



Alumina Type AL-30

General Information

ZIRCAR Ceramics' Alumina Type AL-30 is a medium-density, high-strength, uniformly rigid refractory structure composed of high-alpha polycrystalline alumina fibers and high-purity inorganic binders. AL-30 exhibits a fine, open-pore structure and is made to an optimum bulk density of 0.48 g/cc (30 pcf) which gives it very low thermal conductivity at elevated temperatures. AL-30 has very good hot strength and dimensional stability to 1600°C (2822°F) and withstands intermittent use to 1700°C (3192°F).

AL-30 is manufactured with a high fiber-to-binder ratio making it highly machinable to precise dimensional tolerances. It exhibits high electrical resistivity with low losses in microwave and RF transparency at elevated temperatures. AL-30 is pure white and exhibits high reflectance.

AL-30 is pre-fired, contains no organic binders and will produce no smoke or odors when heated. AL-30 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

Color	White
Typical Composition, %	
Al ₂ O ₃	85
SiO ₂	15
Organic Content	0
Density, g/cc (pcf)	0.48 (30)
Melting Point, °C(°F)	1870 (3392)
Open Porosity, %	85
Specific Heat, J/kg°K (BTU/lb °F)	1047 (0.25)
Maximum Use Temperature*, °C (°F)	
Continuous	1600 (2822)
Intermittent	1700 (3092)
Linear Shrinkage‡, %	
24 hrs. at 1500°(2730°F)	1
24 hrs. At 1650°(3002°F)	3
Thermal Expansion Coefficient, Room Temperature to 1000°C (1832°F)	5.0 x 10 ⁻⁶ /°C (2.8 x 10 ⁻⁶ /°F)
Compressive Strength**, MPa (psi) at 10% Compression	2.8 (400)

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Characteristics & Properties Continued

Flexural Strength**, MPa (psi) at 30% Strain	3.1 (450)
Thermal Conductivity**, (ASTM C177-76) W/m ² K (BTU/hr ft ² °F/in)	
250°C (482°F)	0.09 (0.65)
525°C (977°F)	0.12 (0.85)
800°C (1472°F)	0.16 (1.10)
1075°C (1967°F)	0.19 (1.30)
1350°C (2462°F)	0.23 (1.60)
1650°C (3002°F)	0.27 (1.86)

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).

Backup thermal insulation in furnaces and thermal process systems operating to temperatures exceeding 2000°C (3632°F).

Precision-machined thermal insulation in scientific analytical instruments.

High-temperature setters, supports and process fixtures.

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

Availability of Standard Boards

ITEM #	DESCRIPTION
A11013	AL-30, 24"W x 48"L x 0.50"T
A11014	AL-30, 24"W x 48"L x 0.75"T
A11015	AL-30, 24"W x 48"L x 1.00"T
A11016	AL-30, 24"W x 48"L x 1.50"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 thick as 3"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.

Cylinders can be manufactured with IDs from 1in. to 18" with ½" to 2" wall thickness and length up to 36".

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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