

Q-Fiber® Amorphous High-Purity Silica Fiber

Bulk Material for Manufacture of Insulating Components

Description

Q-Fiber® is an amorphous, exceptionally pure fibrous silica material used as a lightweight, non-crystalline component in high temperature thermal insulations.

Q-Fiber® is formed from high-silica-content sand which is melted, fiberized, acid-washed to remove impurities, rinsed, dried, and heat-treated for structural integrity.

Applications

Q-Fiber® forms the primary component for a diversity of insulating materials used in aerospace applications in which service temperatures range from -170°F (-112°C) to 2300°F (1260°C).

Q-Fiber® is an efficient, economical alternative for many conventional insulating materials used in nuclear power, automotive, catalytic conversion, and chemical applications. Because of its exceptionally pure fibrous construction, Q-Fiber® also provides a potential source for filtration material.

Advantages

Q-Fiber® provides an excellent combination of physical properties including purity, resilience, light weight, as well as resistance to crystal formation, thermal shock, and heat flow. Extremely high in SiO₂ content (99.7% after processing), chemically stable Q-Fiber® will not devitrify in response to elevated temperatures and rapid thermal cycling. Q-Fiber® Amorphous High-Purity Silica Fiber imparts high thermal efficiency with low weight, a critical factor in aerospace insulation design. Q-Fiber® also resists thermal shock damage from drastic temperature fluctuations. These flexible and resilient fibers enable Q-Fiber® to be readily formed into a variety of standard and unique shapes including sheets, felts, blocks, tiles, and cast forms.

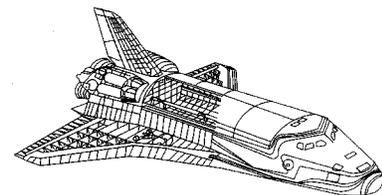


Type:
Bulk Fiber

Temperature Limit:
Upper Limit: 2300°F (1260°C)
Continuous Service: 1800°F (982°C)

Available Forms

Q-Fiber® Amorphous High-Purity Silica Fiber is furnished in bulk form and packed in uniform lots for further processing into ceramic insulating blocks, tiles, and other shapes. Average fiber diameter ranges from 0.75 to 1.59 microns. The High-Purity grade silica fiber is laboratory certified for purity and chemical analysis.



Applications

- Aerospace
- Nuclear Power
- Automotive/Catalytic Converters
- Chemical Industries

Properties

- Non-Crystal Forming
- Chemically Stable
- Heat Flow Resistant
- High Thermal Efficiency
- Low Weight
- Resistant to Thermal Shock
- Easily formed into unique shapes and cast forms
- High Purity

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Bulk Material for Manufacture of Insulating Components

Thermal Conductivity (Btu-in)/(ft²-hr-°F) (ASTM C-518)

When felted to	Mean Temp. °F (between hot surface and cold surface)		
	75°	500°	1000°
Density, pcf			
6.0	.23	.41	.72

Shrinkage

(When felted to 6.0 pcf (96 kg/m³) density)

Temperature	Direction of Shrinkage (%)		
	Length	Width	Thickness
1000°F (538°C)	0.7	0.8	0.9
1200°F (649°C)	1.4	1.5	1.0
1400°F (760°C)	1.8	2.2	1.8
1600°F (871°C)	2.0	2.2	2.0
1800°F (982°C)	2.6	4.0	9.0
2000°F (1093°C)	6.2	17.0	40.0

Thermal Conductivity (Watts/Meter-°C) (ASTM C-518)

When felted to	Mean Temp. °C (between hot surface and cold surface)		
	24°	260°	538°
Density, kg/m ³			
96	.033	.058	.104

Chemical Composition

SiO ₂	99.680% Minimum
R ₂ O ₃	.130% Maximum
TiO ₂	.013% Maximum
Fe ₂ O ₃	.044% Maximum
Na ₂ O	.020% Maximum
K ₂ O	.005% Maximum
CaO	.032% Maximum
MgO	.011% Maximum
B*	.010% Maximum

* The low boron content, normally less than .005%, makes Q-Fiber® particularly useful for thermal control in nuclear applications.

Surface Area

BET surface area measurements indicate 2.38 sq. meters/gm for fiber with an average diameter of 1.5 microns.

■ For Information

Write: Johns Manville Product Information Center, P.O. Box 5108, Denver, Colorado 80217-5108
Call: Toll free 1-800-654-3103 (outside Colorado); or (303) 978-4900 (inside Colorado)
Online: www.jm.com

■ Limited Warranty

All Johns Manville products are sold subject to Johns Manville's Limited Warranty and Limitation of Remedy. For a copy of the Johns Manville Limited Warranty and Limitation of Remedy, write to:

Johns Manville Product Information Center
P.O. Box 5108
Denver, CO 80217-5108

or call toll free 1-800-654-3103, or contact your local Johns Manville sales representative.



Johns Manville

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The physical and chemical properties of Johns Manville Q-Fiber® Amorphous High-Purity Silica Fiber represent typical, average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. The data is supplied as a technical service and is subject to change without notice. Check with your Johns Manville representative to obtain current information.