Lavrentievite $Hg_3S_2(Cl,Br)_2$

Crystal Data: Monoclinic, perhaps triclinic. *Point Group:* $2/m$, 2, or m. As complex intergrowths with arzakite, to 0.2 mm. *Twinning:* Noted.

Physical Properties: Hardness = 2.0–2.5 VHN = 82–103 D(meas.) = 7.46 D(calc.) = 7.26–7.5

Optical Properties: Transparent. *Color:* Colorless to yellow. *Luster:* Vitreous to adamantine.
R_1–R_2: n.d.

Cell Data: *Space Group:* $P2/m$, $P2$, or Pm. $a = 8.94(2)$ $b = 5.194(7)$ $c = 18.33(4)$ $\beta = 92.44(8)^\circ$ Z = 5

X-ray Powder Pattern: Arzak deposit, Russia; differs only by intensities from arzakite. 2.61 (100), 3.01 (55), 3.38 (50), 1.587 (45), 3.96 (40), 2.292 (40), 2.199 (40)

Chemistry:

	(1)	(2)	(3)	(4)
Hg	81.4	78.48	79.25	77.02
S	8.51	8.35	8.06	8.21
Br	1.29	6.94	7.73	10.23
Cl	9.13	6.04	5.20	4.54
Total	100.33	99.81	100.24	100.00

(1) Arzak deposit, Russia; by electron microprobe, average of ten analyses; corresponding to $Hg_{3.01}S_{1.96}(Cl_{1.91}Br_{0.12})_{\Sigma=2.03}$. (2) Do.; by electron microprobe, corresponding to $Hg_{3.01}S_{2.00}(Cl_{1.31}Br_{0.67})_{\Sigma=1.98}$. (3) Kadyrel deposit, Russia, by electron microprobe, average of eight grains; corresponding to $Hg_{3.11}S_{1.97}(Cl_{1.16}Br_{0.76})_{\Sigma=1.92}$. (4) $Hg_3S_2(Cl,Br)_2$ with Cl:Br = 1:1.

Polymorphism & Series: Dimorphous with corderoite; forms a series with arzakite.

Occurrence: In the oxidized zone of hydrothermal mercury-bearing deposits (Arzak and Kadyrel deposits, Russia).

Association: Arzakite, cinnabar, corderoite, quartz, kaolinite (Arzak deposit, Russia); bromian calomel, bromian corderoite, bromian eglestonite, kuzminite, mercury, cinnabar, iron oxides (Kadyrel deposit, Russia).

Distribution: In Russia, in the Pii-Khem district, Tuva, Siberia, from the Arzak mercury deposit, Uyuk Range [TL] and the Kadyrel mercury deposit, right bank of the Oorash-Khem River Valley.

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Type Material: Central Siberian Geological Museum, Novosibirsk, VI-24/3; Mining Institute, St. Petersburg, 1676/1; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 84398.

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