Tantalcarbide TaC

Crystal Data: Cubic. *Point Group*: 4/*m* $\bar{3}$ 2/*m*. As intergrown cube-octahedral and skeletal crystals, to 0.2 mm.

Physical Properties: *Cleavage*: n.d. *Fracture*: n.d. *Tenacity*: n.d. Hardness = 6-7
D(meas.) = n.d. D(calc.) = 14.5

Optical Properties: Opaque. *Color*: Grayish yellow, dark brownish gray (synthetic TaC).
Streak: n.d. *Luster*: Metallic.
Optical Class: Isotropic (presumably).

Cell Data: Space Group: *Fm*$\bar{3}$ *m*. *a* = 4.453 Z = 4

X-ray Powder Pattern: Nizhnii Tagil, Middle Urals, Russia.
2.56 (100), 2.22 (90), 1.572 (41), 1.342 (35), 0.857 (13), 0.995 (11), 1.285 (10)

Chemistry:

	(1)
Ta	93.78
C	6.22
Total	100.00

(1) TaC.

Occurrence: In placer concentrates from a "gold-washing operation". Suspected to be a synthetic compound mixed with natural placer concentrate. No in situ localities known.

Association: Native gold, *α*-Fe, nickel, Fe-Ta-Nb, Fe-Sn alloys, and apatite, Ti-magnetite, dolomite, zircon, wüstite, serpentine, graphite - as inclusions.

Distribution: From Nizhnii Tagil, Middle Urals, Russia.

Name: For the essential chemical components, *tantal*um and *carbide*.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (21298).

References: (1) Pekov, I.V. (1998) Minerals first discovered on the territory of the Former Soviet Union. 369 p. (esp. 203-205, 251). (2) Frondel, C. (1962) Non-existence of native tantalum. Amer. Mineral., 47, 786-787. (3) Novgorodova, M.I., M.E. Generalov, and N.V. Trubkin. (1997), The new TaC-NbC isomorphic row and niobocarbide - a new mineral from platinum placers of the Urals. Zap. Vses. Mineral. Obshch., 126(1), 76-95. (4) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy (7th edition), v. I, 126 [tantalum – shown to be tantalcarbide see ref 2].