

Evdokimovite

Crystal Data: Monoclinic. *Point Group:* $2/m$. As acicular crystals, to 0.09 mm.

Physical Properties: *Cleavage:* None. *Fracture:* Conchoidal. *Tenacity:* Brittle.
Hardness = ~ 2.5 VHN = 92 (100 g load). D(meas.) = n.d. D(calc.) = 4.20

Optical Properties: Nonmetallic. *Color:* Colorless, light gray with beige tints in reflected light with greenish gray internal reflections. *Streak:* White. *Luster:* Adamantine.

Optical Class: n.d.

R_1 - R_2 : (470) 7-7.2, (546) 6.7-6.9, (589) 6.6-6.8, (650) 6.4-6.6

Cell Data: *Space Group:* $P2_1/n$. $a = 6.2958(14)$ $b = 10.110(2)$ $c = 39.426(11)$
 $\beta = 90.347(6)^\circ$ $Z = 4$

X-ray Powder Pattern: Tolbachik volcano, Kamchatka Peninsula, Russia.

8.014 (100), 9.793 (57), 3.522 (44), 3.621 (29), 6.580 (26), 2.974 (21), 4.011 (19)

Chemistry:	(1)	(2)
Tl ₂ O	55.40	54.29
VO ₂	14.92	14.38
SO ₃	25.83	25.58
<u>H₂O</u>	<u>[5.75]</u>	<u>5.75</u>
Total	101.90	100.00

(1) Tolbachik volcano, Kamchatka Peninsula, Russia; average of 30 electron microprobe analyses, H₂O calculated; corresponding to $\text{Tl}_{4.10}\text{V}_{2.83}\text{S}_{5.07}\text{H}_{10.00}\text{O}_{27.94}$. (2) $\text{Tl}_4\text{VO}_3(\text{SO}_4)_5(\text{H}_2\text{O})_5$.

Occurrence: A sublimate around a fumarole.

Association: Markhininite, karpovite, paufferite, bobjonesite, shcherbinaite.

Distribution: First scoria cone, North Breach of the Great Fissure Tolbachik volcano, Kamchatka Peninsula, Russia.

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Type Material: Mineralogical Museum, St. Petersburg State University, St. Petersburg, Russia (1/19542).

References: (1) Siidra, O.I., L.P. Vergasova, Y.L. Kretser, Y.S. Polekhovsky, S.K. Filatov, and S.V. Krivovichev (2014) Unique thallium mineralization in the fumaroles of the Tolbachik volcano, Kamchatka Peninsula, Russia. III. Evdokimovite, $\text{Tl}_4\text{VO}_3(\text{SO}_4)_5(\text{H}_2\text{O})_5$. *Mineral. Mag.*, 78(7), 1711-1724. (2) (2015) *Amer. Mineral.*, 100, 1649-1650 (abs. ref. 1).