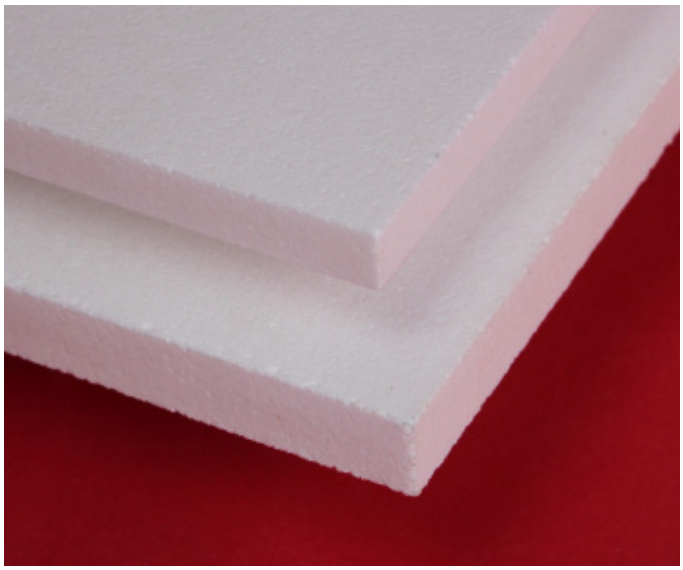
Dense Alumina Hearth Plate Type DAHP

General Information

ZIRCAR Ceramics' Dense Alumina Hearth Plates, Type DAHP, are used for supporting loads in high-temperature furnaces and other thermal process systems. These dense plates are combinations of medium-sized high-purity alumina grains and an alumina binder. Dry-pressed then fully sintered, DAHP exhibit high strength and utility in industrial applications with operating temperatures as high as 1870°C (3400°F). DAHP hearth plates are routinely used as hearth plates in low-mass furnaces with air atmospheres operating to 1825°C (3317°F). They may be positioned directly on the furnace floor or supported with hearth posts made of reticulated alumina, bubble alumina or fiber-filled alumina tubes. These plates are also useful in furnaces with hydrogen atmospheres operating over 1700°C (3100°F). They are of exceptionally high Al_2O_3 purity but are not ideal for use in extreme thermal shock environments.



Characteristics & Properties

Composition, %	
Al_2O_2	99.55
SiO_2	0.07
Fe_2O_3	0.03
K_2O & Na_2O	0.10
Other Oxides	0.25
Bulk Density, g/cc (pcf)	3.2 (199.77)
Maximum Use Temperature*, °C (°F)	1870 (3400)
Specific Heat, J/kj °K (BTU/lb.°F)	4730 (1.13)
Permeability Range, g/(S.Pa.m)	35-70 x 10^{-6}
Modulus of Elasticity, GPa	135
Modulus of Rupture**, MPa (psi)	
2280°F (1250°C)	12.41 (1800)
2640°F (1450°C)	6.89 (1000)
Crushing Strength, Room Temperature, MPa (psi)	75.84 (11000)
Linear Thermal Expansion, 30-1500°C	8.4 x 10^{-6}
Thermal Conductivity**, W/m·K (BTU-in./hr.ft.^{2})	
2200°F (1200°C)	2.3 (16.0)

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 based upon irreversible linear shrinkage. ** Properties expressed parallel to thickness. ‡ Properties expressed perpendicular to thickness.

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

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Suggested Applications

Load-bearing members in furnaces and thermal process systems operating as high as 1870°C (3400°F).
Hearth plates in low-mass furnaces with air atmospheres operating to 1825°C (3317°F).
Support plates in furnaces with hydrogen atmospheres operating over 1700°C (3100°F).
High-temperature setters, supports and process fixtures.

Availability of Standard Heath Plate

ITEM #	DESCRIPTION
D9110	DAHP, 6”W x 6”L x 0.50”T
D9111	DAHP, 8”W x 8”L x 0.75”T
D9113	DAHP, 12”W x 12”L x 1.00”T

To Order

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

Standard tolerances for DAHPs are as follows:

D9110, DAHP, 6”W x 6”L x 0.50”T: ± 0.062” length and width, ± 0.031” thickness
D9111, DAHP, 8”W x 8”L x 0.75”T: ± 0.062”- 0.125” length and width, ± 0.062” thickness
D9113, DAHP, 12”W x 12”L x 1.00”T: ± 0.062”- 0.125” length and width, ± 0.062” thickness

Allowable Warpage: 0.003” per inch

Custom plates ranging in size from 4”W x 4”L x 1/4”T to 12”W x 12”L x 1”T are also available. Other compositions, such as 96% Al_2O_3 , are also available.

Custom cutting and drilling is available. ZIRCAR Ceramics is equipped with multiple wet diamond saws and a complete set of wet diamond core drills.

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