INSUL-LOCK®

Flexible Closed Cell Pipe Insulation Available in 3- and 6-foot lengths Designed for the HVAC/R Industry



DESCRIPTION

INSUL-LOCK[®] is environmentally friendly. CFC-free, flexible elastomeric thermal insulation. It is pre-slit with a factory-applied pressure sensitive adhesive applied to both seam surfaces. It is black in color and is available up to 1" wall thickness and 4" IPS. INSUL-LOCK[®] key physical properties are approved through supervision by Factory Mutual Research Corporation. INSUL-LOCK® is non-porous, fiber-free and resists mold growth. An EPA-registered antimicrobial agent is incorporated into the product to provide additional protection against mold, fungal and bacterial growth. INSUL-LOCK® is GREENGUARD® certified as a low VOC material, meeting the requirements of the "Children & Schools" and "Indoor Air Quality" classifications.

APPLICATIONS

INSUL-LOCK® is used to retard heat flow and prevent condensation on refrigerant lines, cold water plumbing, roof drains and chilled water systems.

INSUL-LOCK[®] is recommended for applications ranging from -70°F to 200°F (-57°C to 93°C) for both new and existing applications and can be used with heat tracing/heat tapes. For best results, store and install INSUL-LOCK® at temperatures above 40°F (4°C).

INSTALLATION

INSUL-LOCK[®] is designed for quick and easy installation: slip on the tube, pull built-in release liners, pinch tube shut and apply pressure at the seams. The seam should be positioned on the bottom of the pipe. See technical bulletin for installation instructions in cold temperatures.

All butt joints must be sealed with an approved contact adhesive. Fittings are fabricated from miter-cut tubular sections of INSUL-TUBE®, and covers, flanges, etc from INSUL-SHEET®. K-Fit® factoryfabricated fittings are also available. INSUL-LOCK®'s closure system is designed to save labor costs, particularly on straight runs. It greatly reduces the use of contact adhesives, allowing for improved working conditions and compliance with OSHA requirements.

OUTDOOR APPLICATIONS

INSUL-LOCK[®] is made from a UV-resistant elastomeric blend. However, when subject to severe UV exposure (rooftop applications) or where optimum performance is required, K-FLEX[®] 374 Protective Coating, approved jacketing or K-FLEX Clad® AL or K-FLEX Clad®WT should be used. Similar to indoor applications, the seam should be positioned on the bottom of the pipe.

FEATURES & BENEFITS

- Faster installation
- Easier handling (3-foot lengths)
- Ideal for straight runs
- Less use of contact adhesives

RESISTANCE TO MOISTURE VAPOR FLOW

The closed cell structure of INSUL-LOCK® effectively retards the flow of moisture vapor and is considered a low transmittance vapor retarder. For most indoor applications, INSUL-LOCK[®] needs no additional protection.

Additional vapor barrier protection may be necessary for INSUL-LOCK® when installed on low temperature surfaces that are exposed to continuous high humidity.

FLAME AND SMOKE RATING

INSUL-LOCK[®] in thicknesses up to 1" (25 mm) has a flame spread rating of 25 or less and a smoke development rating of 50 or less as tested by ASTM E 84. "Surface Burning Characteristics of Building Materials".

INSUL-LOCK[®] is acceptable for use in duct/ plenum applications meeting the requirements of NFPA 90A/B.

Numerical flammability ratings alone may not define the performance of products under actual fire conditions. They are provided only for use in the selection of products to meet limits specified, when compared to a known standard.

SPECIFICATION COMPLIANCE

- ASTM C 534 Type 1 (Tubing), Grade 1
- ASTM D 1056-00-2B1
- New York City MEA 186-86-M Vol. V
- USDA Compliant
- RoHS Compliant
- UL 94-5V Flammability Classification
- (Recognition No. E300774)
- ASTM E 84 1" 25/50-tested according to UL 723
- Complies with requirements of CAN/ULC S102-03 FMRC Approval Guide Chapter 14 Pipe Insulation
- Meets requirements of NFPA 90A Sect. 2.3.3 for Supplemen-tary Materials for Air Distribution Systems
- Meets requirements of ASTM C 411
- (Test Method for Hot Surface Performance of High Temperature
- Thermal Insulation) Meets requirements of UL 181 sections 11.0 and 16.0 (Mold Growth/Air Erosion)
- Meets residential and non-residential requirements for California Energy Commission Building Energy Efficient Standards Title 24
- GREENGUARD certified under "Children & Schools" and "Indoor Air Quality" classifications













Physical Properties		INSUL-LOCK [®] Insulation	Test Methods
Thermal Conductivity (K) BTU - in/hr - Fť - °F (W/mK) Density	90°F (32°C) Mean Temp 75°F (24°C) Mean Temp	0.258 (0.0372) 0.245 (0.0353) 3-6 PCF	ASTM C 177/C 518 ASTM C 177/C 518 ASTM D 1622/D 3575
Operating Temperature Range	Upper Lower	200°F (93°C) -70°F (-57°C)	
Water Vapor Permeability Dry Cup. Perr	n-In	0.03	ASTM E 96
Water Absorption % (Volume Change)		0	ASTM C 209
Flame Spread (up to 1" wall)		Not greater than 25	ASTM E 84
Smoke Developed (up to 1" wall)		Not greater than 50	ASTM E 84
Ozone Resistance		Pass	ASTM D 1171
Chemical/Solvent Resistance		Good	
Mildew Resistance/Air Erosion		Pass	UL 181

Thickness Recommendations* - To Control Condensation								
Pipe Size	Line	Temp	Line	Temp	Line Temp		Line Temp	
	50 F	10 C	35 F	2 C	0 F	-18 C	-20 F	-29 C
Normal Conditions (Max 85°F, 29°C - 70% R.H.)								
3/8" I.D. thru 1-3/8" I.D.	3/8"	10 mm	1/2"	13 mm	3/4"	19 mm	1"	25 mm
Over 1-3/8" thru 3" IPS	3/8"	10 mm	1/2"	13 mm	1"	25 mm	1"	25 mm
Over 3" IPS thru 4" IPS	1/2"	13 mm	1/2"	13 mm	1"	25 mm	1-1/4"	32 mm
Over 4" IPS	1/2"	13 mm	3/4"	19 mm	1"	25 mm	1-1/4"	32 mm
Mild Conditions (Max 80°F, 26°C - 50% R.H.)								
3/8" I.D. thru 2-1/8" I.D.	3/8"	10 mm	3/8"	10 mm	1/2"	13 mm	1/2"	13 mm
Over 2-1/8" thru 3" IPS	3/8"	10 mm	3/8"	10 mm	1/2"	13 mm	3/4"	19 mm
Over 3" IPS thru 4" IPS	1/2"	13 mm	1/2"	13 mm	3/4"	19 mm	3/4"	19 mm
Over 4" IPS	1/2"	13 mm	1/2"	13 mm	3/4"	19 mm	3/4"	19 mm
Severe Conditions (Max 90°F, 32°C - 80% R.H.)								
3/8" I.D. thru 1-1/8" I.D.	3/4"	19 mm	3/4"	19 mm	1-1/4"	32 mm**	1-1/4"	32 mm**
Over 1-1/8" thru 4" IPS	3/4"	19 mm	1"	25 mm	1-1/2"	38 mm**	1-1/2"	38 mm**

INSUL-LOCK in thickness noted within the specified temperature ranges will prevent condensation in indoor piping under design conditions defined below. **Thickness recommendations above 1" can be sleeved to achieve thickness desired.

Normal: Maximum severity of indoor conditions seldom exceed 850° F and 79% R.H. in United States.

Mild: Typical conditions are most air-conditioned spaces and arid climates. Severe: Generally found in areas where excessive moisture is introduced or in poorly ventilated areas where the temperature may be depressed below the ambient.

Under conditions of higher humidity, additional thickness of insulation may be required. NOTE: Thickness recommendations calculated using 0.2575 K-factor (0.25 plus 3% test error allowance)

INSUL-LOCK [°] "R" values								
Pipe O.D. Insulati	or Normal ion I.D.	R Value 3/8" (10 mm) wall	R Value 1/2" (13 mm) wall	R Value 3/4" (19 mm) wall	R Value 1" (25 mm) wall			
3/8"	10 mm	2.7	3.6	5.6	—			
1/2"	13 mm	2.5	3.4	5.4	—			
5/8"	16 mm	2.5	3.3	5.4	7.5			
3/4"	19 mm	2.3	3.1	5.4	7.5			
7/8"	22 mm	2.3	3.2	5.4	7.2			
1-1/8"	29 mm	2.2	3.1	5.5	7.1			
1-3/8"	35 mm	2.2	3.2	5.3	7.3			
1-5/8"	41 mm	2.4	3.1	5.1	7.1			
1-1/2"IPS	_	2.3	3.0	4.9	6.7			
2-1/8"	54 mm	2.3	3.0	4.9	6.6			
2" IPS	_	2.3	2.9	4.8	6.5			
2-1/2" IPS	64 mm	2.3	3.0	4.6	6.3			
2-5/8"	67 mm	2.3	3.1	4.7	6.4			
3-1/8"	79 mm	2.3	3.0	4.6	6.2			
3" IPS	_	2.3	3.2	4.6	6.1			
3-5/8"	92 mm	2.3	3.2	4.6	6.1			
4-1/8"	105 mm	2.3	3.1	4.6	6.0			
4" IPS		2.3	3.2	4.7	6.0			

Note: "R" factors were calculated using a K factor of 0.245 (at 75°F, 24°C mean temp.) and nominal wall thickness is each case. Lower operating temperatures will result in improved R values. Contact Technical Services for specific recommendations.



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