

Vasilyevite

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. As granular microcrystalline aggregates, < 0.5 mm, and as partly hollow spheroidal mass, to 0.3 mm.

Physical Properties: *Cleavage:* None. *Fracture:* Uneven. *Tenacity:* Very brittle.
Hardness = ~ 3 D(meas.) = n.d. D(calc.) = 9.57

Optical Properties: Opaque to translucent (on thin edges). *Color:* Silvery gray, black, dark red-black; gray in reflected light with green and blue tints and orange-red to blood red internal reflections. *Streak:* Red-brown. *Luster:* Adamantine to metallic.

Optical Class: n.d.

R_1 - R_2 : (470) 28.6-29.5, (546) 26.2-27.1, (589) 24.6-25.7, (650) 22.8-24.0

Cell Data: *Space Group:* $P\bar{1}$. $a = 9.250(5)$ $b = 10.629(4)$ $c = 18.182(6)$ $\alpha = 93.06(4)^\circ$
 $\beta = 90.35(5)^\circ$ $\gamma = 115.16(4)^\circ$ $Z = 2$

X-ray Powder Pattern: Clear Creek mine, New Idria district, San Benito County, California, USA. 2.894 (100), 3.132 (90), 4.205 (80), 2.722 (80), 7.645 (60), 3.296 (50), 2.629 (50)

Chemistry:	(1)	(2)	(3)
Hg ₂ O	[89.1]	88.38	87.94
I	7.0	8.06	8.03
Br	2.5	2.71	3.37
Cl	0.6	1.05	0.75
S	0.1	0.14	
CO ₂	[0.8]	0.75	0.93
-O = I + Br + Cl + S	0.88	1.09	1.01
Total	99.22	100.00	100.00

(1) Clear Creek mine, New Idria district, San Benito County, California, USA; average of 4 electron microprobe analyses, HgO calculated from structure analysis, CO₂ calculated and its presence confirmed by structural analysis; corresponding to $(\text{Hg}_2)^{2+}_{10.82}\text{O}_{6.85}\text{I}_{2.69}(\text{Br}_{1.52}\text{Cl}_{0.82})$
 $[(\text{CO}_3)_{0.89}\text{S}^{2-}_{0.15}]_{\Sigma=1.04}$. (2) $(\text{Hg}_2)^{2+}_{10}\text{O}_6\text{I}_3(\text{Br}_{1.6}\text{Cl}_{1.4})_{\Sigma=3}[(\text{CO}_3)_{0.8}\text{S}^{2-}_{0.2}]_{\Sigma=1}$. (3) $(\text{Hg}_2)^{2+}_{10}\text{O}_6\text{I}_3\text{Br}_2\text{Cl}(\text{CO}_3)$.

Occurrence: A rare mineral replacing native mercury in vugs in hydrothermal quartz veins.

Association: Native mercury, eglestonite, montroydite, cinnabar.

Distribution: Clear Creek mercury mine, New Idria district, San Benito County, California, USA.

Name: Honors Russian mineralogist, Vladimir Ivanovich Vasilyev (b. 1929), Institute of Geology, Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia, for his discovery of numerous new mercury minerals.

Type Material: Systematic Reference Series, Geological Survey of Canada, Ottawa, Ontario, Canada (NMC68094) and at the Natural History Museum, London, England (MM2003,5).

References: (1) Roberts, A.C., M.A. Cooper, F.C. Hawthorne, J.A.R. Stirling, W.H. Paar, C.J. Stanley, G.E. Dunning, and P.C. Burns (2003) Vasilyevite, $(\text{Hg}_2)^{2+}_{10}\text{O}_6\text{I}_3\text{Br}_2\text{Cl}(\text{CO}_3)$, a new mineral species from the Clear Creek claim, San Benito County, California. *Can. Mineral.*, 41, 1167-1172. (2) Cooper, M.A. and F.C. Hawthorne (2003) The crystal structure of vasilyevite, $(\text{Hg}_2)^{2+}_{10}\text{O}_6\text{I}_3\text{Br}_2\text{Cl}(\text{CO}_3)$. *Can. Mineral.*, 41, 1173-1181. (3) (2004) *Amer. Mineral.*, 89, 1832 (abs. refs. 1 & 2).