



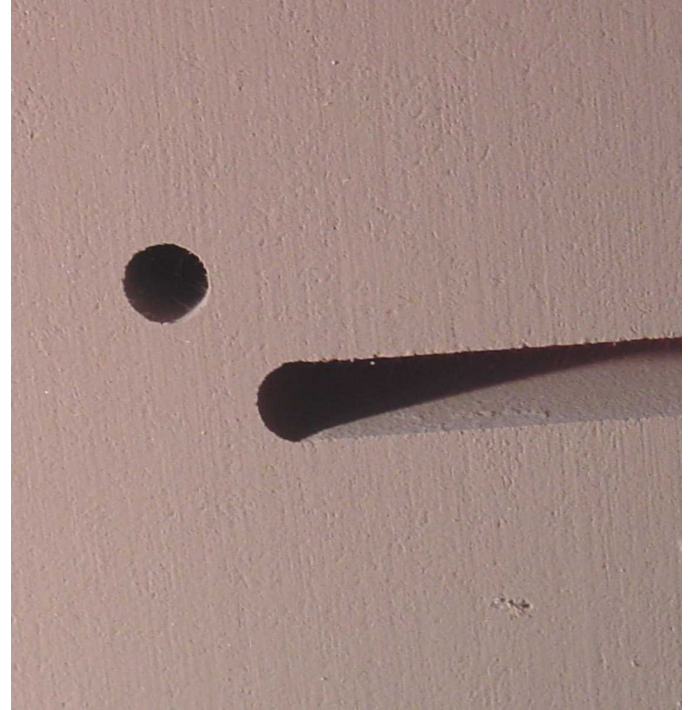
Microporous Insulation Type MICROSIL

General Information

ZIRCAR Ceramics' MICROSIL Microporous Insulation is an incredible insulation material. Having thermal conductivity an order of magnitude lower than ceramic fiber materials, MICROSIL can be an integral part of numerous unique and demanding thermal management applications with temperatures as high as 950°C (1742°F). MICROSIL is a combination of ultra-fine silica powders, inorganic refractory opacifiers and specially processed reinforcing materials. Compacted under tons of force to form a lightweight yet rigid structure MICROSIL offers maximum insulation in a minimum amount of space, saving weight and more importantly energy.

MICROSIL's unique tight microporous structure works to minimize conductive, convective and radiant heat transfer as its billions of nano-pockets block and reflect heat energy – like mirrors – back to its source.

MICROSIL is nearly immune to thermal shock. It is completely non-combustible in accordance with standard DIN 4102 Class A1 and can be stored indefinitely in dry conditions. MICROSIL's microporous structure is adversely affected by water, oil, alcohol and other liquids.



Characteristics & Properties

Color	Grey
Composition, wt%	
SiO ₂	80
SiC	15
Other Oxides	5
Density, g/cc (pcf)	0.23 (14.4)
Maximum Use Temperature, °C (°F)*	950 (1742)
Specific Heat, J/Kg °C (BTU/lb.°F), to 800°C (1472°F)	800 (0.19)
Emmissivity	0.95
Compression** .097 (14) MPa (psi), %	2.9
Cold Crushing Strength, MPa (psi)	0.42 (61)
Linear Shrinkage, % †	
after 24 hrs @ 900°C (1652°F)	1.0
after 24 hrs @ 950°C (1742°F)	1.1
after 24 hrs @ 1000°C (1832°F)	4.8

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Characteristics & Properties Continued

Thermal Conductivity,** w/m ² K (BTU in./hr ft ² °F) (ASTM C177)	
20°C (68°F)	0.019 (0.132)
200°C (392°F)	0.022 (0.153)
400°C (752°F)	0.028 (0.194)
600°C (1112°F)	0.033 (0.229)
800°C (1472°F)	0.043 (0.298)

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 950°C (1742°F).

Primary thermal insulation in advanced energy systems such as Solid Oxide Fuel Cell and DSP systems.

Backup thermal insulation in furnaces and thermal process systems operating to high temperatures.

Backup insulation in molten metal launders, degassing systems & distribution boxes.

Thermal insulation in hot appliances, concentrated solar collectors and scientific instrumentation.

Availability of Standard MICROSIL

ITEM #	DESCRIPTION
D117-03	MICROSIL, 650mmW x 1000mmL x 12.5mmT
D117-01	MICROSIL, 650mmW x 1000mmL x 25mmT
D117-02	MICROSIL, 650mmW x 1000mmL x 50mmT

To Order

Standard Boards are available for immediate shipment from stock.

Standard Linear Tolerance for boards are +/-2.0mm (0.08in.) on length and width.

Standard Thickness Tolerance is +/- .75mm (0.03in.) for 12.5mm and 25mm-thick boards and +/- 1.5mm (0.06in.) for 50mm-thick boards.

Custom Boards and Shapes are ZIRCAR Ceramics' specialty. With 5 CNC milling stations and 40+ years of experience manufacturing custom and difficult Microporous Insulation components, many options are available.

Custom Coating and Encapsulations are available that will enhance the handleability and surface strength of custom parts. Coatings such as ZIRCAR Ceramics' ZIRPORCOAT-2 is easily sprayed or brushed on. Encapsulation in high-temperature textiles such as ZIRCAR Ceramics' Alumina Textile Type AS-7M, amorphous silica cloth or numerous weights of fiberglass cloth can contribute to the successful application of MICROSIL.



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