

**COORSTEK**  
*Amazing Solutions.®*

**TUNGSTEN CARBIDE**



semiconductor



thermal



mechanical



wear



fluid



electronic

## DURABLE TUNGSTEN CARBIDE FOR EXTREME SERVICE APPLICATIONS

### Removing Technological Barriers

CoorsTek® Material Development Teams create technology-enabling materials to solve everyday technical problems. Since we began manufacturing tungsten carbide materials in the early 1990s, we have enhanced and expanded our line of materials substantially.

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

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

- Seal rings
- Plungers
- Liners
- Nozzles
- Valve components
- Pump components
- Wear components in the oil & gas, construction, and agriculture equipment industries



Property	Units	ACI-Ni6	ACI-Ni10	ACI-Co6	ACI-Co10
Density	g/cm <sup>3</sup>	14.95	14.40	14.90	14.50
Hardness	Rockwell A (HV <sub>30</sub> )	92.0 (1600)	90.0 (1360)	92.0 (1600)	92.0 (1600)
Grain Size	MICRON	1 - 3	3 - 5	1 - 3	< 1 - 3
Transverse Rupture Strength	MPa (psi X 10 <sup>3</sup> )	1720 (250)	2930 (425)	1930 (280)	2340 (340)
Elastic Modulus	GPa (psi X 10 <sup>3</sup> )	607 (88)	572 (83)	627 (91)	593 (86)
Poisson's Ratio	—	0.25	0.23	0.21	0.22
Thermal Conductivity	W/m K	82.0	75.0	100.0	85.0
CTE, 25 - 400 °C	1X 10 <sup>-6</sup> /°C	5.2	5.4	4.7	5.5
CTE, 25 - 800 °C	1X 10 <sup>-6</sup> /°C	5.8	5.6	5.3	5.8
Specific Heat Capacity	J/kg*K	210.0	215.0	209.3	213.5

Other material grades available upon request. Hot Iso-static Pressing available.

**Note:** The chart is intended to illustrate typical properties. Engineering data is representative. Property values vary somewhat with method of manufacture, size, and shape of part. Any suggested applications are not made as a representation or warranty that the material will ultimately be suitable for such applications. The customer is ultimately responsible for all design and material suitability decisions. Data contained herein is not to be construed as absolute and does not constitute a representation or warranty for which CoorsTek assumes legal responsibility. ANY WARRANTY OR REPRESENTATION FOR WHICH COORSTEK IS RESPONSIBLE SHALL BE SUBJECT TO A SEPARATELY NEGOTIATED AGREEMENT.

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