

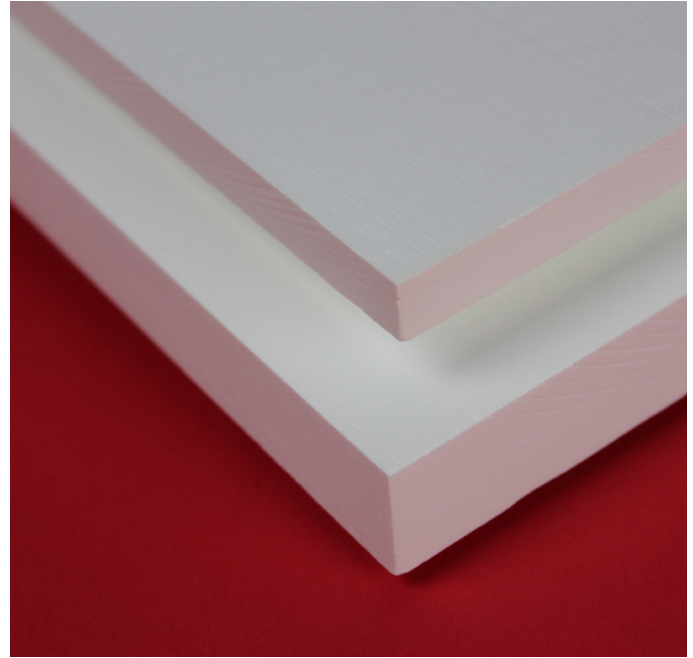


Alumina Type ZAL-45

General Information

ZIRCAR Ceramics' Alumina Type ZAL-45 is a high-density, high-strength, uniformly rigid refractory structure composed of high-alpha polycrystalline alumina fibers and high-purity inorganic binders. ZAL-45 exhibits a fine open-pore structure and is made to a high bulk density of 0.72g/cc (45pcf) which gives it a unique combination of high strength and low thermal conductivity at elevated temperatures. ZAL-45 exhibits very good dimensional stability to 1650°C (3000°F) and withstands intermittent use to 1700°C (3192°F). ZAL-45 is manufactured with a high fiber-to-binder ratio making it highly machinable to precise dimensional tolerances. It exhibits high electrical resistivity with high microwave and RF transparency at elevated temperatures. ZAL-45 is pure white and exhibits high reflectance.

ZAL-45 is pre-fired contains no organic binders and will produce no smoke or odors when heated. ZAL-45 shows excellent resistance to chemical attack and is not affected by oil or water. It is, however, affected by hydrofluoric acid, phosphoric acid and strong alkalis.



Characteristics & Properties

Typical Composition, %	
Al ₂ O ₃	85
SiO ₂	15
Organic Content	0
Density, g/cc (pcf)	0.72 (45)
Maximum Use Temperature*, °C (°F)	
Continuous	1650 (3002)
Intermittent	1700* (3192)
Melting Point, °C (°F)	1870 (3392)
Linear Shrinkage‡, %	
1 hr. at 1500°C (2732°F)	0
1 hr. at 1600°C (2912°F)	3
Thermal Expansion Coefficient, RT to 1000°C (1832°F)	5.0x10 ⁻⁶ /°C (2.8x10 ⁻⁶ /°F)
Color	White
Open Porosity, %	70
Compressive Strength**, MPa (psi) at 10% Compression	5.0 (725)
Flexural Strength**, MPa (psi) at 10% Strain	9.0 (1300)

ZIRCAR Ceramics, Inc

PO Box 519
100 N. Main St., Florida, NY 10921-0519
Telephone: (845) 651-6600
E-mail: sales@zircarceramics.com

Technical Data Bulletin
Alumina Type ZAL-45
www.zircarceramics.com
Page 1 of 2

Alumina Type ZAL-45

Characteristics & Properties Continued

Thermal Conductivity**, (ASTM C177-76) W/m ² K (BTU/hr ft ² °F/in)	
250°C (482°F)	0.16 (1.10)
525°C (977°F)	0.20 (1.40)
800°C (1472°F)	0.23 (1.60)
1075°C (1967°F)	0.29 (2.00)
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.

Suggested Applications

Primary thermal insulation in low-mass furnaces and thermal process systems operating to 1650°C (3002°F)

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

Launders, distribution boxes, pouring spouts, hot tops and others involving molten metal contact.

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
A10509	ZAL-45, 18"W x 24"L x 0.25"T
A10510	ZAL-45, 18"W x 24"L x 0.50"T
A10511	ZAL-45, 18"W x 24"L x 0.75"T
A10512	ZAL-45, 18"W x 24"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.



ZIRCAR Ceramics, Inc.

PO Box 519

100 N. Main St., Florida, NY 10921-0519

Telephone: (845) 651-6600

E-mail: sales@zircarceramics.com

www.zircarceramics.com

Revision Date Dec. 3, 2016