

ZYZ-3, ZYZ-6

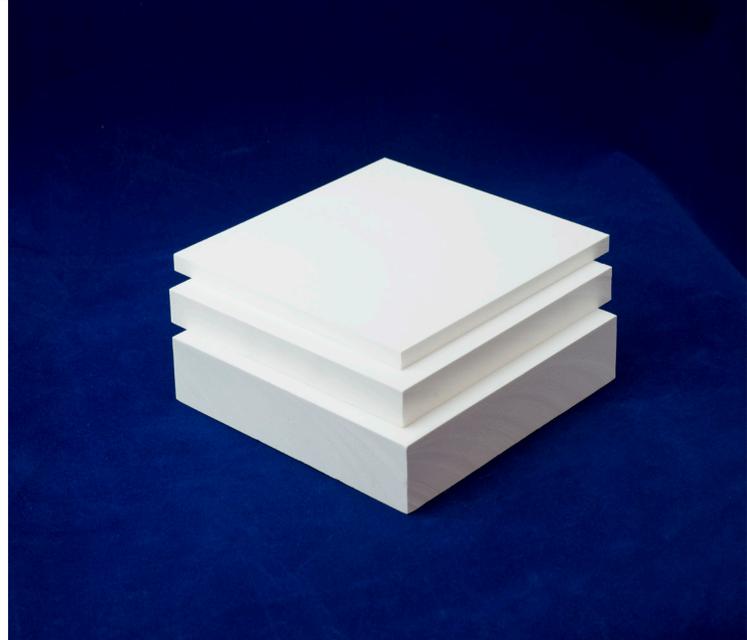
Silica Bonded Ytria Stabilized Zirconia Insulation

Zircar Zirconium Oxide Boards Type ZYZ are rigid, refractory structures composed of yttria stabilized zirconia (YSZ) fibers, bonded with silica. This composition provides ZYZ insulation with the low thermal conductivity of zirconia fibers combined with the strength and machinability of a silica bonded material. ZYZ is evenly bonded, allowing it to be machined to tight tolerances and intricate shapes. ZYZ has a lower coefficient of thermal expansion than our ZYFB materials.

ZYZ-3 and ZYZ-6 are fired at a high temperature to impart good dimensional stability up to 1650 °C. ZYZ is ideally suited for thermal insulation and protection applications under conditions of ultra-high temperatures and in a variety of severe environments. ZYZ has good hot strength up to 1400 °C and can be used as a self supporting setter for loads equal to twice its own weight up to this temperature.

ZYZ-3 has lower thermal conductivity at a density of 30 lbs/ft³.

ZYZ-6 has higher strength at a density of 60 lbs/ft³.



Applications

THERMAL INSULATION

ZYZ Boards are used as self-supporting, primary thermal insulation in laboratory and industrial furnaces. ZYZ produces no smoke or odor and undergoes no physically disruptive phase transitions when heated. ZYZ is complimentary to our ZYC cylinders and is often used as end caps or plugs.

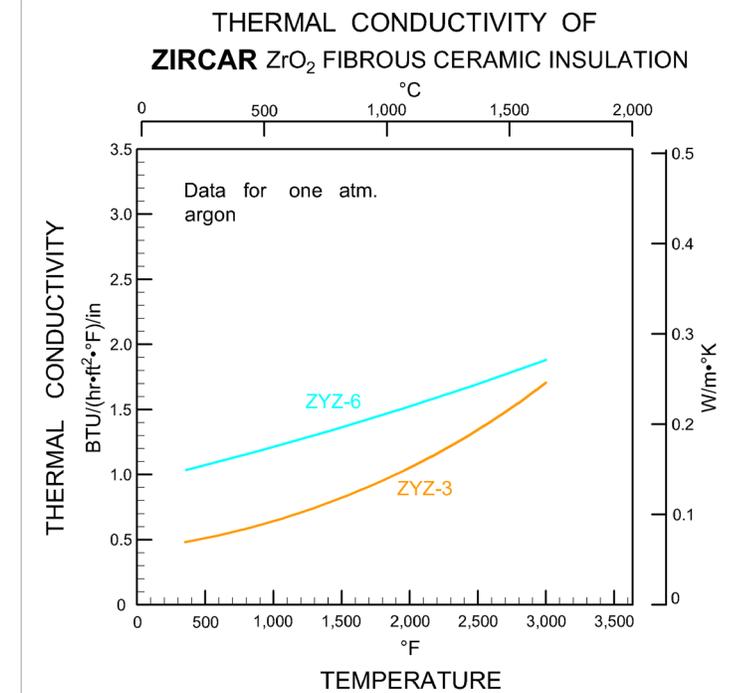
HEAT SHIELDING

The silica bonded board may be used as high temperature heat shielding. It can replace or reduce the number of conventional refractory metal shields needed in many vacuum furnace applications.

SETTER AND FIXTURE MATERIAL

ZYZ Boards are excellent setter and fixturing materials. ZYZ's machinability, dimensional stability and low heat capacity favor its use as a setter in both continuous and batch processes.

ZYZ is not suitable for use in reducing atmospheres because the silica binder is removed in service. For applications where silica is undesirable our zirconia bonded fiber materials ZYFB and/or FBD are recommended.



All zirconia has very low specific heat, half as much as alumina. **Zircar** zirconia provides the additional benefit of being highly porous and pure. The 6-10 micron diameter yttria stabilized zirconia fibers require no binders that would add contaminants and diminish purity and functionality. The serrated cross section of our fibers provides additional porosity making them very low thermal conductivity.

Properties (Nominal)	ZYZ-3	ZYZ-6
Bulk Density, lb/ft ³ (g/cm ³)	30 (0.48)	60 (0.96)
Porosity, %	91	85
Melting Point, °C (°F)	2200 (3992)	2200 (3992)
Continuous Maximum Use Temperature, °C (°F) ⁽¹⁾	1650 (3002)	1650 (3002)
Intermittent Maximum Use Temperature, °C (°F) ⁽¹⁾	1700 (3092)	1700 (3092)
Flexural Strength, MPa (psi) Normal to Fiber Plane	0.28 (40)	1.74 (252)
Compressive Strength, MPa (psi) @ 10% Compression Normal to Fiber Plane	0.39 (56)	0.92 (134)
Outgassing in Vacuum	Nil	Nil
Dilatometric Softening Temperature at 10 psi, °C (°F)	1250 (2282)	1275 (2372)
Thermal Expansion Coefficient RT- 1425 °C (2600 °F)	9x10 ⁻⁶ /°C (5x10 ⁻⁶ /°F)	9x10 ⁻⁶ /°C (5x10 ⁻⁶ /°F)
Linear Shrinkage, % (Perpendicular to Thickness)		
1 hour at 1650 °C (3002 °F)	1.7	1.6
24 hours at 1650 °C (1650 °F)	2.3	2.6
Chemical Composition (Nominal)		
Oxide	Wt%	
ZrO ₂ ⁽²⁾	85	
Y ₂ O ₃	10	
SiO ₂	5	

⁽¹⁾Maximum use temperature is dependent on variables such as the chemical environment and stresses; both thermal and mechanical.

⁽²⁾ 1-2% weight hafnia (HfO₂) occurs naturally with zirconia (ZrO₂) and does not affect performance.

Standard Product Sizes & Ordering

ZYZ is available in the standard sizes shown below.

Please contact our Sales Department for more options, pricing and availability.

To Place an Order

Call: 845-651-3040

email: sales@zircarzirconia.com

ZYZ

Size	Item Number	
	ZYZ-3	ZYZ-6
12" x 12" x 0.50"TK	AE009	AF009
12" x 12" x 0.75"TK	AE010	AF010
12" x 12" x 1.00"TK	AE011	AF011
12" x 12" x 1.50"TK	AE012	AF012
12" x 12" x 2.00"TK	AE018	AF026



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