

# INSUL-TUBE® COIL

Flexible Closed-Cell Insulation  
Designed for Line Sets and Extended Length Pipes



## DESCRIPTION

INSUL-TUBE® Coil pipe insulation is environmentally friendly, CFC-free, flexible elastomeric thermal insulation. It is available as continuous length, unslit tubing up to 1" thickness in lengths ranging from 250 ft to 2800 ft depending on ID size and wall thickness. INSUL-TUBE® COIL key physical properties are approved through supervision by *Factory Mutual Research Corporation*.

INSUL-TUBE® COIL is non-porous, fiber-free and resists mold, fungal and bacterial growth.

K-FLEX USA elastomeric insulation products are GREENGUARD® certified for low VOC content and meet the requirements of the "Children and Schools" classification and "Microbial Resistant" listing.

## APPLICATIONS

INSUL-TUBE® COIL is used to prevent condensation or frost formation on line sets or extended length copper piping for chilled water or refrigeration systems. It also retards heat flow for hot water plumbing, liquid heating, dual temperature piping, and many solar systems.

INSUL-TUBE® COIL is recommended for applications ranging from -297°F to 220°F (-182°C to 104°C). The expanded closed-cell structure makes INSUL-TUBE® COIL an efficient insulator and provides effective moisture vapor resistance. INSUL-TUBE® COIL can be used with heat tracing/heat tapes.

INSUL-TUBE® COIL is tough enough to withstand tearing, rough handling, and severe environmental conditions, but has superior flexibility for easy installation, including in cold weather.

## INSTALLATION

INSUL-TUBE® Coils are best applied to straight runs free of corners and bends. Offered with or without a factory-applied coating of talc on the inner surface for effortless sliding, INSUL-TUBE® COIL slides easily over pipe or tubing for quick installation. All butt joints should be sealed with K-FLEX® Contact Adhesive, making sure both surfaces to be joined are coated with adhesive.

## OUTDOOR APPLICATIONS

INSUL-TUBE® COIL Pipe Insulation is made from a UV-resistant elastomeric blend. For severe UV exposure (rooftop applications), 374 Protective Coating or approved jacketing should be used.

## UNDERGROUND

For buried lines above the water table, use a clean fill such as sand (3"-5" layer) to protect INSUL-TUBE® COIL before backfilling. It is recommended that materials to be buried are properly sealed at all seams and butt joints with an approved contact adhesive. For optimum performance, the lines should be encased in a conduit to protect them from problems associated with ground water and compaction.

## RESISTANCE TO MOISTURE VAPOR FLOW

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

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

## FLAME AND SMOKE RATING

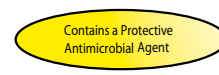
INSUL-TUBE® COIL pipe insulation in wall thicknesses of 1" (50 mm) and below has a flame spread rating of 25 or less and a smoke development rating of 50 or less as tested by ASTM E 84 Method of Testing entitled: "Surface Burning Characteristics of Building Materials".

INSUL-TUBE® COIL 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 us in the selection of products to meet limits specified, when compared to a known standard.

## SPECIFICATION COMPLIANCE

- ASTM C 534 Type 1 (Tubing), Grade 1
- ASTM D 1056-00-2C1
- New York City MEA 186-86-M Vol. V
- UL 94-5V Flammability Classification (Recognition No. E300774)
- ASTM E 84 1" 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 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 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)
- MIL-P-15280, For T (Tubing)



Physical Properties	INSUL-TUBE® COIL Insulation	Test Methods	
Thermal Conductivity (K)	90° F (32° C) Mean Temp	0.27 (.039)	ASTM C 177/C 518
BTU -in/hr - Ft <sup>2</sup> - °F (W/mK)	75° F (24° C) Mean Temp	0.25 (.036)	ASTM C 177/C 518
Density		3-6 PCF	ASTM D 1622/D 3575
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	C209
Flame Spread (up to 1" wall)		Not greater than 25	ASTM E 84
Smoke Developed (up to 1" wall)		Not greater than 50	ASTM E 84
Ozone Resistance		Pass	ASTM D 1171
Chemical/ Solvent Resistance		Good	
Mildew Resistance/Air Erosion		Pass	UL 181
UV Weather Resistance		Pass	QUV Chamber Test

**Thickness Recommendations\* - To Control Condensation**

Pipe Size	Line Temp		Line Temp		Line Temp		Line Temp	
	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
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

\*INSUL-TUBE® COIL 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.

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-TUBE® COIL "R" Values**

Pipe O.D. or Nominal Insulation I.D.		R Value 3/8" (10 mm) Wall	R Value 1/2" (13 mm) Wall	R Value 3/4" (19 mm) Wall	R Value 1" (25 mm) Wall
3/8"	10 mm	2.6	3.5	5.5	—
1/2"	13 mm	2.5	3.3	5.2	—
5/8"	16 mm	2.4	3.2	5.3	7.4
3/4"	19 mm	2.3	3.0	5.3	7.3
7/8"	22 mm	2.2	3.1	5.3	7.0
1-1/8"	29 mm	2.3	3.1	5.5	7.1
1-3/8"	35 mm	2.1	3.1	5.2	7.2
1-5/8"	41 mm	2.5	3.1	5.2	7.1
1-1/2" IPS	48 mm	2.4	3.0	5.0	6.7
2-1/8"	54 mm	2.5	3.2	5.0	6.8
2" IPS	60 mm	2.5	3.1	4.9	6.6
2-1/2" IPS	64 mm	2.5	3.2	4.8	6.4
2-5/8"	67 mm	2.4	3.2	4.8	6.5
3-1/8"	79 mm	2.3	3.1	4.6	6.2
3" IPS	89 mm	2.4	3.3	4.7	6.2

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.