

Junoite**Pb₃Cu₂Bi₈(S, Se)₁₆**

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Crystal Data: Monoclinic. *Point Group:* 2/*m*. As tabular crystals, to 150 μm, and irregular grains.

Physical Properties: *Cleavage:* One good. Hardness = n.d. VHN = 114–213
D(meas.) = n.d. D(calc.) = 6.77

Optical Properties: Opaque. *Color:* In polished section, creamy white. *Pleochroism:* Strong, from cream to gray with green and mauve tints. *Anisotropism:* Strong.

R₁–R₂: (400) 34.7–42.8, (420) 34.8–42.7, (440) 35.0–42.5, (460) 35.0–42.5, (480) 35.0–42.5, (500) 34.8–42.4, (520) 34.7–42.7, (540) 34.6–42.2, (560) 34.6–42.3, (580) 34.6–42.5, (600) 34.6–42.7, (620) 34.8–42.8, (640) 34.9–42.6, (660) 35.0–42.4, (680) 35.0–42.1, (700) 35.0–41.9

Cell Data: *Space Group:* C2/*m*. *a* = 26.66(1) *b* = 4.06(1) *c* = 17.03(1) β = 127.20(2)°
Z = 2

X-ray Powder Pattern: Juno mine, Australia.

3.55 (100), 3.90 (80), 2.919 (70), 3.23 (50), 2.970 (50), 3.39 (40), 2.213 (40)

Chemistry:

	(1)	(2)
Pb	19.3	18.8
Cu	4.1	3.9
Ag	0.1	0.4
Bi	54.7	52.3
Se	7.6	14.7
S	13.5	10.1
Total	102.1	100.2

(1) Juno mine, Australia; by electron microprobe, corresponding to Pb_{2.88}Cu_{1.99}Ag_{0.03}Bi_{8.09}(Se_{2.98}S_{13.02})_{Σ=16.00}. (2) Kidd Creek mine, Canada; by electron microprobe, corresponding to Pb_{2.89}Cu_{1.86}Ag_{0.12}Bi_{7.99}(Se_{5.94}S_{10.06})_{Σ=16.00}.

Occurrence: Of hydrothermal origin.

Association: Gold, selenian heyrovskýite, krupkaite, proudite, chalcopryrite, magnetite (Juno mine, Australia); chalcopryrite, sphalerite, cobaltite, k sterite, mawsonite (Kidd Creek, Canada); pekoite, tetradymite, aikinite, gladite, cassiterite (Kochbulak deposit, Uzbekistan).

Distribution: From the Juno mine, Tennant Creek, Northern Territory, Australia [TL]. At the Kidd Creek mine, near Timmins, Ontario, Canada. From the Linka mine, Spencer Hot Springs district, Lander Co., Nevada, USA. In the Kochbulak gold deposit, Chatkal-Kuramin Mountains, eastern Uzbekistan. At the Baoshan mine, Hunan Province, and the Funiushan copper skarn deposit, near Nanjing, Jiangsu Province, China. From the Felbertal tungsten mine, Salzburg, Austria.

Name: For the Juno mine, Australia, where it was first found.

Type Material: Geology Department, University of New England, Armidale, Australia, R27790.

References: (1) Mumme, W.G. (1975) Junoite, Cu₂Pb₃Bi₈(S, Se)₁₆, a new sulfosalt from Tennant Creek, Australia: its crystal structure and relationship with other bismuth sulfosalts. *Amer. Mineral.*, 60, 548–558. (2) Large, R.R. and W.G. Mumme (1975) Junoite, “wittite” and related seleniferous bismuth sulfosalts from Juno mine, Northern Territory, Australia. *Econ. Geol.*, 70, 369–383. (3) (1975) *Amer. Mineral.*, 60, 737 (abs. ref. 2). (4) Pringle, G.J. and R.I. Thorpe (1980) Bohdanowiczite, junoite and laitakarite from the Kidd Creek mine, Timmins, Ontario. *Can. Mineral.*, 18, 353–360. (5) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 274.

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