

K-FLEX® LS SHEET

S2S
SKIN2SIDES



Flexible closed cell elastomeric insulation
Designed for the professional contractor

DESCRIPTION

K-FLEX® LS SHEET S2S is an environmentally friendly, CFC-free, flexible elastomeric thermal insulation. It is black in color and supplied as flat sheets (36" x 48") in standard thicknesses of 1/8" through 2". It is supplied skin two sides in 1/4" and above. K-FLEX® LS SHEET S2S is also available in rolls, with a standard roll width of 48". K-FLEX® LS SHEET S2S key physical properties are approved through supervision by *Factory Mutual Research Corporation*.

K-FLEX® LS SHEET S2S is non-porous, fiber-free and resists mold growth. An EPA-registered antimicrobial agent is incorporated into the product providing additional protection against mold, fungal and bacterial growth. K-FLEX® LS SHEET S2S is GREENGUARD® certified as a low VOC material, meeting the requirements of the "Children & Schools" and "Indoor Air Quality" classifications.

APPLICATIONS

K-FLEX® LS SHEET S2S is used to retard heat gain and prevent condensation or frost formation on cold equipment, ducts, or large O.D. pipes. It also effectively retards heat loss when used on hot equipment, ducts, or large pipes. K-FLEX® LS SHEET S2S can be used as a duct covering. K-FLEX® LS SHEET S2S is recommended for applications ranging from -297°F to 220°F (-182°C to 104°C) when used as pipe insulation where only the longitudinal seams and butt joints are glued. On full adhesion applications, the upper limit is 200°F (93°C). K-FLEX® LS SHEET S2S has a tough skin that withstands tearing, rough handling, and

severe environmental conditions, yet is flexible for easy installation. K-FLEX® LS SHEET S2S has superior cold weather flexibility. K-FLEX® LS SHEET S2S thickness has been calculated to control condensation on cold surfaces. Refer to the table on the reverse side for specific recommendations.

INSTALLATION

When K-FLEX® LS SHEET S2S insulation is applied to ductwork and equipment, use 100% coverage of an approved contact adhesive. With a contact adhesive, both surfaces to be joined should be coated and then joined after the adhesive is dry to the touch. Compression joints with adhesive applied should be used on all butt edges. K-FLEX® LS SHEET is also available with pre-applied pressure sensitive adhesive (PSA) with an easy-to-use release liner. ASTM C1710, *Installation Guide for Flexible Closed Cell Foams*, should be used as an installation guide.

OUTDOOR APPLICATIONS

For optimum performance, outdoor applications require K-FLEX® 374 Protective Coating, approved jacketing, or K-FLEX Clad® AL or K-FLEX Clad® WT. For more detailed information refer to the *Installation Guidelines*.

RESISTANCE TO MOISTURE VAPOR FLOW

The closed cell structure and unique formulation make K-FLEX® LS SHEET S2S an efficient insulator and provides effective moisture vapor resistance. For most indoor applications, K-FLEX® LS SHEET S2S needs no additional protection. Additional vapor barrier protection may be necessary for K-FLEX® LS SHEET

S2S when installed on low temperature surfaces that are exposed to continuous high humidity.

FLAME AND SMOKE RATING

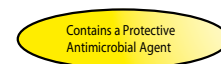
K-FLEX® LS SHEET S2S in thicknesses of 2" (50 mm) and below has a flame spread rating of 25 or less and a smoke development rating of 50 or less as tested by ASTM E 84, "*Surface Burning Characteristics of Building Materials*".

K-FLEX® LS SHEET S2S is acceptable for use in 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 2 (Sheet), Grade I
- ASTM D 1056-00-2C1
- New York City MEA 186-86-M Vol. IV
- USDA Compliant
- RoHS Compliant
- STC = 17 at 1" per ASTM E 90
- NRC = .35 at 1" per ASTM C423
- UL 94-5V Flammability Classification (Recognition No. E300774)
- ASTM E 84 2" 25/50-tested according to UL 723 and NFPA 255
- Complies with requirements of CAN/ULC S102-03 NFPA No. 101 Class A Rating
- Meets requirements of NFPA 90A Sect. 2.3.3 for Supplementary Materials for Air Distribution Systems Meets requirements of UL 181 sections 11.0 and 16.0 (Mold Growth/Air Erosion)
- Meets requirements of ASTM C 411 (Test Method for Hot Surface Performance of High Temperature Thermal Insulation)
- R8 Sheet meets R-value requirements of the International Energy Conservation Code for Outdoor Ductwork
- MIL-P-15280, Form S (Sheet)
- GREENGUARD certified under the "Children & Schools" and "Indoor Air Quality" classifications
- Meets energy code requirements of ASHRAE 90.1 and 189.1



Physical Properties

Temperature Range Sheets	-297°F to +220°F (-182°C to 104°C)	ASTM C 411	Water absorption %	<0.20 by volume	ASTM C 209
Color	Black		Ozone resistance	Good	
Thermal Conductivity	0.25 BTU-in/hr.-ft ² -F 75°F	ASTM C 177/C 518	Resistance to oil & greases	Good	
Water vapor permeability	<0.06 perm-in	ASTM E 96	Density	3 pcf to 6 pcf	ASTM D 1622 ASTM D 3575
Flame Spread (up to 2")	Not greater than 25	ASTM E 84	Resistance to U.V. & weather	Good ¹	
Smoke Developed (up to 2")	Not greater than 50	ASTM E 84	Odor	Negligible	
Flexibility	Excellent		% closed cells	>90	

¹ Outdoor applications should be protected with K-FLEX® 374 Protective Coating (2 or more layers), approved jacketing, or K-FLEX Clad® AL or WT.

Sound Absorption Co-efficients at Frequency

ASTM C-423/E-795 Type A Mounting/Sabins/Sq. Ft.

Thickness	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	NRC
1/4" (6mm)	0.00	0.03	0.05	0.10	0.25	0.45	0.10
1/2" (12mm)	0.03	0.04	0.08	0.15	0.40	0.25	0.20
1" (25mm)	0.10	0.15	0.45	0.30	0.40	0.33	0.35
1-1/2" (38mm)	0.01	0.15	0.81	0.29	0.31	0.27	0.40
2" (50mm)	0.22	0.65	0.48	0.54	0.47	0.45	0.55

SOUND TRANSMISSION CLASS AT 1" = 17 PER ASTM E 90

Thickness Recommendations* - To Control Condensation

Sheet Size	Ducts - Tanks - Vessels - Equipment - Metal - Surface Temperature							
	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.)	1/2"	13 mm	3/4"	19 mm	1"	25 mm	1-1/2"	38 mm
Mild Conditions (Max 80°F, 26°C - 50% R.H.)	1/8"	3 mm	1/4"	6 mm	1/2"	13 mm	3/4"	19 mm
Severe Conditions (Max 90°F, 32°C -80% RH)	3/4"	19 mm	1"	25 mm	1-3/4"	44 mm**	2"	51 mm**

*K-FLEX® LS SHEET in thickness noted within the specified temperature ranges will prevent condensation on indoor piping under design conditions defined below.

Normal: Maximum severity of indoor conditions seldom 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 (0.25 plus 3% test error allowance)

**Thickness above 1-1/2" (38mm) subject to approval of authority having jurisdiction.

Sheet "R" Values (based on nominal thickness)

R Value	R Value	R Value	R Value	R Value	R Value
3/8" ^{**}	1/2" ^{**}	3/4" ^{**}	1" ^{**}	1 1/2" ^{**}	2" ^{**}
1.5	2	3	4	6	8

*All sizes are nominal

Note: "R" factors were calculated using a K factor of 0.2575 (0.25 plus 3% test error allowance at 75°F, 24°C mean temp.) and nominal thickness is each case. Lower operating temperatures will result in improved R values. Contact Technical Services for specific recommendations.



to meet International Energy Conservation Code requirements for Outdoor Ductwork