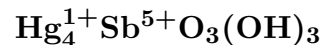


Shakhovite



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Crystal Data: Monoclinic. *Point Group:* *m*. Platy crystals, to about 2 mm, slightly elongated.

Physical Properties: *Cleavage:* In two directions, parallel elongation. *Tenacity:* Brittle. Hardness = 3–3.5 VHN = 285–362, 317 average (20 g load). D(meas.) = 8.34–8.51, 8.38 average. D(calc.) = 8.60

Optical Properties: Semitransparent. *Color:* Bright lettuce-green, olive-green, yellowish green, darkening on exposure; grayish white in reflected light. *Streak:* Yellowish white.

Luster: Adamantine.

Optical Class: Biaxial; high birefringence. *Pleochroism:* Weak; olive-green to colorless.

$\alpha = > 2.03$ $\beta = > 2.03$ $\gamma = > 2.03$ 2V(meas.) = n.d.

R₁–R₂: (434) 24.5–19.0, (460) 22.5–17.6, (486) 21.5–16.4, (500) 21.5–16.2, (546) 20.2–15.8, (590) 20.3–15.6, (656) 18.2–13.4

Cell Data: *Space Group:* *Im*. *a* = 4.871(1) *b* = 15.098(3) *c* = 5.433(1) β = 98.86(2)°
Z = 2

X-ray Powder Pattern: Kelyana mine, Russia.

3.88 (10), 3.33 (8), 2.69 (6), 2.63 (5), 2.552 (5), 1.931 (3.5), 3.47 (3b)

Chemistry:

	(1)	(2)	(3)	(4)
Hg	77.25	77.57	77.3	78.42
Sb	11.53	11.93	12.1	11.90
O	9.88	9.67		9.38
H				0.30
Total	98.66	99.17		100.00

(1) Kelyana mine, Russia; by electron microprobe, Hg average of 24 analyses, Sb average of 13 analyses, O average of five analyses; Cu, As, Cl, S absent; corresponding to Hg_{4.03}Sb_{1.00}O_{6.47}.

(2) Khaydarkan, Kyrgyzstan; by electron microprobe, Hg average of 15 analyses, Sb average of 10 analyses, O average of seven analyses; corresponding to Hg_{4.09}Sb_{1.04}O_{6.38}. (3) Landsberg, Germany; by electron microprobe, presence of (OH)¹⁻ confirmed by IR. (4) Hg₄SbO₃(OH)₃.

Occurrence: A late-stage secondary mineral in the oxidation zone of cinnabar-stibnite ore (Kelyana mine, Russia); in the oxidation zone of cinnabar-livingstonite ore (Khaydarkan, Kyrgyzstan); in oxidized Hg–Sb-bearing tetrahedrite ore (Landsberg, Germany).

Association: Calomel, eglestonite, mercury, montroydite, terlinguaite, corderoite, kelyanite, kuznetsovite, antimony oxides (Kelyana mine, Russia); calomel, cinnabar, mercury, malachite, goethite (Landsberg, Germany).

Distribution: In the Kelyana Sb–Hg mine, North Muya Mountains, Buryatia, Transbaikalia, Siberia, Russia. From the Khaydarkan deposit, Fergana Valley, Alai Range, south Kyrgyzstan. At Landsberg, near Obermoschel, and Stahlberg, Rhineland-Palatinate, Germany.

Name: To honor Feliks Nikolaevich Shakhov (1894–1971), Head of the Division of Geochemistry of the Russian Academy of Sciences, Novosibirsk, Russia.

Type Material: Central Siberian Geological Museum, Siberian Division, Academy of Sciences, Novosibirsk, BII-30/1; Mining Institute, St. Petersburg, 1212/1–2; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 81603.

References: (1) Vasil'ev, V.I., Y.G. Lavrent'ev, and N.A. Pal'chik (1980) Shakhovite – Hg₈Sb₂O₁₃ – a new supergene mineral. *Geol. i Geofiz.*, 128–132 (in Russian with English abs.). (2) (1981) *Amer. Mineral.*, 66, 1101 (abs. ref. 1). (3) Tillmanns, E., R. Krupp, and K. Abraham (1982) New data on the mercury antimony mineral shakhovite: chemical composition, unit cell and crystal structure. *Tschermaks Mineral. Petrog. Mitt.*, 30, 227–235. (4) Baur, W.H. and E. Tillmanns (1986) How to avoid unnecessarily low symmetry in crystal structure determinations. *Acta Cryst.*, 42, 95–111.

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