

Crystal Data: Cubic (pseudocell). *Point Group:* n.d. Massive.

Physical Properties: Hardness = n.d. VHN = 329–419, 381 average (20 g load).
D(meas.) = 12.7 D(calc.) = [14.44]

Optical Properties: Opaque. *Color:* Pale brown, rose-brown. *Streak:* Gold-brown to brown.
Luster: Semimetallic.

R: n.d.

Cell Data: *Space Group:* n.d. $a = 4.095$ $Z = [0.5]$

X-ray Powder Pattern: Aginsk deposit, Russia.

2.37 (100), 1.232 (80), 2.05 (70), 1.448 (60), 3.06 (40), 1.184 (20), 3.00 (10)

Chemistry:	(1)	(2)
Au	48.4	50.06
Ag	1.54	
Cu	9.35	10.77
Fe	0.19	
Pb	19.2	17.55
Te	21.6	21.62
Se	0.34	
Total	100.6	100.00

(1) Aginsk deposit, Russia; by electron microprobe, average of eight analyses on two samples, leading to (Au_{2.90}Ag_{0.17})_{Σ=3.07}(Cu_{1.74}Fe_{0.04})_{Σ=1.78}Pb_{1.10}(Te_{2.00}Se_{0.05})_{Σ=2.05}. (2) Au₃Cu₂PbTe₂.

Occurrence: In the zone of weathering of tellurium deposits.

Association: Gold, bogdanovite, bezsmertnovite, belyakinite, other tellurides of Au, Cu, Pb, Fe (Aginsk deposit, Russia); sylvanite, krennerite (Southern Dzhelambet deposit, Kazakhstan).

Distribution: From the Aginsk gold telluride deposit, Kamchatka, Far Eastern Region, Russia [TL]. At the Southern Dzhelambet deposit, central Kazakhstan [TL].

Name: For Soviet geologist Yuri Aleksandrovich Bilibin (1901–1952), Karpkinskii All-Union Research Institute, St. Petersburg, Russia, specialist in gold deposits.

Type Material: Mining Institute, St. Petersburg, 101/1–2; Institute of Mineralogy and Geochemistry of Rare Elements, Moscow; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 78385, vis207.

References: (1) Spiridonov, E.M., M.S. Bezsmertnaya, T.N. Chvileva, and V.V. Bezsmertnyi (1978) Bilibinskite, Au₃Cu₂PbTe₂, a new mineral of gold-telluride deposits. *Zap. Vses. Mineral. Obshch.*, 107, 310–315 (in Russian). (2) (1979) *Amer. Mineral.*, 64, 652 (abs. ref. 1). (3) Spiridonov, E.M., M.S. Bezsmertnaya, T.N. Chvileva, and V.V. Bezsmertnyi (1978) Bilibinskite Au₃Cu₂PbTe₂ — a new mineral from gold-telluride deposits. *Comments. Zap. Vses. Mineral. Obshch.*, 107, 501 (in Russian). (4) (1978) *Chem. Abs.*, 89, 200512 (abs. ref. 3). (5) Bochek, L.I., Y.A. Malinovskiy, S.M. Sandomirskaya, and N.G. Chuvikina (1982) Bilibinskite and bezsmertnovite, new hybrid minerals of the intermetallic compound-oxide type rather than intermetallic compounds of gold. *Doklady Acad. Nauk SSSR*, 266, 1255–1259 (in Russian). (6) Spiridonov, E.M. (1991) Composition and structure of the bilibinskite-bogdanovite mineral group. *Novye Dannye Mineral.*, 37, 138–145 (in Russian). (7) (1995) *Amer. Mineral.*, 80, 848–849 (abs. ref. 6).