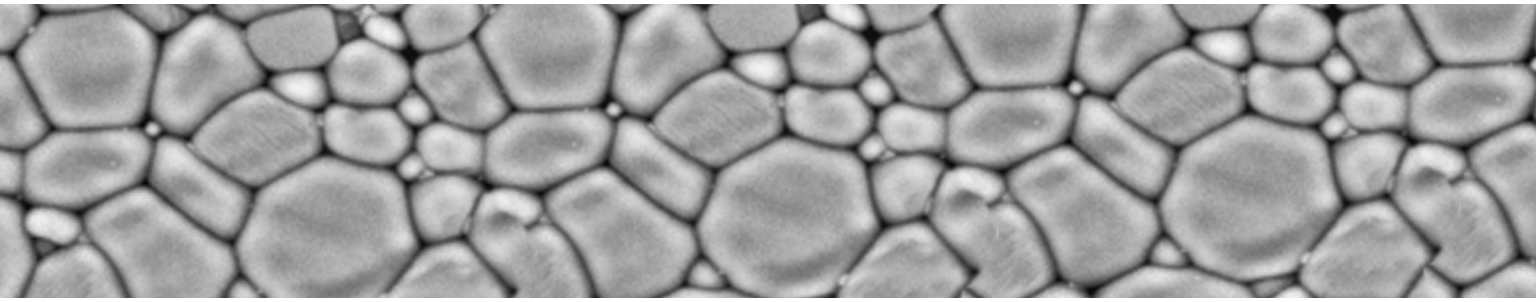
Superior Technical Ceramics

PROVIDING ADVANCED CERAMIC SOLUTIONS WORLDWIDE SINCE 1898

CERIA STABILIZED ZIRCONIA (CSZ)

Consider CSZ a top candidate when choosing a material for high strength and toughness in moist, challenging environments. With high flexural strength and very high compressive strength this material is ideally suited as a structural component in sensors, instrumentation, probes, pumps and fluid control systems.



PRIME FEATURES

CSZ offers a more robust Stabilized Zirconia material when low temperature degradation properties are in question, displaying a reduced vulnerability of molecular water attack compared to YTZP or MSZ. The ability of this material to withstand high temperature, wet operating conditions elevates its performance above other ceramic materials.

TYPICAL APPLICATIONS

- Instrumentation
- Sensors
- Seals
- Bearings
- Desalination plant components
- Steam system instrumentation
- Boiler probes
- Underwater sensors
- Medical instrumentation
- Pump pistons
- Pump liners
- Valve seats
- Emission sensors
- Marine system components
- Chemical pumps
- Fluid metering pumps
- Fluid control valves
- Chemical analysis fluid control systems

Superior Technical Ceramics

PROVIDING ADVANCED CERAMIC SOLUTIONS WORLDWIDE SINCE 1898

CERIA STABILIZED ZIRCONIA SPECIFICATIONS

	Property	ASTM Method	Units	CSZ (Ceria Stabilized)
General	Crystal Size (Average)	Thin Section	Microns	3
	Color	--	--	Yellow
	Gas Permeability	--	atms-cc/sec	gas tight $<10^{-10}$
	Water Absorption	C 20-97	%	0
Mechanical	Density	C 20-97	g/cc	6.20
	Hardness	Vickers 500 gm	GPa (kg/mm^2)	11.7 (1200)
	Hardness	--	R45N	78
	Fracture Toughness	Notched Beam	$MPam^{1/2}$	12
	Flexural Strength (MOR) (3 point) @ RT°	F417-87	MPa (psi x 10^3)	551 (80)
	Tensile Strength @ RT°	--	MPa (psi x 10^3)	337 (49)
	Compressive Strength @ RT°	--	MPa (psi x 10^3)	2000 (290)
	Elastic Modulus	C848	GPa (psi x 10^6)	200 (29)
	Poisson's Ratio	C848	--	0.25
Thermal	C.T.E. 25 - 100° C	C 372-96	x 10^{-6}/C	6.9
	C.T.E. 25 - 300° C	C 372-96	x 10^{-6}/C	8.1
	C.T.E. 25 - 600° C	C 372-96	x 10^{-6}/C	10.5
	Thermal Conductivity @ RT°	C 408	W/m K	3.5
	Max Use Temp (non-loading) (at high strength)	--	Farenheit (°F)	1000
		--	Celcius (°C)	537
Electrical	Dielectric Strength (.125" Thick)	D 149-97A	V/mil	250
	Dielectric Constant @ 1 MHz	D 150-98	--	30.0
	Dielectric Constant	D 2520-95	--	--
	@ Gigahertz			--
	Dielectric Loss @ 1 MHz	D 150-98	--	0.0010
	Dielectric Loss	D 2520-95	--	--
	@ Gigahertz			--
	Volume Resistivity, 25°C	D 257	ohms-cm	> 1 x 10^{13}
	Volume Resistivity, 300° C	D 1829	ohms-cm	1 x 10^{10}
	Volume Resistivity, 500° C	D 1829	ohms-cm	1 x 10^6
	Volume Resistivity, 700° C	D 1829	ohms-cm	5 x 10^3
	Volume Resistivity, 1000° C	D 1829	ohms-cm	--

Form Revised: 8/12/2014

CONTACT US

Superior Technical Ceramics | 600 Industrial Park Rd. | St. Albans, VT 05478 | www.ceramics.net
Telephone: (802) 527-7726 | Fax: (802) 527-1181 | Email: sales@ceramics.net