Shadlunite $(Pb, Cd)(Fe, Cu)_8S_8$

Crystal Data: Cubic. *Point Group:* $4/m\ \overline{3}\ 2/m$. Massive, as irregular grains, to 0.4 mm; also in veinlets, mainly in cubanite. *Twinning:* Polysynthetic, seen in polished section.

Physical Properties: Hardness = n.d. VHN = 210 (20 g load). D(meas.) = n.d. D(calc.) = 4.72

Optical Properties: Opaque. *Color:* In polished section, grayish yellow. *Luster:* Metallic. *Optical Class:* Isotropic. *Pleochroism:* Weak. *Anisotropism:* Weak.
R: (400) — , (420) — , (440) 18.0, (460) 19.5, (480) 20.8, (500) 22.0, (520) 23.4, (540) 24.5, (560) 25.8, (580) 26.9, (600) 27.7, (620) 28.7, (640) 29.3, (660) 30.2, (680) 30.8, (700) 31.2

Cell Data: *Space Group: Fm3m.* a = 10.91 Z = 4

X-ray Powder Pattern: Majak mine, Russia.
3.29 (10), 1.925 (9), 3.84 (4), 2.11 (4), 5.42 (3), 3.16 (2), 1.666 (2)

Chemistry:

	(1)
Cu	27.5
Fe	24.1
Pb	16.6
Cd	3.9
S	27.4
Total	99.5

(1) Majak mine, Russia; by electron microprobe, corresponding to $(Pb_{0.75}Cd_{0.32})_{\Sigma=1.07}(Fe_{4.04}Cu_{4.05})_{\Sigma=8.09}S_{8.00}$.

Mineral Group: Pentlandite group.

Occurrence: As tiny grains and veinlets cutting Cu–Ni sulfide ores.

Association: Manganese-shadlunite, cubanite, talnakhite.

Distribution: In Russia, from the Majak [TL] and Oktyabr mines, Talnakh area, Noril'sk region, western Siberia, and at the Ust'-Khann'ya intrusive, lower Khann'ya River, Vilyui River basin, eastern Siberia. In the USA, in the Minnamax Cu–Ni sulfide deposit, Duluth Gabbro complex, near Hibbing, St. Louis Co., Minnesota, and from the Cove mine, McCoy district, Lander Co. Nevada.

Name: In honor of Soviet mineralogist Tat'yana Nikolaevna Shadlun (1912–1996), researcher on ore minerals, Institute of Geology of Ore Deposits, Petrology, Mineralogy, and Geochemistry, Moscow, Russia.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 75510.

References: (1) Evstigneeva, T.L., A.D. Genkin, N.V. Troneva, A.A. Filimonova, and A.I. Tsepin (1973) Shadlunite, a new sulfide of copper, iron, lead, manganese and cadmium from copper–nickel ores. Zap. Vses. Mineral. Obshch., 102, 63–74 (in Russian). (2) (1973) Amer. Mineral., 58, 1114 (abs. ref. 1).