



Durable Tungsten Carbide for Extreme Service Applications

Removing Technological Barriers

Since 1910, CoorsTek has created technology-enabling materials to solve every day technical problems. We have been manufacturing tungsten carbide materials for over 25 years, continuously enhancing and expanding our line of materials to meet the growing needs of industry.

Material properties of tungsten carbide vary depending on the binders (substances that “bind” the tungsten carbide particles). CoorsTek offers several different binder compositions to optimize hardness, impact resistance, chemical/corrosion resistance, and other physical properties.

Tungsten carbide provides exceptional performance in many severe-service applications:

- Mechanical seal faces
- Down hole drilling tool components for MWD, RST, and other Oil and Gas applications
- Plungers
- Liners
- Nozzles
- Valve components
- Pump components
- Wear components in construction and agricultural equipment



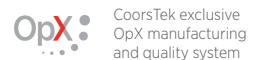
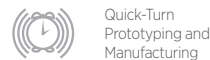
CoorsTek offers many grades of tungsten carbide, and our engineers will work with you on finding the most suitable material for your application. The chart below provides data on some of our more common tungsten carbide materials.

With manufacturing facilities in over 50 locations across four continents, CoorsTek is the international partner of choice for companies requiring the unique properties of engineered technical ceramics and advanced materials. Contact one of our engineers today to discuss your design challenge.

Tungsten Carbide Material Properties

Properties		Units	Test	ACI-Ni6	ACI-Ni10	ACI-Co6	ACI-Co10
Density		gm/cm ³	ASTM-C20	14.9	14.4	14.9	14.5
Hardness		HRA	ASTM-E18	91.0	90.0	92.0	92.0
Grain Size	Average	-	-	SUBMICRON	SUBMICRON	SUBMICRON	SUBMICRON
Color		-	-	GRAY	GRAY	GRAY	GRAY
Transverse Rupture Strength		MPa (psi x 10 ³)	ASTM-B406	2386 (346)	2517 (365)	2758 (400)	3585 (520)
Compressive Strength		MPa (psi x 10 ³)	ASTM-C773	4344 (630)	3413 (495)	4585 (665)	4171 (605)
Elastic Modulus 20 °C		Gpa (psi x 10 ⁶)	ASTM-C848	614 (89)	572 (83)	627 (91)	593 (86)
Poisson's Ratio	20° C	-	ASTM-C848	0.25	0.23	0.21	0.22
Thermal Conductivity	20 °C	W/m °K	ASTM-C408	84	75	100	85

Chart intended to illustrate typical properties. Property values vary with method of manufacture, size, and shape of part. Data contained herein is not to be construed as absolute and does not constitute a representation or warranty for which CoorsTek assumes legal responsibility. CoorsTek, OpX, and Amazing Solutions are registered trademarks of CoorsTek, Inc.



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