



CeraShear™ Cutting Instruments

Knives and Blades for Slitting and Cutting Applications

CeraShear ceramic cutting components are wear-resistant, high-performance, and long-life alternatives for traditional stainless steel and tungsten carbide components.

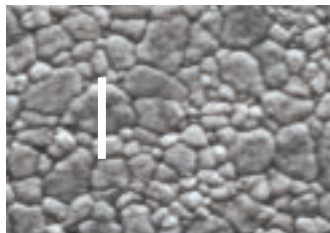
All CeraShear materials offer superior abrasion, erosion, and corrosion resistance when compared to steel blade materials.

Features

- Fine grain (< 1 micron average)
- Abrasion resistant
- Corrosion resistant
- Low coefficient of friction
- Chemically inert
- Tough

Benefits

- Edge sharpness
- Edge retention
- Longer blade life
- Anti-galling



Bar = 2 Microns (5000x)

CeraShear Tetragonal Zirconia

- Mechanical strength near typical tungsten carbide values and much higher than those of sintered alumina or silicon nitride
- The absence of a metal phase greatly improves corrosion wear rate over the various grades of tungsten carbide
- Fine-grain material (< 1 micron average) is 100% tetragonal zirconia — substantially higher density than traditional ceramics
- Excellent resistance to abrasive corrosion
- Well suited for circular knives and blades especially where complex, dual-phase wear conditions exist

CoorsTek is the international partner of choice for companies requiring the unique properties of engineered technical ceramics and advanced materials.

PROPERTY	UNITS	SINTERED Y ₂ O ₃ YTRIA TETRAGONAL ZIRCONIA POLYCRYSTAL	DIRECT SINTERED Y ₂ O ₃ PARTIALLY STABILIZED ZIRCONIA		HIPPED Y ₂ O ₃ YTRIA TETRAGONAL ZIRCONIA POLYCRYSTAL	
		YTZP	Technox 2000	Technox 3000	YTZP	YZ-110 HS
Density	g/cm ³	6.02	6.05	6.07	6.07	6.07
Color	-	WHITE	WHITE	OLIVE	GRAY	OLIVE-BROWN
Flexural Strength (MOR), 20° C	MPa (ksi)	1240 (180)	1000 (145)	1400 (203)	1720 (250)	1500 (218)
Elastic Modulus, 20° C	GPa (msi)	210 (30)	210 (30))	210 (30)	210 (30)	210 (30)
Compressive Strength, 20° C	MPa (ksi)	2500 (363)	2000 (290)	2000 (290)	2500 (363)	2300 (334)
Hardness – Rockwell (45N)		81	81	81	81	81
Hardness – Vickers (HV 1.0)	kg/mm ²	1300	1300	1350	1300	1300
Fracture Toughness, K(I c)	MPa m ^{1/2}	13.0	10.0	10.0	13.0	8.5
Thermal Conductivity	W/mK	2.2	2.2	2.2	2.2	2.2
Coefficient of Thermal Expansion, 25-1000° C	1 X 10 ⁻⁶ /°C	10.3	10.3	10.3	10.3	10.3
Volume Resistivity, 25° C	ohm-cm	>10 ¹⁴	>10 ¹⁴	>10 ¹⁴	>10 ¹⁴	>10 ¹⁴

Charts 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, Amazing Solutions, and Technox are registered trademarks of CoorsTek, Inc. CeraShear is a trademark of CoorsTek, Inc.



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