (50), 2.648 (50), 2.547 (50)

Chemistry:

	(1)	(2)
SiO ₂	36.0	38.84
Al ₂ O ₃	1.5	1.73
Fe ₂ O ₃	0.0	0.10
MgO	< 0.5	0.17
CaO	46.3	44.32
Na ₂ O	0.48	0.32
K ₂ O	0.09	0.24
F	7.49	8.23
H ₂ O	11.0	8.98
-O = F ₂	3.15	3.47
Total	99.71	99.46

(1) Litoměřice, Czech Republic; corresponds to $(\text{Ca}_{4.20}\text{Na}_{0.08}\text{Mg}_{<0.06}\text{K}_{0.01})_{\Sigma \sim 4.3}$ $(\text{Si}_{3.05}\text{Al}_{0.15})_{\Sigma = 3.20}\text{O}_9\text{F}_{2.01} \cdot 6.22\text{H}_2\text{O}$. (2) Březno nad Lábem, Czech Republic; corresponds to $(\text{Ca}_{4.04}\text{Al}_{0.17}\text{Na}_{0.06}\text{K}_{0.03}\text{Mg}_{0.02}\text{Fe}_{0.01})_{\Sigma = 4.33}\text{Si}_{3.31}\text{O}_9\text{F}_{2.22} \cdot 5.10\text{H}_2\text{O}$.

Occurrence: In cavities, as a secondary mineral from hydrothermal alteration of basalt (Litoměřice, Czech Republic); a late-stage mineral in low-temperature hydrothermal veins cutting alkalic intrusive rocks in a differentiated alkalic massif (Khibiny massif, Russia); in marble xenoliths in nepheline syenite in an intrusive alkalic gabbro-syenite complex (Mont Saint-Hilaire, Canada).

Association: Zeolites, apophyllite.

Distribution: In the Czech Republic, at Litoměřice (Leitmeritz), Březno nad Lábem (Gross-Priesen), Radejčín (Radzein), and near Teplice (Teplitz). In Germany, at the Schellkopf, near Brenk, Eifel district. From Monte Somma, Campania, Italy. In the Khibiny massif, Kola Peninsula, Russia. From Göbnehall Yuglingarum, Skåne, Sweden. In the Salmon River district, near Riggins, Idaho Co., Idaho, USA. At Mont Saint-Hilaire, Quebec, Canada.

Name: From the Greek *to boil* and *a leaf*, in allusion to its habit.

Type Material: Harvard University, Cambridge, Massachusetts, USA, 86427.

References: (1) Dana, E.S. and W.E. Ford (1909) Dana's system of mineralogy, (6th edition), app. II, 113. (2) Parry, J., A.F. Williams, and F.E. Wright (1932) On bultfonteinite, a new fluorine-bearing hydrous calcium silicate from South Africa. *Mineral. Mag.*, 23, 145–162. (3) Chalmers, R.A., L.S. Dent, and H.F.W. Taylor (1958) Zeophyllite. *Mineral. Mag.*, 31, 726–735. (4) Merlino, S. (1972) The crystal structure of zeophyllite. *Acta Cryst.*, 28, 2726–2732.

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