

Crystal Data: Hexagonal. *Point Group:* 3. As angular to rounded, elongated grains to 48 μm .

Physical Properties: *Cleavage:* None. *Tenacity:* Brittle. *Fracture:* Splintery. Hardness = n.d. D(meas.) = n.d. D(calc.) = 10.933

Optical Properties: Opaque. *Color:* White in reflected light. *Streak:* n.d. *Luster:* Metallic. *Optical Class:* Very weak to indiscernible anisotropism. No pleochroism or birefractance. R: (470) 40.8, (546) 44.1, (589) 45.3, (650) 47.4

Cell Data: *Space Group:* P3. $a = 7.391(1)$ $c = 10.477(2)$ $Z = 1$

X-Ray Diffraction Pattern: Marathon Cu-PGE deposit, Coldwell complex, Ontario, Canada. 2.148 (100), 2.374 (29), 1.2395 (14), 1.3605 (13), 2.748 (10), 2.436 (10), 1.759 (10)

Chemistry:	(1)	(2)
Si	0.11	
S	0.39	
Cu	2.32	
Ge	18.46	19.73
Pd	77.83	80.27
Pt	1.10	
Total	100.22	100.00

(1) Marathon Cu-PGE deposit, Coldwell complex, Ontario, Canada; average EDS analysis supplemented by Raman spectroscopy; corresponding to $(\text{Pd}_{23.82}\text{Cu}_{1.19}\text{Pt}_{0.18})_{\Sigma=25.19}$ $(\text{Ge}_{8.28}\text{S}_{0.40}\text{Si}_{0.13})_{\Sigma=8.81}$. (2) Pd₂₅Ge₉.

Occurrence: In heavy mineral separates from olivine gabbro.

Association: Vysotskite, Au-Ag alloy, isoferroplatinum, Ge-bearing keithconnite, majakite, coldwellite, ferhodsites-series minerals (cuprorhodsites-ferhodsites), kotulskite, mertieite-II, chalcopyrite, bornite, millerite, Rh-bearing pentlandite, oberthürite, torryweiserite, a clinoamphibole, an Fe-rich chlorite-group mineral.

Distribution From the W horizon, Marathon Cu-PGE deposit, Coldwell complex, Ontario, Canada.

Name: For *Marathon*, Ontario, Canada, after which the Marathon Cu-PGE deposit (Coldwell complex) is named.

Type Material: Canadian Museum of Nature, Gatineau, Québec (87180).

References: (1) McDonald, A.M., D.E. Ames, I.M. Kjarsgaard, L.J. Cabri, W. Zhe, K.C. Ross, and D.J. Good (2021) Marathonite, Pd₂₅Ge₉, and palladogermanide, Pd₂Ge, two new platinum-group minerals from the Marathon deposit, Coldwell Complex, Ontario, Canada: Descriptions, crystal-chemical considerations, and genetic implications. *Can. Mineral.*, 59, 1865-1886.