

Crystal Data: Tetragonal. *Point Group:* 4/m 2/m 2/m. As anhedral grains to 20 μ m intergrown with bortnikovite as rims around tulameenite, Pt-Pd-Fe-Cu alloys, and Pt-Pd-Fe-Cu “oxides”.

Physical Properties: *Cleavage:* n.d. *Tenacity:* n.d. *Fracture:* n.d. *Hardness:* = n.d.
D(meas.) = n.d. D(calc.) = 13.04

Optical Properties: Opaque. *Color:* White in reflected light. *Streak:* n.d. *Luster:* Metallic.
Optical Class: Non-anisotropic. Non-birefractant.
R: (470) 53.9, (546) 57.1, (589) 59.4, (650) 61.7

Cell Data: *Space Group:* I4/mmm. *a* = 4.11 *c* = 15.3 *Z* = 4

X-ray Powder Pattern: Calculated pattern.

2.313 (100), 2.053 (34), 1.230 (18), 1.400 (15), 1.913 (13), 1.452 (9), 1.168 (7)

Chemistry:	(1)	(2)
Pd	59.99	60.97
Cu	1.19	
Fe	0.35	
Ag	1.1	
Tl	35.64	39.03
Se	0.34	
S	0.09	
Total	99.67	100.00

(1) Monchetundra layered intrusion, Kola Peninsula, Russia; average electron microprobe analysis; corresponds to (Pd_{2.894}Cu_{0.096}Fe_{0.032}Ag_{0.053}) Σ =3.075(Tl_{0.895}Se_{0.023}S_{0.008}) Σ =0.926. (2) Pd₃Tl.

Occurrence: In heavy-mineral concentrate from orthopyroxenite cumulates, disseminated Ni-Cu-Fe sulfides, and near-surface oxidized ore of an orthopyroxenite body. Likely formed under post-magmatic or high-temperature hydrothermal conditions (below 600 °C) in a layered intrusion.

Association: In complex intergrowths of Pt-Fe-alloys, tulameenite, and Pd-bearing tulameenite, partly or totally replaced by indeterminate fine-grained secondary Pt-Pd-Fe-Cu alloys and Pt-Pd-Fe-Cu “oxides” enclosed in secondary hydroxyl-bearing silicates and goethite. Intergrown with bortnikovite in symplectite grains of Pt-Pd-Fe-Cu alloy and Pt-Pd-Fe-Cu “oxide”. With Pd-bearing tulameenite on the rim-mantled intergrowth of unconstrained fine-grained secondary Pt-Pd-Fe-Cu alloys and Pt-Pd-Fe-Cu “oxides” and as separate grains with rims of Pt-Pd-Fe-Cu “oxide”.

Distribution: From the Monchetundra layered intrusion, borehole 1818, Kola Peninsula, Russia. Material of similar composition reported in the Merensky Reef and in the Platreef, Bushveld Complex, South Africa; at the Wetlegs deposit, Duluth Complex, Minnesota, USA, and in the South PGE Reef, Fedorova-Pana intrusion, central Kola Peninsula, Russia.

Name: For its essential chemical components, *palladium* and *thallium*.

Type Material: Department of Earth Sciences, Natural History Museum, London, England (BM2019,1).

References: (1) Grokhovskaya, T.L., A. Vymazalová, F. Laufek, C.J. Stanley, and S.Y. Borisovskiy (2021) Palladothallite, Pd₃Tl, a new mineral from the Monchetundra layered intrusion, Kola Peninsula, Russia. *Can. Mineral.*, 59, 1821-1832. (2) (2022) *Amer. Mineral.*, 107, 779 (abs. ref. 1).