

# Pyrogel<sup>®</sup> XT-E

## FLEXIBLE INDUSTRIAL INSULATION FOR HIGH-TEMPERATURE APPLICATIONS

Pyrogel<sup>®</sup> XT-E is a high-temperature insulation blanket that is formed of silica aerogel – which possesses the lowest thermal conductivity of any known solid – and reinforced with a non-woven, glass-fiber batting.

Pyrogel<sup>®</sup> XT-E is our easiest product ever to handle, store, and install. It offers the same industry-leading thermal performance as Pyrogel<sup>®</sup> XT, with standard roll sizes and a product form that dramatically reduces handling dust and simplifies installation and clean-up.

Ideal for insulating piping, vessels, tanks, and equipment, Pyrogel<sup>®</sup> XT-E is an essential material for those seeking the ultimate in thermal efficiency.

### Physical Properties

<b>Thicknesses*</b>	0.20 in (5 mm)	0.40 in (10 mm)
<b>Material Form*</b>	1,500 ft <sup>2</sup> rolls	850 ft <sup>2</sup> rolls
<b>Max. Use Temp.</b>	1200°F (650°C)	
<b>Color</b>	Maroon	
<b>Density*</b>	12.5 lb/ft <sup>3</sup> (0.20 g/cc)	
<b>Hydrophobic</b>	Yes	

\* Nominal values. Thicknesses measured using a method derived from ASTM C 518 and another proprietary method to provide resolutions an order of magnitude smaller than ASTM C 167.

### 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<sup>®</sup> XT-E recovers its thermal performance even after compression events as high as 100 psi

#### Shipping and Warehousing Savings

Reduced material volume, high packing density, consistent roll sizes, 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<sup>®</sup> XT-E blanket can be cut to fit any piece of piping or equipment

#### Hydrophobic Yet Breathable

Pyrogel<sup>®</sup> XT-E repels liquid water but allows vapor to pass through, helping to prevent corrosion under insulation

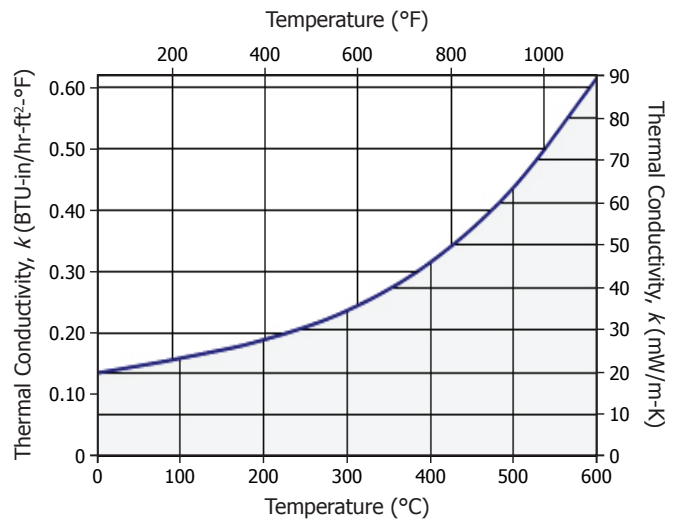
#### Environmentally Safe

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



### Thermal Conductivity<sup>†</sup>

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

<sup>†</sup> Thermal conductivity measurements taken at a compressive load of 2 psi and standard atmospheric pressure.

## Thicknesses Required for Personnel Protection\*

Assumed 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.

Pyrogel® XT-E 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)	
<b>0.5 (15)</b>	5	5	5	10	10	15	15	20	20	25	30	40	<b>5 mm product</b>
<b>0.75 (20)</b>	5	5	5	10	10	15	15	20	25	30	35	45	
<b>1 (25)</b>	5	5	10	10	15	15	20	25	30	35	40	50	
<b>1.5 (40)</b>	5	5	10	10	15	20	20	25	30	40	45	55	
<b>2 (50)</b>	5	5	10	15	15	20	25	30	35	40	50	60	
<b>3 (80)</b>	5	10	10	15	20	25	30	35	40	50	60	70	
<b>4 (100)</b>	5	10	10	15	20	25	30	35	45	55	65	75	<b>5 mm and/or 10 mm product</b>
<b>6 (150)</b>	5	10	15	20	25	30	35	45	50	60	75	85	
<b>8 (200)</b>	5	10	15	20	25	30	40	45	55	70	80	95	
<b>10 (250)</b>	5	10	15	20	25	35	40	50	60	75	85	105	
<b>12 (300)</b>	5	10	15	20	30	35	45	55	65	75	90	110	
<b>14 (350)</b>	5	10	15	25	30	35	45	55	65	80	95	110	
<b>16 (400)</b>	5	10	15	25	30	40	45	55	70	80	100	115	
<b>18 (450)</b>	5	10	20	25	30	40	50	60	70	85	100	120	
<b>20 (500)</b>	5	10	20	25	30	40	50	60	75	90	105	125	
<b>24 (600)</b>	5	15	20	25	35	40	50	65	75	90	110	130	
<b>28 (700)</b>	5	15	20	25	35	45	55	65	80	95	115	135	
<b>30 (750)</b>	5	15	20	25	35	45	55	65	80	95	115	140	
<b>36 (900)</b>	5	15	20	30	35	45	55	70	85	100	120	145	
<b>48 (1200)</b>	10	15	20	30	40	50	60	75	90	105	130	150	
<b>Flat</b>	10	15	20	35	45	50	65	80	100	125	150	175	

## Product Performance Data

Test Procedure	Property	Results
ASTM C 1728, Type III, Grade 1A	Standard Specification for Flexible Aerogel Insulation	Complies
ASTM C 165	Compressive Strength	Stress at 10% strain = 11.4 psi (78.3 kPa) Stress at 25% strain = 37.0 psi (255.2 kPa)
ASTM C 356	Linear Shrinkage Under Soaking Heat	<2% @ 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	<5% (by weight)
ASTM C 1338	Fungal Resistance of Insulation Materials	Passed
ASTM C 1511	Liquid Water Retention After Submersion	<5% (after heat treatment)
ASTM E 84	Surface Burning Characteristics	Flame Spread Index = 0 Smoke Developed Index = 0

## Characteristics

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

## More Info

Scan with mobile device or go to <http://bit.ly/PHjbfN>



This product, produced by Aspen Aerogels, Inc. ("ASPEN") is covered by a series of domestic and international patents and licenses. This information is provided as a convenience and for informational purposes only and obtained from initial type testing by the manufacturer. Product properties are subject to manufacturing variations. This information may contain inaccuracies, errors or omissions. All the products supplied, including all recommendations or suggestions must be evaluated by the user to determine applicability and suitability for any particular use. No guarantee or warranty as to this information, or any product to which it relates, is given or implied here. ASPEN DISCLAIMS ALL WARRANTIES EXPRESSED OR IMPLIED, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AS TO (i) SUCH INFORMATION, (ii) ANY PRODUCT. In no event is ASPEN responsible for, and ASPEN does not accept and hereby disclaims liability for, any damages whatsoever in connection with the use of or reliance on this information or any product to which it relates.