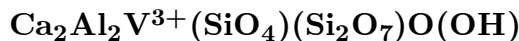


Mukhinite



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Crystal Data: Monoclinic. *Point Group:* n.d. Irregular, short prismatic crystals, to 2.5 mm; as grains and vuggy accumulations and segregations. *Twining:* Simple twins on {100}.

Physical Properties: *Cleavage:* {001}, perfect; {100}, less so; (001) \wedge (100) = 64°. *Tenacity:* Brittle. Hardness = 8 VHN = 1375 average. D(meas.) = n.d. D(calc.) = [3.47]

Optical Properties: Translucent. *Color:* Black with brownish tints, reddish brown to brown; in thin section, reddish brown to olive-green. *Streak:* Light brownish gray. *Luster:* Vitreous. *Optical Class:* Biaxial (+) or (-). *Pleochroism:* Strong; X = pale olive-green; Y = pale reddish brown; Z = reddish brown. *Orientation:* Y = b; Z \wedge a = 32°. $\alpha = 1.723(2)$ $\beta = 1.733(2)$ $\gamma = 1.755(2)$ 2V(meas.) = 88°

Cell Data: *Space Group:* n.d. a = 8.90 b = 5.61 c = 10.15 $\beta = 115^\circ 30'$ Z = 2

X-ray Powder Pattern: Tashelginskoye deposit, Russia.
2.892 (10), 2.682 (8), 2.600 (8), 2.398 (8), 1.405 (8), 1.394 (8), 2.530 (7)

Chemistry:

	(1)
SiO ₂	36.50
Al ₂ O ₃	21.81
Fe ₂ O ₃	1.31
V ₂ O ₃	11.29
Cr ₂ O ₃	0.28
MgO	trace
CaO	22.23
H ₂ O	1.76
S	0.98
Total	96.16

(1) Tashelginskoye deposit, Russia; corresponds to Ca_{2.0}(Al_{2.1}V_{0.8}Fe_{0.1})_{Σ=3.0}Si_{3.1}O₁₂(OH).

Mineral Group: Epidote group.

Occurrence: In marble associated with an iron deposit (Tashelginskoye deposit, Russia); a late-stage mineral in garnet-bearing metamorphic rocks (Kuznetsk, Kazakhstan).

Association: Goldmanite, muscovite, pyrite, pyrrhotite, sphalerite, chalcopyrite (Tashelginskoye deposit, Russia); garnet, diopside, titanite, quartz, clinozoisite, galena, molybdenite (Kuznetsk, Kazakhstan).

Distribution: From the Tashelginskoye iron deposit, Shoriya Mountains, about 400 km southeast of Novosibirsk, southwestern Siberia, Russia. At Kuznetsk, Ala-Tau Range, Tien Shan, Kazakhstan. From Lewiston, Fergus Co., Montana, USA.

Name: In honor of Aleksei Stepanovich Mukhin (1910–1974), geologist with the West Siberian Geological Survey.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 71421.

References: (1) Shepel, A.V. and M.V. Karpenko (1969) Mukhinite, a new vanadium species of epidote. Doklady Acad. Nauk SSSR, 185, 1342–1345 (in Russian). (2) (1970) Amer. Mineral., 55, 321–322 (abs. ref. 1). (3) Karev, M.E. (1974) New finds of vanadium-containing minerals in metamorphic rocks of the Kuznetsk Alatau. Geol. Geofiz., 11, 141–143. (4) (1975) Chem. Abs., 83, 45824 (abs. ref. 3).

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