



## Alumina-Silica Type AXHTM

### General Information

ZIRCAR Ceramics' Alumina-Silica Insulation Type AXHTM is a strong, rigid refractory structure of high-alpha alumina and high-purity refractory ceramic fibers (RCF). Its binder is a high-purity inorganic Colloidal (Amorphous) Silica. AXHTM offers low thermal conductivity, excellent thermal shock resistance and is an effective thermal insulator in numerous thermal process systems with continuous operating temperatures of 1420°C (2600°F). Unique to this type of material are its rigid, almost crusty outer surfaces with a less bound interior. AXHTM is frequently machined or cut into custom configurations. In applications where a strong exterior is desired AXHTM's original exterior hardness can be easily restored with the use of ZIRCAR Ceramics' Silica Rigidizer Type SI-RIG. AXHTM contains no organic binders and produces no smoke or odor when heated. It is unaffected by oil or water. It is, however, attacked by hydrofluoric acid, phosphoric acid and strong alkalis.



### Characteristics & Properties

Color	White to tan with light brown areas
Typical Composition, %	
Al <sub>2</sub> O <sub>3</sub>	59
SiO <sub>2</sub>	41
Organics	0
Bulk Density, gm/cc (pcf)	0.26 (16)
Maximum Use Temperature*, °C (°F)	1427 (2600)
Linear Shrinkage‡, %	
24 hrs. at 1000°C (1832°F)	-
24 hrs. At 1200°C (2192°F)	0.75
Thermal Conductivity, W/m <sup>2</sup> K (BTU/hr ft <sup>2</sup> °F/in)	
400°C (752°F)	0.08 (0.6)
800°C (1472°F)	0.14 (1.0)
1100°C (2012°F)	0.26 (1.7)
Flexural Strength**, Mpa (psi)	0.14 (21)
Compressive Strength**, Mpa (psi) at 10% Compression	0.03 (4.8)
Durometer**, ASTM 02240, (PTC Type A, Model 306L)	≥15

The data presented herein is intended to help the user to determine the appropriateness of this material for their application.

This data is a nominal representation of this product's properties and characteristics and therefore should not be used in preparing specifications.

\* Maximum use temperature is dependent on variables such as stresses, both thermal and mechanical, and the chemical environment that the material experiences. \*\* Properties expressed parallel to thickness. ‡ Properties expressed perpendicular to thickness.

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Technical Data Bulletin  
Alumina-Silica Type AXHTM  
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## Suggested Applications

Primary thermal insulation in low-mass furnaces and thermal process systems operating to 1480°C (2696°F).  
 Backup thermal insulation in furnaces and thermal process systems operating to high temperatures.  
 Launders, distribution boxes, pouring spouts, hot tops and others involving molten non-ferrous metal contact.  
 Vestibule Blocks in semiconductor processing diffusion furnaces.  
 Furnace and kiln flue and chimney linings.  
 Combustion chamber liners, baffles and muffles.  
 High-temperature setters, supports and process fixtures.  
 Electrical insulation in systems operating at elevated temperatures.  
 Thermal insulation in hot appliances and scientific analytical equipment.

## Availability of Standard Boards

ITEM #	DESCRIPTION
CX10560	AXHTM, 24"W x 36"L x 1"T
CX10570	AXHTM, 24"W x 36"L x 2"T

## To Order

**Standard boards:** order online or specify quantity, item # and description.  
 Standard boards are available for immediate shipment from stock.

**Standard tolerances** for all AXHTM Boards and all Custom Vacuum-Formed Shapes are defined in the chart that follows.

**Custom boards** are available as large as 36"W x 48"L from 1" to 6"T. Tooling also exists to manufacture boards 30" x 60" x 2" and 3"T. Small boards of just a few cubic inches are also manufactured.

**Cylinders** can be manufactured with IDs from 1" to 48" with ½" to 5" wall thickness and lengths up to 16"

**Custom shapes:** AXHTM is vacuum-formed and dried. In many cases complex shapes are formed, demolded and dried. Such shapes include muffles, combustion chambers, molten metal distribution components, barrel-staved cylinders, furnace plugs - to name just a few. Post-dry machining is also frequently performed.

**Surface treatments** including rigidization with colloidal alumina (AL-R/H) or colloidal silica (SI-RIG) or coating with alumina cement (AL-CEM) are all available.

**Bonded Assemblies** are available where multiple components are bonded together with ZIRCAR Ceramics' AX Moldable or AS-CEM Cement.



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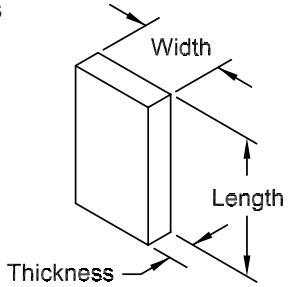
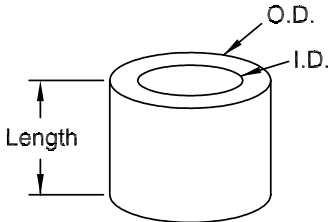
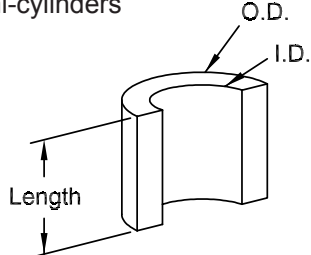
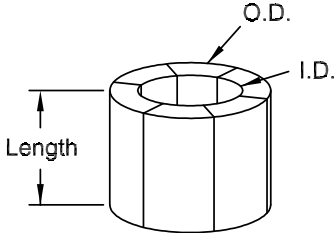
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**Tolerances:** This chart shows dimensional tolerances for products that are formed, demolded and dried only. Tighter tolerances are available with the use of drying fixtures or custom machining.

<b>Boards</b> 	Length (in.)		Width (in.)		Thickness (in.)	
	+/- 1/4		+/- 1/4		1	2 to 6
<b>Full Cylinders</b> 	Inside Diameter (in.)		Outside Diameter (in.)		Length (in.)	
	3/4 to 4	5 to 30	3 to 4	5 to 40	1 to 11	12 to 36
	+/- 1/8	+/- 1/4	+/- 1/8	+/- 1/4	+/- 1/8	+/- 1/4
<b>Semi-cylinders</b> 	Inside Diameter (in.)		Outside Diameter (in.)		Length (in.)	
	1 to 4	5 to 18	+/- 1/4		6 to 11	12 to 36
	+/- 1/8	+/- 1/4			+/- 1/8	+/- 1/4
<b>Staved Cylinders</b> 	Inside Diameter (in.)		Outside Diameter (in.)		Length (in.)	
	+/- 1/4		+3/8 / -1/4		+/- 1/4	



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