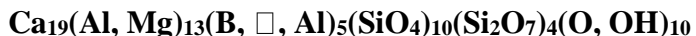


Wiluite

Crystal Data: Tetragonal. *Point Group:* 4/m 2/m 2/m. Prismatic crystals display dominant {100} and {101} with {110} and {001}, to 5 cm, and slightly elongated along [001].

Physical Properties: *Cleavage:* Poor on {100}. *Fracture:* Irregular. *Tenacity:* Brittle. Hardness = 6 D(meas.) = 3.36(3) D(calc.) = 3.358 Nonfluorescent.

Optical Properties: Translucent. *Color:* Dark green, colorless to light yellowish green in thin section. *Streak:* Colorless. *Luster:* Vitreous.

Optical Class: Uniaxial (+). $\omega = 1.721(2)$ $\varepsilon = 1.725(2)$ Strong sector zoning: {001} sectors are cross-hatched, {110} and {100} sectors show fine striations. The {001} sector is slightly biaxial, with $2V = 0^\circ\text{-}10^\circ$; {100} sectors with higher birefringence, $2V = 10^\circ\text{-}25^\circ$. *Pleochroism:* Very weak.

Cell Data: *Space Group:* P4/nnc. $a = 15.752(1)$ $c = 11.717(1)$ $Z = 2$

X-ray Powder Pattern: Wilui River, Sakha Republic, Russian Federation.

2.776 (100), 2.617 (61), 2.491 (61), 2.592 (43), 1.66 (26), 1.640 (23), 2.121 (20)

Chemistry:	(1)	(2)		(1)	(2)
SiO ₂	36.11	36.33	SrO		0.079
Al ₂ O ₃	12.03	11.97	Ce ₂ O ₃	0.18	0.235
TiO ₂	0.80	0.71	La ₂ O ₃		0.298
MgO	6.48	5.27	B ₂ O ₃	3.06	3.350
MnO		0.27	BeO		0.016
FeO	1.21		F	0.50	0.774
Fe ₂ O ₃	32.28	5.11	H ₂ O	0.61	0.239
CaO	35.54	35.26	-O = F	0.24	0.33
			Total	99.2	99.64

(1) Wilui River, Sakha Republic, Russian Federation; average electron microprobe analysis, H₂O by LECO induction furnace, FeO by wet chemistry; corresponding to $(\text{Ca}_{18.97}\text{Ce}_{0.03})_{\Sigma=19}(\text{Al}_{6.53}\text{Ti}_{0.30}\text{Fe}^{3+}_{0.86}\text{Mg}_{4.81}\text{Fe}^{2+}_{0.5})_{\Sigma=13}(\text{B}_{2.63}\text{Al}_{0.53}\square_{1.84})_{\Sigma=5}\text{Si}_{17.99}\text{O}_{68}[(\text{OH})_{2.03}\text{O}_{7.97}]_{\Sigma=10}$. (2) Ariccia, Rome, Latium, Italy; average electron microprobe analysis, total includes REE = 0.058, UO₂+ThO₂+Li₂O = 0.004.

Mineral Group: Vesuvianite group.

Occurrence: In metasomatized skarn (Russia). In fragments of metasomatized carbonate-rich xenoliths in volcanic ejecta (Italy).

Association: Grossular, serpentine minerals, carbonate, limonitized pyrite, chlorite, 'achtarandite'.

Distribution: From the Wilui River, Sakha Republic, Russian Federation [TL]. In Templeton Township, Quebec, Canada. At the Bill Waley mine, Tulare County, California, USA. In the ignimbrite quarry of Parco Chigi, Ariccia community, Rome, Latium, Italy.

Name: For the *Wilui* River, Russia.

Type Material: Canadian Museum of Nature, Ottawa, Ontario, Canada.

References: (1) Groat, L.A., F.C. Hawthorne, T.S. Ercit, and J.D. Grice (1998) Wiluite, Ca₁₉(Al,Mg,Fe,Ti)₁₃(B,Al)₅Si₁₈O₆₈(O,OH)₁₀, a new mineral species isostructural with vesuvianite, from the Sakha Republic, Russian Federation. *Can. Mineral.*, 36(5), 1301-1304. (2) (2000) Wiluite, Ca₁₉(Al,Mg,Fe,Ti)₁₃(B,Al)₅Si₁₈O₆₈(O,OH)₁₀, a new mineral species isostructural with vesuvianite, from the Sakha Republic, Russian Federation: Discussion and Reply. *Can. Mineral.*, 38, 763-766. (3) Pekov, I.V. (2007) New minerals from former Soviet Union countries, 1998-2006. *Mineral. Almanac* 11, 49-51. (4) Bellatreccia, F., F. Cámara, L. Ottolini, G. Della Ventura, G. Cibin, and A. Mottana (2005) Wiluite from Ariccia, Latium, Italy: occurrence and crystal structure. *Can. Mineral.*, 43, 1457-1468. (5) Panikorovskii, T.L., A.S. Mazur, A.V. Bazai, et al. (2017) X-ray diffraction and spectroscopic study of wiluite: implications for the vesuvianite-group nomenclature. *Phys. Chem. Minerals*, 44, 577-593.