

Crystal Data: Monoclinic. *Point Group:* 2/m. As plates to 0.4 mm, elongate along [001], platy on (010), showing {100}, {010}, {110}, {011}, and {111}.

Physical Properties: *Cleavage:* Perfect on {010}. *Tenacity:* Brittle. *Fracture:* n.d. *Hardness = n.d.* VHN = 337-441, 378 average (10 g load). *D(meas.) = n.d.* *D(calc.) = 3.93* Nonfluorescent.

Optical Properties: Transparent. *Color:* Light green. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Biaxial (-). $\alpha = 1.672(2)$ $\beta = 1.718(2)$ $\gamma = 1.722(2)$ $2V(\text{meas.}) \approx 30(2)^\circ$ $2V(\text{calc.}) = 32.2^\circ$ *Orientation:* $b = Y$, $c \approx X$. *Pleochroism:* Weak, $X = \text{colorless}$, $Y = Z = \text{light green}$.

Cell Data: *Space Group:* $P2_1/c$. $a = 7.314(2)$ $b = 10.223(3)$ $c = 5.576(2)$ $\beta = 99.79(3)^\circ$ $Z = 4$

X-ray Powder Pattern: Second Cinder cone, Tolbachik eruption, Kamchatka, Russia. 7.20 (100), 4.327 (23), 3.124 (20), 3.604 (10), 3.174(10), 4.844 (9), 2.458 (8)

Chemistry:	(1)
CuO	32.23
ZnO	0.25
Al ₂ O ₃	20.89
Fe ₂ O ₃	0.32
As ₂ O ₅	46.02
<u>V₂O₅</u>	<u>0.10</u>
Total	99.81

(1) Second Cinder cone, Tolbachik eruption, Kamchatka, Russia; average electron microprobe analysis; corresponding to $(\text{Cu}_{0.99}\text{Zn}_{0.01})_{\Sigma=1.00}\text{Al}_{1.00}\text{As}_{0.98}\text{O}_5$.

Occurrence: A sublimate at a volcanic fumarole.

Association: Ponomarevite, piypite, sylvite, dolerophanite, euchlorine, tenorite, hematite.

Distribution: From the Second Cinder cone, North Breach of the great fissure Tolbachik eruption, Kamchatka, Russia.

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Type Material: Mining Museum, Saint Petersburg Mining Institute, Russia.

References: (1) Vergasova L.P., S.K. Filatov, M.G. Gorskaya, A.A. Molchanov, S.V. Krivovichev, and V.V. Ananiev (2000) Urusovite, Cu[AlAsO₅], a new mineral from the Tolbachik volcano, Kamchatka, Russia. *Eur. J. Mineral.*, 12, 1041-1044. (2) Krivovichev, S.V., A.V. Molchanov, and S.K. Filatov (2000) Crystal structure of urusovite Cu[AlAsO₅]: a new type of tetrahedral aluminoarsenate polyanion. *Crystallogr. Reports*, 45, 723-727. (3) (2001) *Amer. Mineral.*, 86, 769 (abs. refs. 1 and 2).