

Crystal Data: Monoclinic. *Point Group:* 2/m. As crude to equant or tabular crystals to 0.5 mm, as distorted skeletal, typically case-like crystals to 1 mm and in open-work aggregates forming crusts.

Physical Properties: *Cleavage:* Distinct on {001} (by analogy with wagnerite and sarkinite). *Tenacity:* Brittle. *Fracture:* Uneven. Hardness = ~5 D(meas.) = n.d. D(calc.) = 3.698 Fluoresces orange-red weakly under SW UV.

Optical Properties: Transparent. *Color:* Light to lemon-yellow, sometimes greenish yellow or colorless; colorless in transmitted light. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Biaxial (+). $a = 1.614(2)$ $\beta = 1.615(2)$ $\gamma = 1.640(2)$ $2V(\text{meas.}) = 25(5)^\circ$ $2V(\text{calc.}) = 23^\circ$

Cell Data: *Space Group:* P2₁/c. $a = 9.8638(3)$ $b = 12.9830(3)$ $c = 12.3284(3)$ $\beta = 109.291(3)^\circ$ Z = 16

X-ray Powder Pattern: Arsenatnaya fumarole, Tolbachik volcano, Kamchatka, Russia. 3.043 (100), 3.339 (98), 2.940 (72), 3.155 (65), 2.787 (51), 5.80 (41), 3.916 (37)

Chemistry:	(1)	(2)
MgO	38.72	39.03
CaO	0.23	
MnO	0.32	
CuO	0.60	
ZnO	0.05	
Fe ₂ O ₃	0.11	
TiO ₂	0.03	
SiO ₂	0.08	
P ₂ O ₅	0.18	
V ₂ O ₅	0.03	
As ₂ O ₅	54.96	55.64
SO ₃	0.10	
F	8.91	9.20
- O = F ₂	3.75	3.87
Total	100.57	100.00

(1) Arsenatnaya fumarole, Tolbachik volcano, Kamchatka, Russia; average of 6 electron microprobe analyses supplemented by IR spectroscopy; corresponds to (Mg_{1.98}Cu_{0.02}Mn_{0.01}Ca_{0.01})_{Σ=2.02}(As_{0.99}P_{0.01})_{Σ=1.00}O_{4.03}F_{0.97}. (2) Mg₂(AsO₄)F.

Mineral Group: Triplite-triploidite supergroup, triplite group.

Occurrence: A sublimate around an active fumarole.

Association: Anhydrite, tilasite, johillerite, hematite, fluorophlogopite, cassiterite, calciojohillerite, apthitalite, nickenichite, svabite, berzeliite, metathénardite, krashennikovite, fluoborite.

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

Name: The prefix, *arseno*, indicates the arsenate analogue of *wagnerite* Mg₂(PO₄)F.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (95000).

References: (1) Pekov, I.V., N.V. Zubkova, A.A. Agakhanov, V.O. Yapaskurt, N.V. Chukanov, D.I. Belakovskiy, E.G. Sidorov, and D.Yu. Pushcharovsky (2018) New arsenate minerals from the Arsenatnaya fumarole, Tolbachik volcano, Kamchatka, Russia. VIII. Arsenowagnerite, Mg₂(AsO₄)F. Mineral. Mag., 82(4), 877-888. (2) (2021) Amer. Mineral., 106, 158-159 (abs. ref. 1).