K-FLEX™ LS SHEET

S2S SKIN2SIDES

GREENGUARD Children & Schools Indoor Air Quality Certified

R8 sheet

to meet International Energy Conservation Code requirements for Outdoor Ductwork

UL 94 (Recognition No. E147665)

UV resistant Refer to K-Flex USA L.L.C. Technical Bulletin (Outdoor Applications) for More Information

Protected by the Bio-Guard™ System

Flexible closed cell elastomeric sheet insulation Designed for the professional contractor

S2S Sheet

DESCRIPTION

K-FLEX™ LS SHEET Insulation 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 is also available in rolls, with a standard roll width of 48". This product is non-porous, fiber free and resistant to mold and mildew. K-FLEX™ LS closed cell structure inherently resists mold growth. The Bio-Guard™ antimicrobial system provides added protection against mold, fungal and bacterial growth. The active ingredient in Bio-Guard™ is registered with the EPA.

K-Flex USA elastomeric insulation products are GREENGUARD **certified** as low VOC materials, meeting the requirements of the "Children and Schools" classification, the most stringent requirements. Additionally, all K-Flex USA elastomeric insulation products are GREENGUARD **listed** for mold resistance and meet the "mold resistant" criteria.

APPLICATIONS

K-FLEX™ LS SHEET Insulation 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 can be used as a duct covering. K-FLEX™ LS SHEET is recommended for applications ranging from -297˚F to 220˚F (-182˚C to 104˚C) when used as pipe insulation, only the seams and butt joints are glued. On full adhesion applications, the upper limit is 200˚F (93˚C).

K-FLEX™ LS SHEET has a very tough skin which withstands tearing, rough handling, and severe environmental conditions, and yet is quite flexible for easy installation. K-FLEX™ LS SHEET has superior cold weather flexibility.

K-FLEX™ LS SHEET 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 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 easy to use release liner. Refer to specific installation instructions.

Sheet with PSA

OUTDOOR APPLICATIONS

For optimum performance, outdoor applications require 374 Protective Coating or other recommended protective coating, cladding or jacketing. *For more detailed information refer to the Installation Guidelines.*

RESISTANCE TO MOISTURE VAPOR FLOW

The expanded closed-cell structure and unique formulation make K-FLEX™ LS SHEET an efficient insulator and provides effective moisture vapor resistance. For most indoor applications, K-FLEX™ LS SHEET needs no additional protection.

Additional vapor barrier protection may be necessary for K-FLEX™ LS SHEET when installed on low temperature surfaces that are exposed to continuous high humidity.

FLAME AND SMOKE RATING

K-FLEX™ LS SHEET Insulation in thicknesses of 1 1/2" (38 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 Method of Testing entitled: "Surface Burning Characteristics of Building Materials."

K-FLEX™ LS SHEET 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 1
ASTM D 1056-00-2C1
New York City MEA 186-86-M Vol. IV
USDA Requirements
STC = 17 per ASTM E 90

UL 94-5V Flammability Classification (Recognition No. E300774)

ASTM E 84 1-1/2" 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 requirments of the International Energy Conservation Code for Outdoor Ductwork.

MIL-P-15280, Form S (Sheet)

Made in USA

K-FLEX™ LS SHEET S2S SKIN2SIDES
PRODUCT DATA

Physical Properties

Temperature Range Sheets	-297˚F to +220˚F (-182˚C to 104˚C)		ASTM C 411
Color	Black		
Thermal Conductivity	0.25 BTU-in/hr.-ft²-˚F	75˚F	ASTM C 177/C 518
Water vapor permeability	<0.06 perm-in		ASTM E 96
Flame Spread (up to 1-1/2")	Not greater than 25		ASTM E 84
Smoke Developed (up to 1-1/2")	Not greater than 50		ASTM E 84
Flexibility	Excellent		

Water absorption %	<0.20 by volume	ASTM C 209
Ozone resistance	Good	
Resistance to oil & greases	Good	
Density	3 pcf to 6 pcf	ASTM D 1622 ASTM D 3575
Resistance to U.V. & weather	Good[1]	
Odor	Negligible	
% closed cells	>90	

1 Outdoor applications should be protected with an approved K-Flex coating or cladding.

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

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)

Sheet "R" Values (based on nominal thickness)

R Value 3/8"*	R Value 1/2"*	R Value 3/4"*	R Value 1"*	R Value 1 1/2"*	R Value 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.

R-8 sheet
to meet International Energy Conservation Code requirements for Outdoor Ductwork

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