

Pyrogel[®] XTF

FLEXIBLE INDUSTRIAL INSULATION FOR HIGH-TEMPERATURE APPLICATIONS

Pyrogel[®] XTF is a high-temperature insulation blanket formed of silica aerogel and reinforced with a non-woven, high-temperature batting. Similar to Pyrogel[®] XT in composition, Pyrogel[®] XTF has been specially formulated to provide exceptional protection against fire.

Silica aerogels possess the lowest thermal conductivity of any known solid. Pyrogel[®] XTF achieves this industry-leading thermal performance in a flexible, environmentally safe, and easy-to-use product.

Ideal for insulating piping, vessels, tanks, and equipment, Pyrogel[®] XTF is an essential material for those seeking the ultimate in thermal efficiency.

Physical Properties

Thickness*	0.40 in (10 mm)
Material Form*	60 in (1,500 mm) wide x 155 ft (47 m) long rolls
Max. Use Temp.	1200°F (650°C)
Color	Gray
Density*	11 lb/ft ³ (0.18 g/cc)
Hydrophobic	Yes

*Nominal Values



Advantages

Superior Thermal Performance

Up to five times better thermal performance than competing insulation products

Reduced Thickness and Profile

Equal thermal resistance at a fraction of the thickness

Less Time and Labor to Install

Easily cut and conformed to complex shapes, tight curvatures, and spaces with restricted access

Physically Robust

Soft and flexible but with excellent springback, Pyrogel[®] XTF recovers its thermal performance even after compression events as high as 100 psi

Shipping and Warehousing Savings

Reduced material volume, high packing density, and low scrap rates can reduce logistics costs by a factor of five or more compared to rigid, pre-formed insulations

Simplified Inventory

Unlike rigid pre-forms such as pipe cover or board, the same Pyrogel[®] XTF blanket can be kitted to fit any shape or design

Hydrophobic Yet Breathable

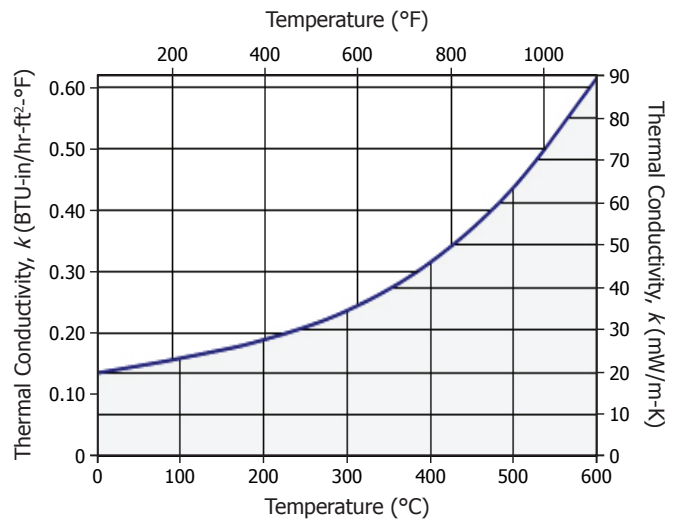
Pyrogel[®] XTF repels liquid water but allows vapor to pass through, helping to prevent corrosion under insulation

Environmentally Safe

Landfill disposable, shot-free, with no respirable fiber content

Thermal Conductivity[†]

ASTM C 177 Results



Mean Temp.	°C	0	100	200	300	400	500	600
	°F	32	212	392	572	752	932	1112
k	mW/m-K	0.20	0.23	0.28	0.35	0.46	0.64	0.89
	BTU-in/hr-ft ² -°F	0.14	0.16	0.19	0.24	0.32	0.44	0.62

[†]Thermal conductivity measurements taken at a compressive load of 2 psi.

Thicknesses Required for Personnel Protection*

Design conditions:

Ambient temperature = 86°F (30°C)
 Wind speed = 2.2 mph (1 m/s)
 Surface emissivity = 0.15
 Max. touch temp = 140°F (60°C)

*These data are provided as an example only. Actual performance should be determined using the parameters relevant to the particular application. Please contact Aspen Aerogels® for technical assistance.

Pyrogel® XTF Thickness (mm) vs. Process Temperature and Nominal Pipe Size												
NPS in (mm)	100°C (210°F)	150°C (300°F)	200°C (390°F)	250°C (480°F)	300°C (570°F)	350°C (660°F)	400°C (750°F)	450°C (840°F)	500°C (930°F)	550°C (1020°F)	600°C (1110°F)	650°C (1200°F)
0.5 (15)	5	5	5	10	10	15	15	20	20	25	30	40
0.75 (20)	5	5	5	10	10	15	15	20	25	30	35	45
1 (25)	5	5	10	10	15	15	20	25	30	35	40	50
1.5 (40)	5	5	10	10	15	20	20	25	30	40	45	55
2 (50)	5	5	10	15	15	20	25	30	35	40	50	60
3 (80)	5	10	10	15	20	25	30	35	40	50	60	70
4 (100)	5	10	10	15	20	25	30	35	45	55	65	75
6 (150)	5	10	15	20	25	30	35	45	50	60	75	85
8 (200)	5	10	15	20	25	30	40	45	55	70	80	95
10 (250)	5	10	15	20	25	35	40	50	60	75	85	105
12 (300)	5	10	15	20	30	35	45	55	65	75	90	110
14 (350)	5	10	15	25	30	35	45	55	65	80	95	110
16 (400)	5	10	15	25	30	40	45	55	70	80	100	115
18 (450)	5	10	20	25	30	40	50	60	70	85	100	120
20 (500)	5	10	20	25	30	40	50	60	75	90	105	125
24 (600)	5	15	20	25	35	40	50	65	75	90	110	130
28 (700)	5	15	20	25	35	45	55	65	80	95	115	135
30 (750)	5	15	20	25	35	45	55	65	80	95	115	140
36 (900)	5	15	20	30	35	45	55	70	85	100	120	145
48 (1200)	10	15	20	30	40	50	60	75	90	105	130	150
Flat	10	15	20	35	45	50	65	80	100	125	150	175

5 mm product

5 mm and/or 10 mm product

Specification Compliance and Performance

Test Procedure	Property	Results
ASTM C 165	Compressive Strength	Stress at 10% strain = 14.8 psi (102 kPa) Stress at 25% strain = 26.6 psi (183 kPa)
ASTM C 356	Linear Shrinkage Under Soaking Heat	< 1.3% @ 1200°F (650°C)
ASTM C 411	Hot Surface Performance	Passed
ASTM C 447	Estimation of Maximum Use Temperature	1200°F (650°C)
ASTM C 795	Insulation for Use Over Austenitic Stainless Steel	Passed
ASTM C 1101	Classifying the Flexibility of Mineral Fiber Blankets	Class: Resilient Flexible
ASTM C 1104	Water Vapor Sorption	2.25% (by weight)
ASTM C 1338	Fungal Resistance of Insulation Materials	Passed
ASTM C 1511	Liquid Water Retention After Submersion	4% (by weight)
ASTM E 84	Surface Burning Characteristics	Flame Spread Index = 0 Smoke Developed Index = 0
ASTM E 1354	Cone Calorimetry	No ignition at 50 kW/m²
ISO 1182:1990	Non-Combustibility	Meets criteria outlined in ISO 1182:1990
UL 1709	Rapid Rise Fire Tests of Protection Materials for Structural Steel	12 mm → 68 min 48 mm → 184 min 30 mm → 132 min 66 mm → >240 min

Characteristics

Pyrogel® XTF can be cut using conventional cutting tools including scissors, tin snips, and razor knives. The material can be dusty, and it is recommended gloves, safety glasses, and dust mask be worn when handling material. See MSDS for complete health and safety information.

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