Specialty Products and Insulation

Polyisocyanurate Pipe Insulation

(Trymer®, Polyiso, ISO)

Description

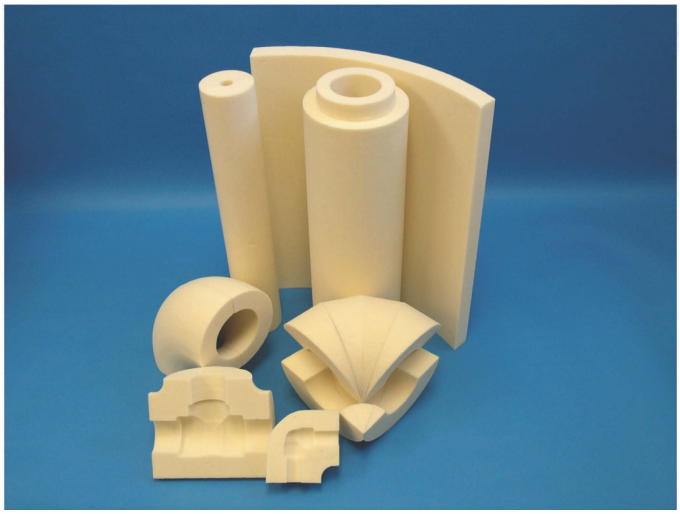
Polyisocyanurate Insulation is a closed cell rigid foam that combines light weight and strength with exceptional thermal insulating qualities. The material is available as sectional pipe covering, complete with a vapor barrier jacket, as well as sections for fittings and board segments for equipment and tanks.

Uses

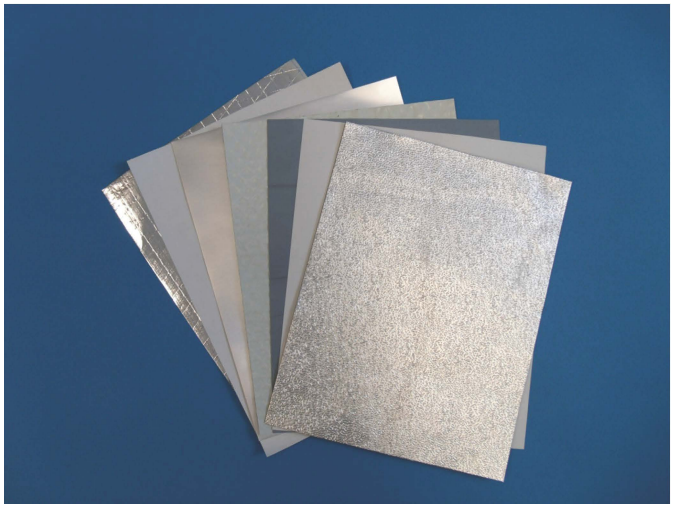
For use on piping, fittings, equipment and tanks operating in the temperature range of -297°F (-183°C) to 300°F (149°C). For applications above 250°F or below -140°F, contact your local SP! Fabrication center for system recommendations. Typical applications include: Commercial and Industrial pipe and fitting insulation on chilled water, tank insulation and core material for panel construction (not used in commercial building return air plenums).

Advantages

- High Temperature Capability - Polyisocyanurate insulation does not soften or lose its strength at elevated temperatures within the recommended use limit.
- Excellent Chemical Resistant - Most commercial solvents have no effect on polyisocyanurate, therefore a wide range of adhesives and coatings are suitable for bonding and finishing this insulation material.
- Low Thermal Conductivity - Factory pre-curing provides consistent physical properties.
- Easy Installation - Light weight and easy to install on a variety of surfaces.
- Good Moisture Resistance - For both liquid and water vapor.
- Not a known nutrient source for mold and mildew.



ShipLap, Spline and Tongue & Groove joint details are available for an additional charge.



A variety of jacketing materials are available to meet service & specification requirements.

Performance and compliance use data is based on fabrication of Trymer® 2000 XP Insulation as manufactured by ITW Insulation Systems.

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Polyisocyanurate Pipe Insulation

Performance Compliance Data

ASTM C585-90 (2004) Standard Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System).

ASTM C450 Standard Practice for Fabrication of Thermal Insulating Fitting Covers for NPS Piping and Vessel Lagging.

Trymer® 2000 XP complies with ASTM C591, Grade 2, Type IV.

Table 1

Physical Properties of TRYMER™ 2000 XP Polyisocyanurate Foam[1,2]

Property and Test Method	Value	Property[1] and Test Method[2]	Value
Density, ASTM D1622, lb/ft³ (kg/m³)	2.05 (32.8)	Closed Cell Content, ASTM D6226, % min.	90
Compressive Strength, ASTM D1621, lb/in² (kPa),		Water Absorption, ASTM C272, 24-hour immersion, % by volume	<0.7
Parallel to rise	25 (172)	Water Vapor Permeability, ASTM E96	
Perpendicular to rise - width	24 (165)	perm-inch (ng/Pa•s•m)	4 (5.8)
Perpendicular to rise - length	30 (207)	Dimensional Stability[5], ASTM D2126	
Compressive Modulus, ASTM D1621, lb/in² (kPa),		At -40° F (-40°C), 7 days	
Parallel to rise	650 (4,485)	Length, % change	0.4
Perpendicular to rise - width	475 (3,278)	Volume, % change	0.6
Perpendicular to rise - length	600 (4,414)	At -10° F (-23°C), 7 days	
Shear Strength, ASTM C273, lb/in² (kPa),		Length, % change	0.2
Parallel and perpendicular, avg	15 (104)	Volume, % change	0.2
Shear Modulus, ASTM C273, lb/in² (kPa),		At 158° F (70°C), 7 days	
Parallel and perpendicular, avg	250 (1,725)	Length, % change	1.5
Tensile Strength, ASTM D1623, lb/in² (kPa),		Volume, % change	3.0
Parallel to rise - thickness	20 (138)	At 158° F (70°C), 97% R.H. 7 days	
Flexural Modulus, ASTM C203, lb/in² (kPa),		Length, % change	1.6
Parallel to rise	720 (4,968)	Volume, % change	3.4
Flexural Strength, ASTM C203, lb/in² (kPa),		At 300° F (149°C), 7 days	
Parallel to rise	33 (228)	Length, % change	2.7
k-Factor for comparison and product qualification[3],		Volume, % change	4.5
ASTM C518, Btu-in/hr·ft²·°F (W/m°C) @ 75°F (24° C)	0.168 (0.024)	Service Temperature[6], °F (°C)	-297 to +300 (-183 to +149)
R-Value per inch for comparison and product qualification[3], ASTM C518, hr·ft²·°F/Btu (m²·°C/W) @ 75°F (24°C)	6.0 (1.06)	Surface Burning Characteristics[7], ASTM E84,	
k-Factor for thickness calculations[4], ASTM C518,		Flame Spread	≤25
Btu·in/hr·ft²·°F (W/m°C), Aged 180 days @ 75°F (24°C)	0.19 (0.027)	Smoke Developed	≤450
R-Value per inch for thickness calculations[4], ASTM C518,		Color	Tan
hr·ft²·°F/Btu (m²·°C/W) @ 75°F (24°C)	5.3 (0.93)		

(Technical data is provided by ITW Insulation Systems. Other manufacturer products available on request.)

1. All properties are measured at 74° (23°C), unless otherwise indicated.
2. Unless otherwise indicated, data shown are typical values obtained from representative production samples. This data may be used as a guide for design purposes, but should not be construed as specifications. For property ranges and specifications, consult your SPI representative.
3. Trymer 2000 XP has third party test results showing a 180 day aged k-Factor of 0.168 Btu-in/hr-ft^2-°F at 75°F mean temperature. This Value demonstrates the excellent performance of the product and can be used for comparison to other materials and to qualify Trymer 2000 XP to specification requirements.
4. Thermal conductivity test results include no safety factor and are obtained in pristine lab conditions on samples with no joints and that have not been subjected to the vagaries of installation. For Trymer 2000 XP, ITW recommends that a more conservative 180 days ages k-Factor curve represented by a value of 0.19 Btu-in/hr-ft^2-°F at 75°F mean temperature be used for all system design and insulation thickness calculation purposes.
5. Frequent and severe thermal cycling can produce dimensional changes significantly greater than those stated here. Special design consideration must be made in systems that cycle frequently.
6. Above 300°F, discoloration and charring will occur, resulting in an increased k-factor in the discolored area.
7. This numerical flame spread data is not intended to reflect hazards presented by this or any other material under actual fire conditions.

Specialty Products and Insulation

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For additional information please visit http://www.spi-co.com

Please ask your Sales Representative about our other fabrication products and services.