

INSUL-SHEET®



Sheet Insulation

Flexible Closed Cell Insulation

Designed for the HVAC/R Industry



DESCRIPTION

INSUL-SHEET® 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" thru 2". It is supplied skin two sides in 1/4" and above. INSUL-SHEET® is also available in rolls, with a standard roll width of 48". INSUL-SHEET® key physical properties are approved through supervision by Factory Mutual Research Corporation.

INSUL-SHEET® 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.

INSUL-SHEET® is GREENGUARD® certified as a low VOC material, meeting the requirements of the "Children and Schools" and "Indoor Air Quality" classifications.

APPLICATIONS

INSUL-SHEET® is used to retard heat gain and prevent condensation or frost formation on cold equipment, tanks, vessels, ducts, or large O.D. pipes. It also effectively retards heat loss when used on hot equipment, ducts, or large pipes. INSUL-SHEET® 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).

INSUL-SHEET® has a tough skin that

withstands tearing, rough handling, and severe environmental conditions, yet is flexible for easy installation. INSUL-SHEET® has superior cold weather flexibility.

INSUL-SHEET® thickness has been calculated to control condensation on cold surfaces. Refer to the table on the reverse side for specific recommendations.

INSTALLATION

When INSUL-SHEET® 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. **INSUL-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 WT. *For more detailed information, refer to the Application Guide.*

RESISTANCE TO MOISTURE VAPOR FLOW

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

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

FLAME AND SMOKE RATING

INSUL-SHEET® 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."

INSUL-SHEET® 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 2 (Sheet), Grade 1

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/B

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)

MIL-P-15280, Form S (Sheet)

R8 Sheet meets R-value require-
ments of the International Energy
Conservation Code for Outdoor
Ductwork

GREENGUARD certified under the
"Children & Schools" and "Indoor Air
Quality" classifications



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



to meet International Energy Conservation Code requirements for Outdoor Ductwork



Made in USA



PRODUCT DATA

Physical Properties		INSUL-SHEET® Insulation	Test Methods
Thermal Conductivity (K)	90°F (32°C) Mean Temp	.27 (.039)	ASTM C 177/C 518
BTU -in/hr - Ft ² - °F (W/mK)	75°F (24°C) Mean Temp	.25 (.036)	ASTM C 177/C 518
Density		3 - 6 PCF	ASTM D1622 / D3575
Operating Temperature Range	Upper	220°F (104°C)	
Flexible to -40°F (-40°C)	Lower	-297°F (-182°C)	
Water Vapor Permeability Dry Cup. Perm-In		<0.06	ASTM E 96
Water Absorption %		<0.20 by volume	ASTM C 209
Flame Spread (up to 2" thickness)		Not greater than 25	ASTM E 84
Smoke Developed (up to 2" thickness)		Not greater than 50	ASTM E 84
Ozone Resistance		Pass	ASTM D 1171
Chemical/ Solvent Resistance		Good	
Mildew Resistance/Air Erosion		Pass	UL 181

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

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"	3mm	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"	50 mm**

**Subject to code compliance.

*INSUL-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 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-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 wall thickness is each case. Lower operating temperatures will result in improved R values. Contact Technical Services for specific recommendations.

