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aspen aerogels™
NANOTECHNOLOGY AT WORK™

DATA SHEET

Pyrogel XT

FLEXIBLE INDUSTRIAL INSULATION FOR HIGH-TEMPERATURE APPLICATIONS

Pyrogel® XT is a high-temperature insulation blanket formed of silica aerogel and reinforced with a non-woven, glass-fiber batting. It is also available with a factory-applied foil vapor barrier (Pyrogel® XTZ) for low- to moderate-temperature applications such as chilled water piping.

Silica aerogels possess the lowest thermal conductivity of any known solid. Pyrogel XT 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 XT is an essential material for those seeking the ultimate in thermal efficiency.

Physical Properties

Thicknesses*	0.20 in (5 mm)	0.40 in (10 mm)
Material Form*	57 in (1,450 mm) wide x 220 ft (67 m) long rolls	57 in (1,450 mm) wide x 105 ft (32 m) long rolls
Max. Use Temp.	1200°F (650°C)	
Color	Beige	
Density*	11 lb/ft^3 (0.18 g/cc)	
Hydrophobic	Yes	

*Nominal Values

Advantages

Superior Thermal Performance
2 to 5 times better 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 XT 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

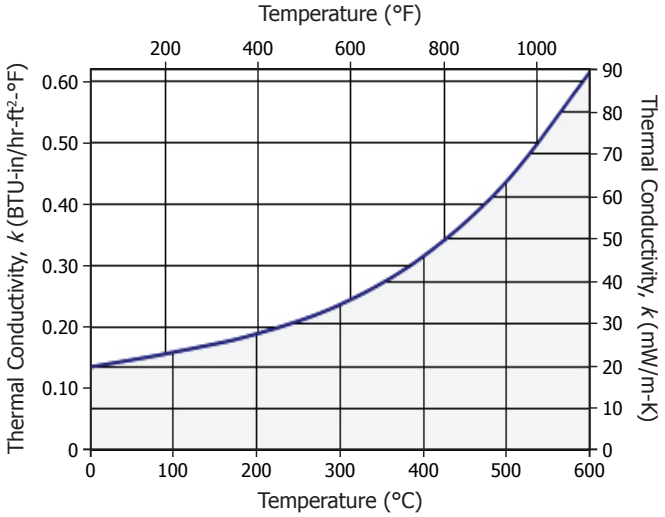
Simplified Inventory
Unlike rigid pre-forms such as pipe cover or board, the same Pyrogel XT blanket can be kitted to fit any shape or design

Hydrophobic Yet Breathable
Pyrogel 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	20	23	28	35	46	64	89
	BTU-in/hr-ft²-°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.

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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

*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 XT 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	5 mm product
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	5 mm and/or 10 mm product
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	

Specification Compliance and Performance

Test Procedure	Property	Results
ASTM C165	Compressive Strength	Stress at 10% strain = 14.8 psi (102 kPa) Stress at 25% strain = 26.6 psi (183 kPa)
ASTM C356	Linear Shrinkage Under Soaking Heat	< 1.3% @ 1200°F (650°C)
ASTM C411	Hot Surface Performance	Passed
ASTM C447	Estimation of Maximum Use Temperature	1200°F (650°C)
ASTM C871	Leachable Chloride, Fluoride, Silicate and Sodium Ions	Passed
ASTM C1101	Classifying the Flexibility of Mineral Fiber Blankets	Class: Resilient Flexible
ASTM C1104	Water Vapor Sorption	2.25% (by weight)
ASTM C1338	Fungal Resistance of Insulation Materials	Passed
ASTM C1511	Liquid Water Retention After Submersion	4% (by weight)
ASTM E84	Surface Burning Characteristics	Flame Spread Index = 0 Smoke Developed Index = 0
ISO 1182:1990	Non-Combustibility	Meets criteria outlined in ISO 1182:1990
ASTM E1354	Cone Calorimetry	No ignition at 50 kW/m²

Characteristics

Pyrogel XT 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 matierial. See MSDS for complete health and safety information.

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