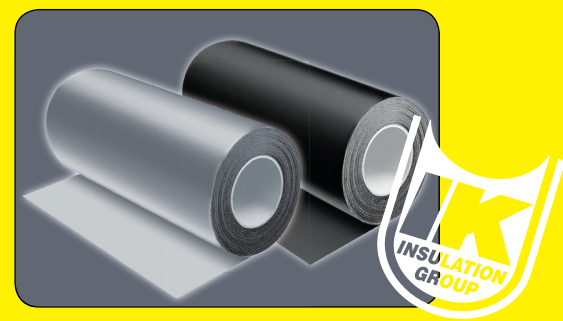


K-FLEX CLAD® IN JACKETING

Flexible, Non-Metallic, Polymeric Jacket Protection for Demanding Applications



DESCRIPTION

K-FLEX CLAD® IN Jacketing is a flexible, non-metallic, polymeric (CPE/PVC) protective jacketing for all insulation types (elastomeric, mineral fiber, cellular glass, polyurethane, etc). The product is made in L'Isolante K-FLEX's ISO 9001:2008-certified manufacturing facility in Milan, Italy.

AVAILABILITY

K-FLEX CLAD® IN Jacketing is gray or black in color, 0.045" thick and is available in 39" wide x 75' long rolls. Matching fitting covers (segmented and thermoformable) and jacketing factory-applied to K-FLEX® FEF insulation tubes and sheets / rolls are also available.

APPLICATIONS

K-FLEX CLAD® IN Jacketing is recommended for applications with high surface temperature limits (ambient air or insulation surface) below +175°F (+80°C). Service temperature ranges are dependent on that of the insulation substrate (e.g. temperature range for K-FLEX® NBR/PVC-based FEF is -297°F (-183°C) to +220°F (+104°C)). For applications below -40°F (-40°C), contact K-FLEX technical support when using K-FLEX® FEF insulation. The product is used to protect insulation against UV, ozone, high humidity, salt spray, weather, oil and grease, aggressive chemicals, impact and mechanical abuse, corrosion under insulation (CUI), and moisture vapor intrusion. The jacket's density gives it good sound deadening properties, making it suitable for use as a coating material in acoustic systems for industrial use, such as configurations relating to ISO 15665. It's high emissivity surface makes accurate thermal imaging possible and allows for non-destructive insulation inspection. The polymeric barrier is resistant to oxidation that can occur on metal jackets in outdoor applications, leading to rust, as well as jacket and insulation replacement in severe cases. It is also well-suited for temperature cycling applications due to the ability of the polymeric covering to expand and contract with rapid

temperature cycles. The jacket's physical properties allows it to be used as a dielectric protector (note that it cannot be counted as an electrically conductive material). For these reasons, K-FLEX CLAD® IN Jacketing is ideal for utility and process pipes, ducts, vessels and tanks in industrial plants, operating mills (pulp and paper), offshore platforms, FPSOs, LNG Terminals and marine applications.

INSTALLATION

K-FLEX CLAD® IN Jacketing is flexible (even at low temperatures), durable (non-fracturing and resistant to corrosion, deformation, punctures, dents and tearing from traffic, handling and environment), safe to handle (non-dusting and free of sharp edges), easy to transport and store (delivered in roll form), and lightweight for an efficient installation. It requires little to no maintenance and allows for removal and reapplication for pipe inspection. K-FLEX recommends that insulation systems are installed on non-operational systems with clean, dry surfaces in ambient conditions between 40°F and 100°F. K-FLEX CLAD® IN Jacketing delivers a 100% sealed system (longitudinal, butt and overlap seams) via either an aggressive solvent-based contact adhesive (K-FLEX® 420 Adhesive) or heat welding (adhesive-free, sealed seam). Consult with K-FLEX technical support before using heat welding method. When bonding with adhesive, the jacket surface does not require preparation or activation for it to accept the adhesive. Once the insulation has been installed, it can be covered immediately with the jacket. For pipe applications, jacketing should be cut to allow for a 2" overlap over the jacket's longitudinal seam and the insulation's circumferential seam. The jacket should be adhered to the top insulation layer via an adhesive strip, wrapped around the insulation (ensuring longitudinal joints are positioned against the flow of water), and sealed with adhesive on both overlap sections. Consecutive jacketing sections should allow for a 2" circumferential overlap. All seams (horizontal and vertical) should be sealed with a marine-grade sealant (Bostik® 70-03A).

For vessel and tank applications, the jacket should be adhered to the outer insulation layer with 100% adhesive coverage on both surfaces. All adjoining jacket sections should overlap the already installed section by 2" and be glued in place. All seams (horizontal and vertical) should be sealed with a marine-grade sealant (Bostik® 70-03A). K-FLEX CLAD® IN Jacketing is perfect for field fabrication. No special processes (crimping, riveting, strapping, etc.), tools or materials are necessary at the job site. Special parts (flanges, valves, etc.) can be field-fabricated from insulation tubes / sheets and jacketing, which is flexible and easily cut with a sharp, non-serrated knife. Refer to the *K-FLEX Installation Manual* for complete installation guidelines.

PROTECTION AGAINST CUI

K-FLEX CLAD® IN Jacketing has a high water vapor diffusion resistance factor and practically eliminates the problems of progressive insulation deterioration and corrosion under insulation (CUI). The installed system is 100% sealable with moisture-tight seams, eliminates gaps between the insulation surface and cladding layer, has a high emissivity value, and is resistant to puncture.

FLAME AND SMOKE RATING

K-FLEX CLAD® IN Jacketing has an appropriate response to fire, achieving a Class A flammability rating (<25/450) when tested to ASTM E84 and meeting the requirements of IMO 61/67 part 2&5.

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

- CE Marine Mark Approved (MED, module B)
- RoHS Compliant
- ABS (American Bureau of Shipping)
- DNV (Det Norske Veritas)
- Lloyd's Register
- Norsok Standard R-004 ed 3 (par. 5.9 non-metallic jacket)
- ASTM E84 25/450-rated (Class A) - tested to UL 723

PHYSICAL PROPERTIES	K-FLEX CLAD® IN JACKET	TEST METHODS
Material Type	Flexible, Polymeric (Chlorinated Polyethylene (CPE) / PVC) Barrier	
Color	Gray (RAL 7001) or Black (RAL 9011)	
Thickness	.045" (1.2 ± 0.2mm)	
Water Vapor Permeance	0.08 perms μ > 90,000 (moisture resistance factor)	ASTM E96 EN 12086
Specific Weight	1.8 ± 0.1g/cm³	
Hardness	≥80 ShA	ISO 7619, ASTM D2240
Tensile Strength	≥6.9 MPa (Typical value 7.5 MPa)	ISO 37
Modulus 10%	>1.5 MPa	ISO 37
Elongation to Break	>100% (Typical values: elongation @ 70%, elongation to break 300%)	ISO 37
Peel Adhesion	>50 Kpa	ISO 2411
Shear Strength	>20 N/25mm	ISO 34-1
Ozone Resistance	Extremely Good: No oxidation after 72 hours of 50pphm and 20% elongation	ASTM D1171
UV Resistance	Extremely Good: No change in color, pitting, cracking or blistering after 2 years exposure in Arizona	ASTM G7
Salt Spray (Sea Water) Resistance	Extremely Good: No color shade change, scaling or blistering after 480 hours	ISO 3768, ASTM B117
Aging Resistance	Extremely Good: Elongation to break and modulus conformance to specification after 360 hours of 72 MJ	ISO 4982
Oil Resistance	Extremely Good: Elongation to break and modulus conformance to specification after 72 hours of immersion in oil IRM 903	ISO 1817
Chemical Resistance	Excellent resistance to broad spectrum of chemicals (hydrocarbons, alcohols, acids, oils, etc.). Full compatibility data, including chemicals to avoid, is available on request.	
Impact Resistance	Extremely Good: Resistant to 20mm diameter puncher of 1 Kg mass	EN 12691
High Surface Temperature Limit (continuous temperature of ambient air & insulation surface)	175°F (80°C)	
Flexibility (for installation)	Excellent: Flexible to -4°F (-20°C)	ISO 812
Emissivity	0.90	
Corrosion Risk (CUI)	Protects against corrosion under insulation: 100% sealable, high emissivity, resistant to moisture vapor intrusion, puncture and tear	
Fire Performance	Pass Pass <25/450 (Class A) Pass	BS 476 pt 6 & 7 NF 92501 ASTM E84 IMO 61/67 part 2&5
K-FLEX® 420 ADHESIVE (JACKET-TO-JACKET AND JACKET-TO-SUBSTRATE ADHESIVE)		
Base Material	Polychloroprene	
Solvents	Petroleum Distillate, Acetone, MEK, Toluene, N-Hexane	
Application Method	Spray, Brush, Roll or Flow (For spraying, air pressure of 80 psi and fluid flow of 6 fl. oz/min should be used)	
Coverage (approximate)	300 ft²/gal (@2.5 grams(dry weight)/ft²)	
Properties - Dry Time: 10 minutes (varies dependent on conditions) / Viscosity: 200 - 450 cps / Solids: 23-27% / Color: Gray-Green / VOC: ≤674 g/L / Net Weight: 6.6-7.0 lbs/gal / Flash Point: -14°F / Storage Temperature: +60°F to +80°F / Installation Temperature: +65°F to +100°F / Shelf Life: 12 months		
MARINE-GRADE SEALANT (SEAM & JOINT SEALANT)		
Product	Bostik® 70-03A	
Base Material	Silyl Modified Polymer (SMP)	
UV / Weather / Aging Resistance	Excellent	
Properties - Curing Method: Moisture / Specific Gravity: 1.4 g/mL / Skin Forming Time: 10 minutes / Open Time: <15 minutes / Cure Rate (after 24 hours): 3mm / Hardness: 55 Shore A / Tensile Strength (100%): 1.7 MPa / Tensile Stress at Break: 2.6 MPa / Elongation to Break: 250% / Shear Stress: 2.2 MPa / E-Modulus (10%): 3.3 MPa / High Temperature Limit: +250°F / Installation Temperature: +40°F to +100°F / Color: Gray		