K-FLEX® TITAN™

CLOSED-CELL, FLEXIBLE, ELASTOMERIC FOAM INSULATION WITH A FLEXIBLE CO-EXTRUDED UV RESISTANT JACKETING

DESCRIPTION

K-FLEX® TITAN™ is a flexible coextruded jacketed composite material applied to K-FLEX® NBR/PVC tubular insulation. It is a polymeric jacketed material that offers excellent flexibility, abrasion and weather resistance, making it ideal for outdoor applications. The product is made in K-FLEX® USA's ISO 9001 certified manufacturing facility in North Carolina.

AVAILABILITY

K-FLEX® TITAN™ is black in color and is available in 1/2", 3/4", 1" and 1-1/2" wall thicknesses, non-slit and preslit 6' length tubes. It is available in diameter sizes ranging from 1/4" I.D. to 2-1/8" I.D. across all wall thicknesses and additional IDs dependent on wall thickness. Coils are also available up to 1" wall thickness.

APPLICATIONS

K-FLEX® TITAN™ can be used for outdoor applications with service temperatures ranging from -70 °F to +220 °F. The applications would be consistent with those recommended for K-FLEX® Insul-Tube tubing. The product is used to enhance the weather and abuse resistance of the insulation tubing. K-FLEX® TITAN™ is ideal for use on HVAC linesets and flex hose applications. K-FLEX® USA NBR/PVC elastomeric insulation products can withstand temperature "spikes" up to 250°F (121°C). Because these spikes can vary in temperature and duration, long term effects may vary. Refer to technical bulletin TA36 for additional information.

OUTDOOR APPLICATION

K-FLEX® TITAN™ provides excellent UV resistance and protection from weather. K-FLEX® TITAN's proprietary copolymer blend jacket provides excellent protection from mechanical abuse, including incidental impact from lawn equipment such as weed wackers (plastic string type). The product has a 5-year warranty.

INSTALLATION

1-Step Install: No field applied protective coating or additional jacketing required.

K-FLEX® TITAN™ is durable (nonfracturing) and the skin is resistant to tearing from handling and the environment, safe to handle (nondusting and non-abrasive), and lightweight for an efficient installation. It is very flexible and easily conforms to bends. Its low modulus allows it to be pushed back for easy installation of fittings.

K-FLEX® recommends that insulation is installed on non-operational systems with clean, dry surfaces in ambient conditions between 40 °F and 100 °F.

Properly sized insulation tubing can be slid over piping (tubing should be pushed, not pulled). All seams, butt joints, termination points and open ends should be sealed with an approved contact adhesive, making sure both surfaces to be joined are coated. Vapor stops should be installed as needed. K-FLEX® TITAN™ may be slit longitudinally for retrofit applications.
On straight runs, seams should be facing down to reduce weight/pressure on the seam. For additional protection on the longitudinal seam, apply Titan Tape over entire length of the seam. A squeegee may be used to eliminate wrinkles and air pockets.
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

The expanded closed-cell structure and unique formulation inherently resists moisture vapor intrusion. K-FLEX® TITAN™ needs no additional protection.

DIRECT BURIAL APPLICATIONS

K-FLEX® TITAN™ can be installed in direct burial application if the lines are above the water table and not in a flood zone. K-FLEX® TITAN™ should be installed in a single layer with all butt joint and longitudinal seams completely sealed with an approved contact adhesive (see technical bulletin TA 14). Install in a PVC conduct to prevent insulation compaction or increase insulation thickness by a minimum one wall size to compensate for compaction. Backfill materials shall not contain any angular/sharp edges and shall allow for drainage. For applications below the water table or in a flood zone, install K-FLEX® TITAN™ in a sealed conduct or trench. See technical bulletin TA 10 for additional information.

SPECIFICATION COMPLIANCE

- 2012 IECC
  Section R403.3.1 (residential)
  Section C403.2.8 (commercial)
- 2015, 2018, 2021 IECC
  Section R403.4.1 (residential)
  Section C403.2.10.1 (commercial)
- 2012, 2015, 2018, 2021 IRC
  Section N1103.4.1
- 2019 California Title 24 Energy Code, Section 120.3
- ASTM E84 25/50-rated (to 1-1/2")
  CAN/ULC S102.2 – 25/50 rated
- UL 94 Flammability Classification (#E300774)
- NFPA 90 A - 90 B
- UL Greenguard Gold Certified

The K-FLEX® USA website contains the most recent version of all K-FLEX® USA literature.
Please refer to the website for current versions of K-FLEX® USA literature at **www.kflexusa.com**

K-FLEX® TITAN™ ▸ TECHNICAL DATA

Physical properties		Titan	Test methods
Main Composition		Flame-retarded NBR/PVC elastomeric foam with proprietary copolymer blend jacket	-
Thermal Conductivity (Btu-in/hr-Ft2-°F)	75°F (24°C) Mean Temp	0.230	ASTM C177
Density		3-6 lb/ft^3	ASTM D1667
Operating Temperature Range		-70°F* (-57°C) to +220°F (+104°C)**	ASTM C534
Water Vapor Permeability (Dry Cup)	(Core Material Only)	<0.01 perm-in	ASTM E96
Water Vapor Permeance	(Jacket Material)	≤0.05 perms (Class I vapor retarder)	ASTM E96
Dimensional Stability		<7% Linear Shrinkage	ASTM C534
Corrosion Risk		pH neutral	DIN 1988
UV Resistance (Artificial Aging)	(Jacket Material)	Pass: No Changes to Surface Condition Excellent – No Deterioration	ASTM G153 ASTM G154 tested to 5,000 hours
Flammability		25/50 (up to 1-1/2") HF-1, V-0, 5VA	ASTM E84 UL 94
Tensile Strength		1,200 psi min.	ASTM D412
Elongation		150% min.	ASTM D412
Hot surface Performance at 250°F (121°C)		pass	ASTM C411 NFPA 90 A

* For applications below -40°F (-40°C), contact K-FLEX® technical support.
**Intermittent temperature "spikes" to 250°F (121°C)

K-FLEX® TITAN™ ▸ THICKNESS RECOMMENDATIONS - TO PREVENT CONDENSATION

SERVICE TEMPERATURE	-20°F (-29°C)	50°F (10°C)
3/8" ID to 1-1/2" ID	1"	1/2"
1-1/2" IPS to 2-7/8" IPS	1"	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.

K-FLEX® TITAN™ ▸ FOR ENERGY CONSERVATION (ASHRAE 90.1 - 2010)

NOMINAL PIPE OR TUBE SIZE, INCHES	< 40°F < 4.4°C	40-60 °F 4.4-15.6°C	105-140 °F 40.6-60 °C	141-200°F 60.6-93.3°C
< 1"	0.5	0.5	1.0	1.5
1" to 1 1/2"	1.0	0.5	1.0	1.5
1 1/2" to 4"	1.0	1.0	1.5	2.0

K-FLEX® TITAN™ ▸ PIPE "R" VALUES PER SQUARE FOOT (ALL SIZES ARE NOMINAL)

Nominal insulation I.D.	1/2" WALL Insul-Tube	3/4" WALL Insul-Tube	1" WALL Insul-Tube	1-1/2" WALL Insul-Tube
1/4"	4.2	6.4	10.1	17.9
3/8"	3.8	5.8	9.1	15.6
1/2"	3.6	5.7	8.4	14.4
5/8"	3.5	5.8	8.0	13.6
3/4"	3.3	5.7	7.9	12.9
7/8"	3.4	5.8	7.6	12.3
1-1/8"	3.3	5.7	7.5	11.5
1-3/8"	3.4	5.5	7.2	-
1-5/8"	3.3	5.4	6.9	-
1-1/2" IPS	2.8	4.7	6.2	-
2-1/8"	3.2	5.1	6.6	-
2" IPS	3.1	5.0	-	-
2-1/2" IPS	3.0	-	-	-
2-5/8"	3.1	-	-	-

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