



## Zycron® L and H

Zycron compositions were developed to solve a wide range of material requirements. These include environments requiring strength and resistance to corrosion, impact, and high temperature. Some of the outstanding features include:

- Fracture resistance up to  $K_{1C}$  of 13.
- Greater corrosion and impact resistance than Alumina, or Tungsten Carbide.
- Higher thermal shock resistance than other oxide ceramics.
- Thermal expansion typical of metal alloys.
- Elastic modulus similar to steel.

- Low sliding coefficient of friction against metals.
- Higher hardness than chrome-plated steel at all temperatures.
- High strength up to temperatures of 1500°F (815°C).

Chemically inert, Zycron L and H easily withstand the harshest liquid and gaseous environments. In general, Zycron ceramics resist attack by organic solvents, molten metals, caustics, and acids.

### Crack Resistant and Chemically Inert

Zycron L and H are transformation toughened for added strength and crack resistance. When subjected to fracture stresses, a unique change in crystalline structure occurs, inhibiting crack growth. The stressed area expands to close any cracks, preventing failure.

### Ready to Assist You

Do you need more information, or want to discuss specific applications? Our application engineers are ready to assist you. They will help you select the best Zycron material and design your part utilizing Zircoa's computer-assisted techniques.

### Typical Properties

	Zycron L	Zycron H		Zycron L	Zycron H
Chemistry (wt %)	97 ZrO <sub>2</sub> 3 MgO	97 ZrO <sub>2</sub> 3 MgO	Young's Modulus of Elasticity at Room Temp.		
			10 <sup>6</sup> psi	36	32
Bulk Density (g/cm <sup>3</sup> )	5.7	5.5	GPa	248	221
Apparent Porosity (%)	0	0	Thermal Expansion ( $\Delta L/L/^\circ C$ ) 10 <sup>-6</sup>		
MOR at Room Temp.			Room Temp. to 600°C	9.8	2.4
1000 psi	90	60	Room Temp. to 1000°C	10.3	3.4
MPa	621	414	Room Temp. to 1300°C	10.8	6.4
Tensile Strength at Room Temp. (.6 MOR)			Electrical Resistivity		
1000 psi	60	36	ohm • cm at Room Temp.	10 <sup>8</sup>	10 <sup>8</sup>
MPa	414	248	ohm • cm at 1000°C	200	200
Fracture Toughness ( $K_{1C}$ ) MPa $\sqrt{m}$	13	7	Thermal Conductivity		
Weibull Modulus	12	14	W/(m•K) at 260°C	2	2
Hardness Rockwell A	85	83	Compressive Strength (1000 psi)	285	285
Rockwell C	68	63	Coefficient of Sliding Friction		
Poisson's Ratio	.30	.30	unlubricated at RT	.15	.15



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