

Crystal Data: Tetragonal. *Point Group:* $\bar{4} 2m$. As equant, skeletal, tetragonal prismatic-dipyramidal crystals to 0.15 mm, in aggregates to 1 cm, and as interrupted crusts to 2×2 cm². Visually indistinguishable from udinaite.

Physical Properties: *Cleavage:* None. *Tenacity:* n.d. *Fracture:* Uneven. Hardness = ~3.5
D(meas.) = n.d. D(calc.) = 3.816

Optical Properties: Transparent. *Color:* Beige or brownish-yellowish, colorless. *Streak:* White. *Luster:* Vitreous.
Optical Class: Uniaxial (-). $\omega = 1.777$ $\varepsilon = 1.820$ Non-pleochroic.

Cell Data: *Space Group:* $I\bar{4} 2d$. $a = 6.8022(1)$ $c = 19.1843(6)$ $Z = 4$

X-Ray Diffraction Pattern: Arsenatnaya fumarole, Tolbachik volcano, Kamchatka, Russia. 2.775 (100), 3.007 (46), 3.341 (29), 1.698 (27), 4.657 (26), 4.300 (24), 2.750 (17)

Chemistry:	(1)	(2)
Na ₂ O	3.43	6.66
CaO	1.41	
MgO	33.48	34.67
MnO	0.17	
CuO	0.03	
Fe ₂ O ₃	0.09	
SiO ₂	0.01	
P ₂ O ₅	1.33	
V ₂ O ₅	14.82	
As ₂ O ₅	46.34	58.67
SO ₃	0.14	
Total	99.34	100.00

(1) Arsenatnaya fumarole, Tolbachik volcano, Kamchatka, Russia; average electron microprobe and Raman spectroscopic analyses; corresponds to (Na_{0.57}Ca_{0.13}) $\Sigma=0.70$ (Mg_{4.01}Mn_{0.01}Fe_{0.01}) $\Sigma=4.03$ (As_{2.07}V_{0.84}P_{0.10}Si_{0.01}S_{0.01}) $\Sigma=3.03$ O₁₂. (2) NaMg₄(AsO₄)₃.

Polymorphism & Series: Udinaite and arsenudinaite form an isomorphous series.

Occurrence: A sublimate at an active volcanic fumarole.

Association: Udinaite, anhydrite, diopside, hematite, schäferite, berzeliite, svabite, calciojohillerite, tilasite, reznitskyite, ludwigite, rhabdobarite-group borates, forsterite, magnesioferrite, fluorapatite, pliniusite, powellite.

Distribution: From the Arsenatnaya fumarole, Second scoria cone of the Northern Breakthrough of the Great Tolbachik Fissure Eruption, Tolbachik volcano, Kamchatka peninsula, Far-Eastern Region, Russia.

Name: Prefix identifies the *arsenic*-analogue of *udinaite* with As > V.

Type Material: A.E. Fersman Mineralogical Museum, RAS, Moscow, Russia (5238/1; 96,273).

References: (1) Pekov, I.V., N.N. Koshlyakova, N.V. Zubkova, D.I. Belakovskiy, M.F. Viganina, A.A. Agakhanov, D.A. Ksenofontov, A.G. Turchkova, S.N. Britvin, E.G. Sidorov, and D.Yu. Pushcharovsky (2022) A natural vanadate-arsenate isomorphous series with jeffbenite-type structure: new fumarolic minerals udinaite, NaMg₄(VO₄)₃, and arsenudinaite, NaMg₄(AsO₄)₃. Minerals, 12(7), 850, 1-16.