

Q-Fiber® Felt
High Purity Felt

Description

Q-Fiber® Felt is formed from 98.5+% pure silica fibers using a water deposition process. It is clean, flexible, without binder of any kind, and possesses the thermo-physical and chemical stability of pure silica. Q-Fiber® Felt is effective in a wide range of applications. It is unaffected by moisture, will not accelerate or cause corrosion, and is inert to most acids.

Applications

Q-Fiber® Felt is useful in many applications requiring steady state heat resistance to 1800°F. Intermittently, it may be used above 1800°F. It provides excellent thermal insulation for aircraft, missiles, spacecraft and special industrial applications. It can also be used to provide reinforcement for high-temperature plastics such as exhaust nozzles, nose cones, and aerodynamically heated surfaces. It is particularly useful in components where the factors of space and weight are highly important. These felts are also very effective in cryogenic applications.

Advantages

Q-Fiber® Felt is unaffected by moisture. It will not accelerate or cause corrosion. The chemical composition of Q-Fiber® Felt makes it incombustible and resistant to most acids. Q-Fiber® Felt possesses the lowest thermal conductivity value per unit weight of any commercially available high temperature fibrous insulation. The long fibers trap and absorb undesirable noise to provide excellent sound absorption. Finally, Q-Fiber® Felt offers high heat resistance, remaining effective up to 1800°F for steady state applications.

Available Forms

Q-Fiber® Felt is only available in sheets of 36" (91 cm) width and 60" (152 cm) or 120" (305 cm) length.



Q-Fiber® Felt is manufactured based on areal weight (weight per area) and is not produced or dimensioned to an exact thickness or density. For approximation purposes, refer to the Available Densities, Thicknesses and Weights Table.

Properties

- Moisture Resistant
- Noncorrosive
- Low Thermal Conductivity
- Resists Thermal Shock
- Low Shrinkage

Specifications

Temperature Limit 1800°F (982°C)

Type

Binderless Felt

Available Densities, Thicknesses and Weights

Nominal Density	Nominal Thickness		Areal Weight		
	pcf	kg/m ³	in.	mm	lb/ft ²
3	48	3/16	4.8	0.05	0.23
		1/4	6.4	0.06	0.31
		3/8	9.5	0.09	0.46
		1/2	12.7	0.13	0.61
3.5	56	3/16	4.8	0.06	0.27
		1/4	6.4	0.07	0.36
		3/8	9.5	0.11	0.53
		1/2	12.7	0.15	0.71
4	64	3/16	4.8	0.06	0.31
		1/4	6.4	0.08	0.41
		3/8	9.5	0.13	0.61
		1/2	12.7	0.17	0.81
6	96	3/16	4.8	0.09	0.46
		1/4	6.4	0.13	0.61
		3/8	9.5	0.19	0.92
		1/2	12.7	0.25	1.22

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Thermal Conductivity (k) Per ASTM C 518

Density	Mean Temperature (Btu•in)/(ft ² •hr•°F)							
pcf	300°F	400°F	500°F	600°F	700°F	800°F	900°F	1000°F
3	0.33	0.39	0.46	0.54	0.63	0.72	0.83	0.96
4	0.32	0.37	0.43	0.5	0.57	0.65	0.74	0.84
6	0.31	0.36	0.41	0.46	0.52	0.58	0.65	0.72

Density	Mean Temperature (Watts/Meter•°C)							
kg/m ³	149°C	204°C	260°C	316°C	371°C	427°C	482°C	538°C
48	0.05	0.06	0.07	0.08	0.09	0.10	0.12	0.14
64	0.05	0.05	0.06	0.07	0.08	0.09	0.11	0.12
96	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.10

Shrinkage*

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

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

Chemical Composition

Silica—SiO ₂	98.500% Minimum
Boron—B*	.010% Maximum
Iron Oxide—Fe ₂ O ₃	.060% Maximum
Alumina—Al ₂ O ₃	.068% Maximum
Calcium Oxide—CaO	.250% Maximum
Magnesium Oxide—MgO	.200% Maximum
Sodium Oxide—Na ₂ O	.090% Maximum

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



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The physical and chemical properties of Q-Fiber® Felt listed herein represent typical, average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice. Numerical flame spread and smoke developed ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions. Check with the Regional Sales Office nearest you to assure current information. **All Johns Manville products are sold subject to Johns Manville's standard Terms and Conditions including Limited Warranty and Limitation of Remedy. For a copy of the Johns Manville standard Terms and Conditions, Limited Warranty and Limitation of Remedy, and information on other Johns Manville thermal insulations and systems, call (800) 654-3103.**

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