

Germanocolusite

$\text{Cu}_{26}\text{V}_2(\text{Ge}, \text{As})_6\text{S}_{32}$

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Crystal Data: Cubic. *Point Group:* $\bar{4}3m$. As single grains, may be in aggregates, to 100 μm .

Physical Properties: Hardness = n.d. VHN = 280–370, 330 average (40 g load).
D(meas.) = n.d. D(calc.) = 4.55

Optical Properties: Opaque. *Color:* Yellow, grayish yellow, greenish yellow, olive-yellow, cream-yellow; less commonly yellowish cream with a rose to brownish tint.

R: (400) 22.4, (420) 22.5, (440) 22.7, (460) 23.2, (480) 24.1, (500) 25.5, (520) 26.4, (540) 27.1, (560) 27.6, (580) 27.8, (600) 27.9, (620) 28.0, (640) 27.9, (660) 27.8, (680) 27.7, (700) 27.4

Cell Data: *Space Group:* $P\bar{4}3m$ (by analogy to colusite). $a = 10.568(3)$ $Z = 1$

X-ray Powder Pattern: Urup, Russia.

3.05 (10), 1.870 (5), 1.017 (5), 2.64 (4), 1.595 (3), 1.320 (3), 1.212 (3)

Chemistry:	(1)	(2)	(3)		(1)	(2)	(3)
Cu	49.69	49.22	48.04	Mo	0.67	1.18	0.00
Zn	0.91	0.15	1.28	W	0.03	0.06	0.00
Fe	0.47	1.56	1.54	As	5.09	5.90	3.38
Ag	0.13	0.00	0.09	Sb	0.08	0.12	0.40
V	3.32	3.19	3.17	Bi	0.15	0.00	0.00
Ge	8.62	6.55	9.13	S	32.10	31.97	31.05
Ga	0.00	0.35	0.17	Se	0.00	0.00	1.08
Sn	0.14	0.06	1.33	Total	101.40	100.31	100.66

(1) Urup, Russia; by electron microprobe, corresponds to $(\text{Cu}_{24.96}\text{Zn}_{0.44}\text{Fe}_{0.27}\text{Ag}_{0.04})_{\Sigma=25.71}\text{V}_{2.08}(\text{Ge}_{3.79}\text{As}_{2.17}\text{Mo}_{0.22}\text{Sn}_{0.04}\text{Sb}_{0.02}\text{Bi}_{0.02})_{\Sigma=6.26}\text{S}_{31.95}$. (2) Tsumeb, Namibia; by electron microprobe, corresponds to $(\text{Cu}_{24.92}\text{Fe}_{0.90}\text{Zn}_{0.07})_{\Sigma=25.88}\text{V}_{2.01}(\text{Ge}_{2.90}\text{As}_{2.53}\text{Mo}_{0.40}\text{Ga}_{0.16}\text{Sb}_{0.03}\text{Sn}_{0.02})_{\Sigma=6.04}\text{S}_{32.06}$. (3) Chelopech deposit, Bulgaria; by electron microprobe, corresponds to $(\text{Cu}_{24.50}\text{Fe}_{0.89}\text{Zn}_{0.64}\text{Ag}_{0.03})_{\Sigma=26.06}\text{V}_{2.02}(\text{Ge}_{4.08}\text{As}_{1.46}\text{Sn}_{0.36}\text{Sb}_{0.11}\text{Ga}_{0.08})_{\Sigma=6.09}(\text{S}_{31.39}\text{Se}_{0.44})_{\Sigma=31.83}$.

Mineral Group: Colusite group.

Occurrence: In germanium-rich polymetallic hydrothermal deposits.

Association: Renierite, germanite, gallite, mawsonite, bornite, enargite, tennantite, chalcopyrite, chalcocite, galena, pyrite.

Distribution: From Urup, Karachaevo-Cherkessk district, Northern Caucasus Mountains, Russia [TL]. In the Maykain gold deposit, Pavlodar district, northeastern Kazakhstan. From the Chelopech deposit, Sofia, Bulgaria. At Tsumeb, Namibia.

Name: For its germanium content and relation to colusite.

Type Material: Mining Institute, St. Petersburg, 2050/1–2; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia.

References: (1) Spiridonov, E.M., V.M. Kachalovskaya, V.V. Kovachev, and L.Y. Krapiva (1992) Germanocolusite $\text{Cu}_{26}\text{V}_2(\text{Ge}, \text{As})_6\text{S}_{32}$ — a new mineral. *Vestnik Moskovskogo Universiteta*, Ser. 4, *Geologiya*, 1992(6), 50–54 (in Russian). (2) (1994) *Amer. Mineral.*, 79, 387 (abs. ref. 1).