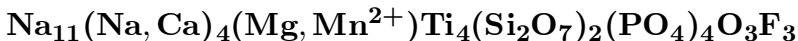


Sobolevite

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Crystal Data: Triclinic. *Point Group:* 1. As platy masses to 5 mm, flattened on {001}.**Physical Properties:** *Cleavage:* Perfect on {001}, distinct on {110}. *Hardness* = ~4.5–5
VHN = 342–712 *D*(meas.) = 3.03 *D*(calc.) = 3.03**Optical Properties:** Semitransparent. *Color:* Brown. *Luster:* Metallic, resinous, or pearly on (001).*Optical Class:* Biaxial (-). *Pleochroism:* X = nearly colorless; Y = Z = yellowish brown.*Orientation:* X = b; Y = a; X \wedge c = 32°. *Dispersion:* r < v, strong. *Absorption:* Z = Y > X.
 $\alpha = 1.627(2)$ $\beta = 1.686(2)$ $\gamma = 1.690(2)$ $2V(\text{meas.}) = 25^\circ\text{--}33^\circ$ **Cell Data:** *Space Group:* P1. *a* = 7.078(1) *b* = 5.4115(7) *c* = 40.618(10) $\alpha = 90.01(2)^\circ$
 $\beta = 93.19(2)^\circ$ $\gamma = 90.00(1)^\circ$ *Z* = 2**X-ray Powder Pattern:** Mt. Alluaiv, Russia.

2.896 (100), 2.691 (70), 2.913 (50), 1.771 (50), 1.671 (50), 3.18 (40), 1.717 (35)

Chemistry:

	(1)
SiO ₂	17.1
TiO ₂	15.2
Fe ₂ O ₃	0.6
Nb ₂ O ₅	4.4
MnO	4.0
MgO	0.6
CaO	6.4
Na ₂ O	29.7
F	0.7
P ₂ O ₅	19.9
-O = F ₂	0.3
Total	98.3

(1) Mt. Alluaiv, Russia; by electron microprobe, average of four samples; corresponds to
(Na_{13.47}(Ca_{1.60})_{Σ=15.07}(Mn_{0.79}Mg_{0.21}Fe_{0.11})_{Σ=1.11}(Ti_{2.67}Nb_{0.46})_{Σ=3.13}P_{3.94}Si_{4.00}O_{33.19}F_{0.52}·**Occurrence:** In alkalic pegmatite, cutting sodalite-cancrinite syenite, in a differentiated alkalic massif.**Association:** Lamprophyllite, lomonosovite.**Distribution:** On Mt. Alluaiv, Lovozero massif, Kola Peninsula, Russia.**Name:** For Academician Vladimir Stepanovich Sobolev (1908–1982), Russian mineralogist, petrologist, and former President of the International Mineralogical Association, Institute of Geology and Geophysics, Novosibirsk, Russia.**Type Material:** Geology Museum, Kola Branch, Academy of Sciences, Apatity, 5778/2; Mining Institute, St. Petersburg, 1303/1; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 82754.**References:** (1) Khomyakov, A.P., T.A. Kurova, and N.I. Chistyakova (1983) Sobolevite, Na₄Ca₂MnTi₃P₄Si₄O₃₄, a new mineral. *Zap. Vses. Mineral. Obshch.*, 112, 456–461 (in Russian). (2) (1984) *Amer. Mineral.*, 69, 813 (abs. ref. 1). (3) (1987) *Amer. Mineral.*, 72, 1279 (errata ref. 2). (4) (1988) Sokolova, E.V., Y.K. Yegorov-Tismenko, and A.P. Khomyakov (1988) Crystal structure of sobolevite. *Doklady Acad. Nauk SSSR*, 302, 1112–1118 (in Russian). (5) (1991) *Amer. Mineral.*, 76, 305 (abs. ref. 4).

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