

K-FLEX® LS SEAM-SEAL DS

Flexible, Closed Cell Pipe Insulation (6')
Factory-Applied DoubleSeal Closure System:
Insulation Seam Tape With Flexible PVC Overlap Tape



DESCRIPTION

K-FLEX® LS SEAM-SEAL DS (*DoubleSeal*) is environmentally-friendly, CFC-free, flexible elastomeric thermal insulation. It is pre-slit with a factory-applied pressure sensitive modified-acrylic adhesive with scrim reinforcement on the seam surface and a flexible PVC overlap tape with acrylic adhesive for *doubled* seam security. It is black in color and is available in 1/2" up to 2" wall thickness and 4" IPS*. K-FLEX® LS SEAM-SEAL DS key physical properties are approved through supervision by Factory Mutual Research Corporation.

K-FLEX® LS SEAM-SEAL DS 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. K-FLEX® LS SEAM-SEAL DS is GREENGUARD® certified as a low VOC material, meeting the requirements of the "Children & Schools" and "Indoor Air Quality" classifications.

APPLICATIONS

K-FLEX® LS SEAM-SEAL DS is used to retard heat flow and prevent condensation on refrigerant lines, cold water plumbing, roof drains and chilled water systems. K-FLEX® LS SEAM-SEAL DS is recommended for applications ranging from -70°F to +220°F (-57°C to +104°C) for both new and existing applications and can be used with heat tracing/heat tapes. For best results, store and install K-FLEX® LS SEAM-SEAL DS at temperatures between 40°F and 100°F.

INSTALLATION

K-FLEX® LS SEAM-SEAL DS is designed for quick and easy installation: slip on the tube, pull the built-in release liner, pinch

the tube shut, apply pressure at the seams, and apply the overlap seam using pressure. The seam should be positioned on the bottom of the pipe. *See the K-FLEX Installation Manual for installation instructions in cold temperatures.*

All butt joints must be sealed with an approved contact adhesive. Fittings, covers, flanges, etc can be field-fabricated from sections of K-FLEX® LS tubes and sheets. K-FIT® factory-fabricated fittings are also available. K-FLEX® LS SEAM-SEAL DS's closure system is designed to save on 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

K-FLEX® LS SEAM-SEAL DS is made from a UV-resistant elastomeric blend. For moderate UV exposure (residential applications), no additional protection is needed. For severe UV exposure (rooftop applications) or for optimum performance, K-FLEX® 374 Protective Coating, approved jacketing or K-FLEX CLAD® is required. Similar to indoor applications, the seam should be positioned on the bottom of the pipe.

FEATURES & BENEFITS

- Faster installation
- Easier handling
- Ideal for straight runs and retrofits
- Less use of contact adhesives

RESISTANCE TO MOISTURE VAPOR FLOW

The closed cell structure of K-FLEX® LS SEAM-SEAL DS effectively retards the flow of moisture vapor and is considered a low transmittance vapor retarder. For most indoor

applications, K-FLEX® LS SEAM-SEAL DS needs no additional protection. Additional vapor barrier protection may be necessary for K-FLEX® LS SEAM-SEAL DS when installed on low temperature surfaces that are exposed to continuous high humidity.

FLAME AND SMOKE RATING

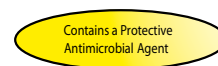
K-FLEX® LS SEAM-SEAL DS has a flame spread rating of 25 or less and a smoke development rating of 50 or less as tested by ASTM E 84, "Surface Burning Characteristics of Building Materials". K-FLEX® LS SEAM-SEAL DS is acceptable for use in duct/plenum applications meeting the requirements of NFPA 90A/B.

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.

*3/8" thick product is available and consists of just hot melt adhesive on both seams for sealing purposes. 3/8" product does not include overlap tape.

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 25/50-tested according to UL 723 and NFPA 255
- 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 Supplementary 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		K-FLEX® LS SEAM-SEAL DS	TEST METHODS
THERMAL CONDUCTIVITY (K)	90°F (32°C) MEAN TEMP	0.258 (0.0372)	ASTM C 177/C 518
BTU - IN/HR - FT² - °F (W/MK)	75°F (24°C) MEAN TEMP	0.245 (0.0353)	ASTM C 177/C 518
	32°F (0°C) MEAN TEMP	0.235 (0.0339)	ASTM C 177/C 518
DENSITY		3-6 PCF	ASTM D 1622/D 3575
OPERATING TEMPERATURE RANGE (FLEXIBLE TO -40°F (-40°C))		-70°F (-57°C) TO +220°F (+104°C)	
WATER VAPOR PERMEABILITY DRY CUP (ELASTOMERIC INSULATION)		0.03 PERM-IN	ASTM E 96
WATER VAPOR PERMEABILITY WET CUP (GLUED SEAM WITH OVERLAP)		0.10 PERM-IN	ASTM E 96
WATER ABSORPTION % (VOLUME CHANGE)		0	ASTM C 209
FLAME SPREAD / SMOKE DEVELOPED (UP TO 2" WALL)		<25/50	ASTM E 84
OZONE RESISTANCE		PASS	ASTM D 1171
CHEMICAL/SOLVENT RESISTANCE		GOOD	
MILDEW RESISTANCE/AIR EROSION		PASS	UL 181

SEALING PROPERTIES	
Seam Adhesive	High-tack, modified-acrylic pressure sensitive adhesive (foam-tearing bond) with polymeric scrim reinforcement that provides excellent adhesive/composite reinforcement, dimensional stability and conformability while maintaining maximum adhesion properties.
Overlap Tape	Factory-applied tape comprised of flexible PVC strip, aggressive acrylic pressure sensitive adhesive (foam-tearing bond) and a polyethylene terephthalate (PET) release liner.

THICKNESS RECOMMENDATIONS - TO CONTROL CONDENSATION				
PIPE SIZE	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)	1-1/2" (38 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)
Severe Conditions (Max 90°F, 32°C - 80% RH)				
3/8" I.D. thru 1-1/8" I.D.	3/4" (19 mm)	3/4" (19 mm)	1-1/2" (38 mm)	1-1/2" (38 mm)
Over 1-1/8" I.D. thru 4" IPS	3/4" (19 mm)	1" (25 mm)	1-1/2" (38 mm)	1-1/2" (38 mm)

K-FLEX® LS SEAM-SEAL DS in thickness noted within the specified temperature ranges will prevent condensation on indoor piping under design conditions defined below. Thickness recommendations above 1" can be sleeved to achieve thickness desired. **Normal:** Maximum severity of indoor conditions rarely exceed 85°F (29°C) and 70% 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 high humidity, additional thickness of insulation may be required. **NOTE:** Thickness recommendations calculated using 0.2575 K-factor (0.245 plus 5% test error allowance).

PIPE "R" VALUES PER SQUARE FOOT						
NOMINAL INSULATION I.D.	3/8" WALL*	1/2" WALL	3/4" WALL	1" WALL	1-1/2" WALL	2" WALL
3/8"	2.7	3.6	5.6	8.5	14.6	20.4
1/2"	2.5	3.4	5.4	7.9	13.5	18.9
5/8"	2.5	3.3	5.4	7.5	12.8	17.8
3/4"	2.3	3.1	5.4	7.5	12.1	16.8
7/8"	2.3	3.2	5.4	7.2	11.6	16.1
1-1/8"	2.3	3.1	5.5	7.1	10.8	15.8
1-3/8"	2.2	3.2	5.3	7.3	10.2	14.9
1-5/8"	2.4	3.1	5.1	7.1	9.8	14.6
1-1/2" IPS	2.3	3.0	4.9	6.7	9.3	13.8
2-1/8"	2.3	3.0	4.9	6.8	9.2	13.6
2" IPS	2.3	2.9	4.8	6.5	9.0	13.3
2-1/2" IPS	2.3	3.0	4.6	6.3	8.6	12.6
2-5/8"	2.3	3.1	4.7	6.4	8.8	12.9
3-1/8"	2.3	3.0	4.6	6.2	8.5	12.4
3" IPS	2.3	3.2	4.6	6.1	8.3	12.2
3-5/8"	2.3	3.2	4.6	6.1	8.3	12.1
4-1/8"	2.3	3.1	4.6	6.0	8.1	11.7
4" IPS	2.3	3.2	4.7	6.0	8.1	11.6

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

*3/8" thick product construction does not include overlap tape. Hot melt adhesive on both seams is used for sealing purposes.



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