

# INSUL-SHEET® PSA

Closed Cell Flexible Elastomeric Foam Insulation  
Thermal Performance for HVAC/R Applications



## DESCRIPTION

INSUL-SHEET® with PSA (Pressure Sensitive Adhesive) is an NBR/PVC-based closed cell, flexible elastomeric foam insulation. It is environmentally-friendly as it is free of CFCs, HFCs, HCFCs, PBDEs, formaldehyde and fibers. An EPA-registered antimicrobial agent is incorporated into the product providing additional protection against mold, fungal and bacterial growth. It is UL GREENGUARD® Gold Certified for low VOC emissions. The product is made in K-FLEX USA's ISO 9001:2008-certified manufacturing facility in North Carolina.

## AVAILABILITY

INSUL-SHEET® with PSA is black in color and is available in flat sheet (3' x 4') or roll (4' wide) form in thicknesses of 1/8" up to 2". It is supplied with skin on one side and a specially formulated scrim-reinforced adhesive and tear- and moisture-resistant release liner on the opposite side.

## APPLICATIONS

INSUL-SHEET® with PSA is recommended for applications with service temperatures ranging from -40°F (-40°C) to +200°F (+93°C). The product is used to retard heat gain and prevent condensation or frost formation on below-ambient applications, including utility and industrial process equipment, tanks, vessels, and ducts (for covering only). It also retards heat loss from medium hot surfaces.

## OUTDOOR APPLICATIONS

INSUL-SHEET® with PSA is made from a UV-resistant elastomeric blend. For severe UV exposure (rooftop applications) or for optimum performance, K-FLEX® 374 Protective Coating, approved jacketing or K-FLEX Clad® is required.

## INSTALLATION

INSUL-SHEET® with PSA is flexible (even at low temperatures), durable (non-fracturing and skin is resistant to tearing from handling and environment), safe to handle (non-dusting and non-abrasive), and lightweight for an efficient installation. INSUL-SHEET® with PSA is designed to speed up installation time and reduce the use of contact adhesives, allowing for improved working conditions and compliance with OSHA requirements. The adhesive's scrim reinforcement reduces the tendency to stretch the sheet insulation during installation and improves the peel strength of the material.

K-FLEX recommends that insulation is installed on non-operational systems with clean, dry surfaces in ambient conditions between 40°F and 100°F. For cold weather installations, it is critical that sufficient pressure levels be applied for proper adhesion. Properly sized insulation sheets can be installed by peeling the release liner away and applying uniform pressure to the sheet. Compression joints (with adhesive applied) should be used on all butt edges.

Special parts can be field-fabricated from insulation sheets. ASTM C1710, *Installation Guide for Flexible Closed Cell Foams*, and the *K-FLEX Installation Manual* should be used as comprehensive installation guides.

## RESISTANCE TO MOISTURE VAPOR FLOW

The expanded closed cell structure and unique formulation inherently resists moisture vapor intrusion and is considered a Class 1 vapor retarder per ASHRAE. For most indoor applications, INSUL-SHEET® with PSA needs no additional protection. Additional vapor barrier protection may be necessary when installed on cold surfaces that are exposed to continuous high humidity.

## FLAME AND SMOKE RATING

INSUL-SHEET® with PSA 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 to ASTM E84, "Surface Burning Characteristics of Building Materials". It is acceptable for 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 C534 Type 2, Grade 1
- ASTM D1056-00-2B1
- New York City MEA 186-86-M Vol. V
- USDA Compliant
- RoHS Compliant
- UL 94-5V Flammability Classification (#E300774)
- ASTM E84 25/50-rated (to 2") - tested to UL 723, NFPA 255 and CAN/ULC S102-03
- NFPA No. 101 Class A Rating
- NFPA 90A, 90B
- R-8 (2") meets IECC requirements for Outdoor Ductwork
- UL GREENGUARD® Gold Certified
- Meets energy code requirements of ASHRAE 90.1 and 189.1

PHYSICAL PROPERTIES		INSUL-SHEET® PSA	TEST METHODS
Main Composition		Flame-retarded NBR/PVC-based elastomeric foam	
Thermal Conductivity (K)	90°F (32°C) Mean Temp	0.258 (0.0372)	ASTM C177
Btu-in/hr-Ft <sup>2</sup> -°F (W/mK)	75°F (24°C) Mean Temp	0.245 (0.0353)	
	32°F (0°C) Mean Temp	0.235 (0.0339)	
Density		3-5 lb/ft <sup>3</sup>	ASTM D1667
Operating Temperature Range		-40°F (-40°C) TO +200°F (93°C)	ASTM C534
Water Vapor Permeability (Dry Cup)		<0.01 perm-in	ASTM E96
Water Absorption (Volume Change)		0%	ASTM C209
Flame Spread / Smoke Development (up to 2" wall)		<25/50	ASTM E84
Pressure Sensitive Adhesive (PSA): Solvent-free, acrylic dispersion adhesive with high tack, high peel resistance (≥20 N / 25 mm per DIN EN 1939), high shear adhesion (500 g / 625 mm <sup>2</sup> per DIN EN 1943), and resistance to humidity and aging. Adhesive: 0.07 mm thickness; Support: Scrim; Liner: Poly film release liner, moisture and tear resistant, easy release.			
Dimensional Stability		<7% Linear Shrinkage	ASTM C534
Hot Surface Performance (220°F)		No Cracking or Delamination	ASTM C411
Ozone Resistance		Pass	ASTM D1171
Odor Emissions		No Objectionable Odor	ASTM C1304
Chemical/Solvent/Oil/Grease Resistance		Good	Compatibility Data Available on Request
Flexibility		Excellent Pass: Cold Crack Test at -40°F (-40°C)	ASTM C534 ASTM D1056
Mildew Growth Resistance/Air Erosion		Pass	UL 181, ASTM G21
Corrosion Risk		pH neutral: 6.6±0.04	DIN 1988
Leachable Chlorides		<0.05% water-soluble chloride ions	DIN 1988
UV / Weather Resistance <sup>1</sup>		Pass	QUV Chamber Test
Sound Transmission Class (1")		13	ASTM E90

<sup>1</sup> Outdoor applications should be protected with an approved K-FLEX® coating or cladding.

### THICKNESS RECOMMENDATIONS (TO PREVENT CONDENSATION)

SERVICE TEMPERATURE	50°F (10°C)			35°F (2°C)			0°F (-18°C)			-20°F (-29°C)		
	Mild	Normal	Severe	Mild	Normal	Severe	Mild	Normal	Severe	Mild	Normal	Severe
Flat Surface or Pipe ≥48"	1/8"	1/2"	3/4"	1/4"	3/4"	1-1/2"	1/2"	1"	2"	3/4"	1-1/2"	2-1/2"

Thickness listed for the specified ranges will prevent condensation on indoor piping under the defined design conditions. Normal: 85°F and 70% R.H. Mild: Most air conditioned spaces and arid climates: 80°F and 50% R.H. Severe: Areas where excessive moisture is introduced or in poorly ventilated areas where the temperature may be depressed below the ambient: 90°F and 80% R.H. Contact K-FLEX technical support for additional information.

### SOUND ABSORPTION COEFFICIENTS AT FREQUENCY (Hz) (ASTM C423)

THICKNESS	125	250	500	1000	2000	4000	NRC
1/2" (12mm)	0.03	0.02	0.06	0.10	0.22	0.27	0.10
1" (25mm)	0.00	0.07	0.13	0.59	0.20	-0.05	0.25
1-1/2" (38mm)	0.00	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

### "R" VALUES (ALL SIZES ARE NOMINAL)

3/8"	1/2"	3/4"	1"	1-1/2"	2"
1.5	2	3	4	6	8



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