

**COORSTEK**  
*Amazing Solutions.*



**ZIRCONIA MATERIALS**

## ADVANCED ZIRCONIA MATERIALS FOR SEVERE-SERVICE ENVIRONMENTS

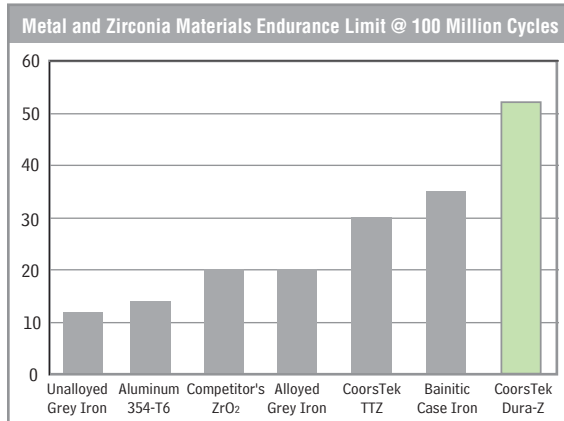
### NEW! Dura-Z™ Zirconia Material

State-of-the-art processes, precise material controls, and our dedication to operational excellence built our latest zirconia offering for severe service environments – Dura-Z™ Partially-Stabilized Zirconia. This material offers a significant performance gain over competitive materials and our own standard TTZ:

- 40% stronger than TTZ
- 60% greater fracture toughness than TTZ
- Equivalence to TTZ in all other measured properties
- Best-in-industry fatigue resistance behavior



Dura-Z™ Zirconia represents a huge performance gain over competitive materials, and offers the most fatigue-resistant standard zirconia in the marketplace



### New Metric for Advanced Ceramic Components

Utilizing test methods normally reserved for metal components, an independent laboratory has tested and verified that CoorsTek Dura-Z™ material exhibits best-in-class performance for Endurance Fatigue Limit. In this test, the sample is cyclically loaded to determine the maximum stress allowable for survivability at 100,000,000 cycles. Dura-Z™ Zirconia results are significantly greater than the closest competitive material.

### Wide Variety of Manufacturing Options

Dura-Z™ material properties can be combined with our state-of-the-art manufacturing processes to result in a cost effective solution for your most stringent engineering problems. CoorsTek maintains efficient, large-scale manufacturing facilities supporting everything from quick-turn prototype development to high-volume production (> 1x10<sup>8</sup> pieces). These processes include:

- Dry Pressing
- Isostatic Pressing
- Extrusion
- Injection Molding

### Advanced Finishing Services

In addition to our wealth of processing methodologies, CoorsTek provides several advanced finishing services including:

- Lapping and polishing
- Precision grinding
- Threading
- Laser marking

### Materials and Manufacturing Experts

CoorsTek is uniquely capable of providing advanced materials and manufacturing technologies. Let the CoorsTek team help you select the best materials and design for manufacturability. For access to our engineering expertise and design assistance, please call CoorsTek at 1-800-821-6110 in North America or call +1-303-271-7000 outside of the USA.

Property	Units	Zirconia Materials	
		TTZ	Dura-Z™
Density	g/cc	5.72	5.72
Color	–	Ivory	Ivory
Flexural Strength (MOR)	Mpa (psi x 10 <sup>3</sup> )	620 (90)	860 (125)
Compressive Strength	Mpa (psi x 10 <sup>3</sup> )	1750 (254)	1750 (254)
Hardness	Rockwell R45N	77.5	77.5
Indentation Fracture Toughness	MPa m	6.2	9.9
Endurance Limit	Kpsi @ 10 <sup>8</sup> cycles	30	52
Thermal Conductivity (20 °C)	W/mK	2.2	2.2
Coefficient of Thermal Expansion (25-1000 °C)	1x10 <sup>-6</sup> / °C	10.1	10.2
Thermal Shock Resistance	°C	350	350
Maximum Use Temperature	°C	500	500
Impingement	–	0.63	0.63
Rubbing	–	0.57	0.57

The chart above is intended to illustrate typical properties only. Engineering data is representative. Property values vary somewhat with method of manufacture, size, and shape of part. This data is not to be construed as absolute and does not constitute a warranty for which we assume legal responsibility.



Quick-Turn  
Prototyping and  
Manufacturing