



## Alumina Type AL-45/1700

### General Information

ZIRCAR Ceramics' Alumina Insulation Type AL-45/1700 is a high-density, high-fired combination of polycrystalline alpha alumina fiber, specially processed refractory fillers and inorganic colloidal binders. Strong, yet low in mass, AL-45/1700 is used to distribute the weight of loads being fired in rapid-cycle laboratory and production furnaces. AL-45/1700 does not significantly contribute to the mass of a load being fired and can be heated and cooled rapidly. It has excellent resistance to chemical attack and is not affected by oil or water. However, it is affected by hydrofluoric acid, phosphoric acid and strong alkalis. The image to the right shows AL-45/1700 supporting the weight of a dense alumina crucible in a 1700°C low-mass rapid-cycle laboratory furnace.



### Characteristics & Properties

Composition, %	
Al <sub>2</sub> O <sub>3</sub>	90
SiO <sub>2</sub>	10
Other	< 0.07
Maximum Use Temperature*, °C (°F)	1700 (3092)
Density, g/cc (pcf)	0.64 (40.23)
Modulus of Rupture**, MPa (psi)	2.76 (401)
Compressive Strength**, MPa (psi) at 10% Compression	0.9 (131)
Specific Heat, J/kg°K (BTU/lb °F)	
Linear Shrinkage‡, %	
24 Hrs @ 1500°C	0.33
24 Hrs @ 1700°C	1.37
Thickness Shrinkage**, %	
24 Hrs @ 1500°C	0.4
24 Hrs @ 1700°C	1.98
Thermal Conductivity**, W/m°K (BTU/hr ft² °F/in)	
1350°C (2462°F)	0.36 (2.50)
1650°C (3002°F)	0.43 (3.00)

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 Type AL-45/1700  
[www.zircarceramics.com](http://www.zircarceramics.com)  
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## Suggested Applications

Low-mass hearth plates and primary thermal insulation in low-mass furnaces and thermal-process systems operating to 1700°C (3092°F)

Thermal insulation, supports and process fixtures in Hot Isostatic Presses (HIP) furnaces and other thermal-process systems operating to 1650°C (3002°F).

High-temperature setters, supports and process fixtures for sintering of CIM, MLC and LTCC substrates.

Electrical insulation in high-temperature systems operating to 1650°C (3002°F).

## Availability of Standard Boards

ITEM #	DESCRIPTION
A163-02	AL-45/1700, 24"W x 36"L x 0.50"T
A163-01	AL-45/1700, 24"W x 36"L x 1.00"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 boards are +/- 1/8" on length and width and +/- 1/16" on thickness.

**Custom boards** as large as 24"W x 36"L x 2"T have been manufactured.

**Custom shapes:** our state-of-the-art tight-tolerance machining techniques allow a wide variety of sizes and shapes to be made.

**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.



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