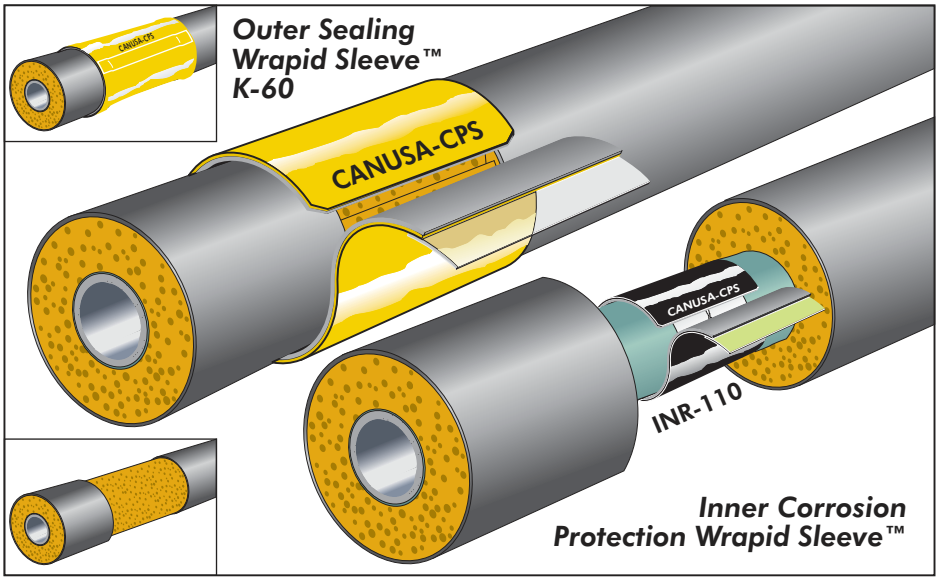
CANUSA-CPS
A SHAWCOR COMPANY

Product Data Sheet

INR-110 & K-60 Wrapid Sleeves™ for Insulated Pipes

Corrosion protection and sealing sleeves for pre-insulated pipe joints

Canusa-CPS is a leading manufacturer of specialty pipeline coatings which, for over 35 years, have been used for sealing and corrosion protection of pipeline joints and other substrates. Canusa high performance products are manufactured to the highest quality standards and are available in a number of configurations to accommodate your specific project applications.



Product Description

Canusa provides high performance, heat shrinkable products designed for the corrosion protection (INR-110) and sealing protection (K-60) of pre-insulated pipe joints.

INR-110 sleeves are specifically engineered for use in combination with polyurethane (PUR) foam or other infill systems. These sleeves are resistant to the conditions associated with the PUR foaming operation and maintain their full set of anti-corrosion properties. INR-110 sleeves are fully compatible with a wide range of pipeline coatings, including PP, FBE, PE, Coal Tar and Tape.

The Canusa Wrapid Sleeve™ Type K-60 is a onepiece wraparound sleeve used to seal and provide mechanical protection of exposed foam insulation. It consists of a cross-linked polyolefin backing, coated with a technologically advanced protective adhesive which effectively bonds to polyethylene outer jackets and foam insulation.

Features & Benefits

Corrosion Protection INR-110 Sleeve

I) Operator Friendliness - One-piece, wraparound sleeves with a factory bonded closures and a specially engineered product thickness results in optimum installation time. Single wrap configuration eliminates the requirements for muiltiple wrappings.

II) Crosslinked Polyolefin Backing - Proprietary crosslinking technology provides superior resistance to PUR in-fill while ensuring long-term hoop stress.

III) Unique adhesive technology allows for a low surface preparation requirement while ensuring long-term adhesion and excellent cathodic disbondment resistance properties.

Outer Sealing Sleeves-Type K-60

Long-Term Protection

Wrapid Sleeve™ Type K-60 provides excellent resistance to soil stress resulting in an effective long term seal. Once installed, Wrapid Sleeve™ Type K-60 provides the structural integrity of a seamless tube, and provides the substrate with durable protection against abrasion and chemical attack.

Saves Time & Money

With Wrapid Sleeve™ Type K-60's unique construction, less time is required handling, positioning and installing separate closures. With the application of heat, this feature allows for fast, simple and complete installation of the sleeve. This minimizes installation time and labour costs while promoting high production rates.

I) Wrapid Sleeve™ Type K-60 Configuration - One-piece configuration (K) incorporates a pre-attached closure that has been factory applied resulting in quick and reliable field installation.

II) Crosslinked Polyolefin Backing - Proprietary crosslinking technology provides superior abrasion resistance and mechanical strength to the backing.

III) Assured Performance - Operating temperature specific adhesives ensure aggressive bonding and long-term sealing protection even in high soil stress conditions.

IV) Job-site Flexibility - CanusaWrap™ (W) bulk rolls are available upon special request for varying pipe diameters.

Applications

- Pre-Insulated Pipes
- Infill Systems
- Girth-Weld Joints
- Jacket Continuation

Configurations

- Wrapid Sleeve™
- CanusaWrap™
- Standard Shrink

Pipe Sizes

55-1520mm (2-60")

Temperature Range

up to 110°C (230°F)

INR-110 & K-60 Wrapid Sleeves™ for Insulated Pipes

The product selection chart shown here is intended as a guide for standard products.

Corrosion protection and sealing sleeves for pre-insulated pipe joints

Product Selection Guide

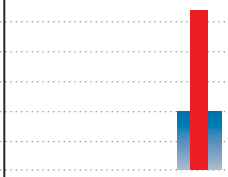
Sleeve Operating Characteristics

Choose your sleeve based on Operating Temperature and Characteristics listed below.

Pipeline Operating Temperature

Pre-heat Temperature

Celsius	Fahrenheit
100°	212°
80°	176°
60°	140°
40°	104°
20°	68°
0°	32°



	Corrosion Protection	Sealing Protection
	INR-110	**K-60***
Minimum Installation Temperature[1]	10°C (18°F) above Dew Point	65°C (149°F)
Maximum Operating Temperature	110°C (230°F)	60°C (122°F)
Resistance to Soil Stress / Axial Movement	not applicable	good
Compatibility to Polyurethane Foam (In-fill)[2]	excellent	not applicable
Main Line Coating Compatibility	Bit, Tape, CTE, PE, PP, FBE	Tape, PE, PP
Recommended Surface Preparation	St 2	St 2

[1] these preheat temperatures only apply to insulated pipelines, refer to Wrapid Sleeve™ Product Data Sheet for girth-weld corrosion protection

[2] product resists in-fill material (i.e. PUR foam) up to 240°C (464°F)

Typical Product Properties

		Test Standard	Unit	INR-110	K-60*
Adhesive	Softening Point	ASTM E28	°C (°F)	120 (248)	102 (216)
	Lap Shear Strength	DIN 30 672	N/cm² (psi)	6 (9)	40 (58)
Backing	Specific Gravity	ASTM D792		0.95	0.95
	Tensile Strength	ASTM D638	MPa (psi)	22 (3190)	22 (3190)
	Elongation	ASTM D638	%	600	600
	Hardness	ASTM D2240	Shore D	52	52
	Heat Shock - 4 hrs @ 250°C	ASTM D2671	Visual	pass	pass
	Abrasion Resistance	ASTM D1044	mg	30	30
Sleeve	Peel Strength	DIN 30 672	N/cm (pli)	18 (10)	65 (37)
	Water Absorption	ASTM D570	%	0.05	0.05
	Low Temperature Flexibility	ASTM D2671	°C (°F)	-30 (-22)	-14 (7)
	Resistance to PUR in-fill	- -	Pass/Fail	Pass	N/A
	Drum Skin Test	D024 A P50-F SD004	Visual	no melt or sag	N/A
	Fully Recovered Sleeve Thickness:	- -	mm (mils)	2.1 (84)	2.5 (99)
	T2	- -	mm (mils)	- -	- -

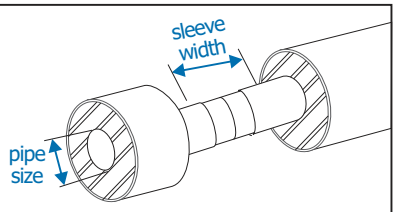
*K-60 UV should be used for above ground applications

How To Order:

Dimensions & Ordering Info

INR-110 230-300 BK

	Standard Corrosion Protection (INR-110) Sleeve Options
Colour	**BK-** Black
Sleeve Width	**300, 450, 600 mm** (12, 18, 24")
Pipe Size	**55 - 1220 mm** (2 -48")
Maximum Operating Temperature	**110°C** (230°F)
Adhesive (thickness as supplied)	**1.0 mm** (40 mils)
Backing (thickness as supplied)	**0.63 mm** (25mils)
Backing (thickness fully recovered)	**0.80 mm** (32mils)
Application	**Corrosion Protection of PUR Infill Systems**

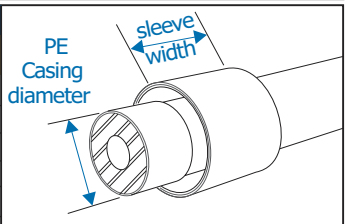


Min. Sleeve Width =
Bare Steel Dimension + **50 mm** (2")
on each side of the pipe joint.

Dimensions & Ordering Info

PRODUCT 315-600 BK

		Standard Sealing Protection Sleeve Options
		K-60
Colour		**YE-** Yellow
Sleeve Width		**600, 900 mm** (24, 36")
Jacket Diameter		**55 - 1520 mm** (2 - 60")
Adhesive (thickness as supplied)	T1	**T-** 1.25mm (50mils)
	T2	
Backing (thickness as supplied)	T1	**T-** 0.63mm (25mils)
	T2	
Application		**Sealing Protection of PUR Infill Systems**



Sleeves should overlap at least 50mm (2") onto the mainline coating

PRODUCT refers to sleeve type (KTG, KLG, KTS, KLS, KTON, KTD, KLD, GTS-65/L or GTS-65/S)

The above represent standard ordering options. Consult your Canusa representative for any unique project requirements or CanusaWrap™ (require CLW closures) configuration.

CANUSA-CPS
A SHAWCOR COMPANY

www.canusacps.com

Canada

CANUSA-CPS
a division of SHAWCOR LTD.
25 Bethridge Road
Rexdale, Ontario
M9W 1M7,
Canada
Tel: +1 (416) 743-7111
Fax: +1 (416) 743-5927

U.S.A./Latin America

CANUSA-CPS
a division of SHAWCOR INC.
2408 Timberloch Place
Building C-8
The Woodlands, Texas
77380, U.S.A.
Tel: +1 (281) 367-8866
Fax: +1 (281) 367-4304

Europe/Middle East

CANUSA-CPS
a division of Canusa Systems Ltd.
Unit 3, Sterling Park
Gatwick Road
Crawley, West Sussex
England RH10 9QT
Tel: +44 (1293) 541254
Fax: +44 (1293) 541777

Asia/Pacific

CANUSA-CPS
a division of SHAWCOR LTD.
#05-31, Blk 52, Frontier
Ubi Avenue 3
Singapore
408867
Tel: +65-6749-8918
Fax: +65-6749-8919

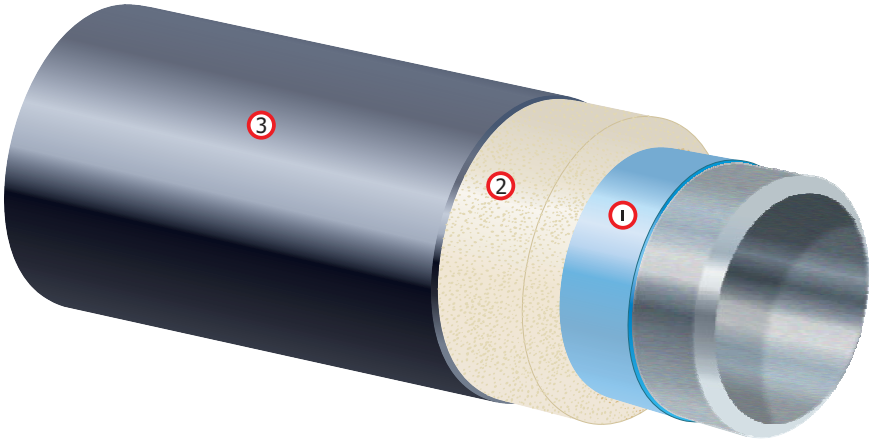
SHAW PIPE
A SHAWCOR COMPANY

the GLOBAL LEADER in pipe coating solutions.

Insul-8® Systems

PRODUCT DATA SHEET

Moulded or Spray Applied Polyurethane Foam Insulation



① Anti-corrosion Coating ② Thermal Insulation Layer ③ Outer Jacket- Protective Topcoat

Oil & Gas pipelines

Small diameter steel pipe

Large diameter steel pipe

Waterworks pipelines

PRODUCT DESCRIPTION

Insul-8® Systems are moulded and/or spray applied polyurethane foam coatings developed for external protection of buried or above ground steel and plastic pipe.

The polyurethane foam provides a cost-effective alternative for preventing hydrate formation in gas pipelines, maintaining viscosity of hot oil lines and providing freeze protection for water and sewage lines.

FEATURES AND BENEFITS

Provides a water tight barrier

Prevents hydrate formation in gas lines

Insul-8® polyurethane foam reduces heat loss to prevent hydrate formation in gas pipelines and helps to maintain viscosity in hot oil lines.

Available with a variety of anti-corrosion undercoat systems

Insul-8® Systems can be used with a variety of anti-corrosion coatings and is available in a variety of insulation thicknesses to meet specific project requirements.

Protection of water and sewage lines from freezing

An optional design for further protection against temperature loss is the application of heat tracing channels.

High Operating Temperature Capabilities

For use where high operating temperatures are attained, and high shear strength bond is required. Insul-8 is available in a range of maximum operating temperatures.

Global Availability

Bredero Shaw has a network of 27 coating plants strategically located across 6 continents to minimize pipe transportation costs. High capacity within the Bredero Shaw plant network allows the client to benefit from single source advantages, ultimately providing more cost effective management of pipe coating needs.

Insul-8®

Americas
Bredero Shaw
A ShawCor Company
3838 N. Sam Houston Pkwy E.
Suite 300
Houston, Texas
77032-3400, USA
Telephone: +1-281-886-2350
Fax: +1-281-886-2353

Shaw Pipe
A ShawCor Company
Two Executive Place,
200, 1824 Crowchild Trail, N.W.,
Calgary, Alberta
T2M 3Y7, Canada
Telephone: +1-403-263-2255
Fax: +1-403-264-3649

Europe/Africa/Russia
Bredero Shaw
A ShawCor Company
Imperial Dock
Leith, Edinburgh, EH6 7DT
Scotland, UK
Telephone: +44-131-553-9600
Fax: +44-131-553-9699

Bredero Shaw Norway
A ShawCor Company
P.O. Box 214
N-7301 Orkanger
Norway
Telephone: +47-72-46-60-60
Fax: +47-72-46-60-70

Middle East
Bredero Shaw
A ShawCor Company
P.O.Box 1789,
Suite 402, Al Reem Plaza
Buhairah Corniche, Sharjah, U.A.E
Telephone: +971-6-573-7374
Fax: +971-6-573-7379

Asia Pacific
Bredero Shaw
A ShawCor Company
101 Thomson Road
#17-01/02 United Square
Singapore 307591
Telephone: +65-6732-2355
Fax: +65-6732-9073

www.shawpipe.ca

TYPICAL PRODUCT PROPERTIES

PROPERTY	Insul-8®
Minimum Operating Temperature	-35°C (-31°F)
Maximum Operating Temperature	110°C (230°F)

TYPICAL PLANT CAPABILITIES

Minimum Pipe Diameter	50 mm (2")
Maximum Pipe Diameter	600 mm (24")*
Minimum Pipe Length	4.9 m (16')
Maximum Pipe Length	25.0 m (80')

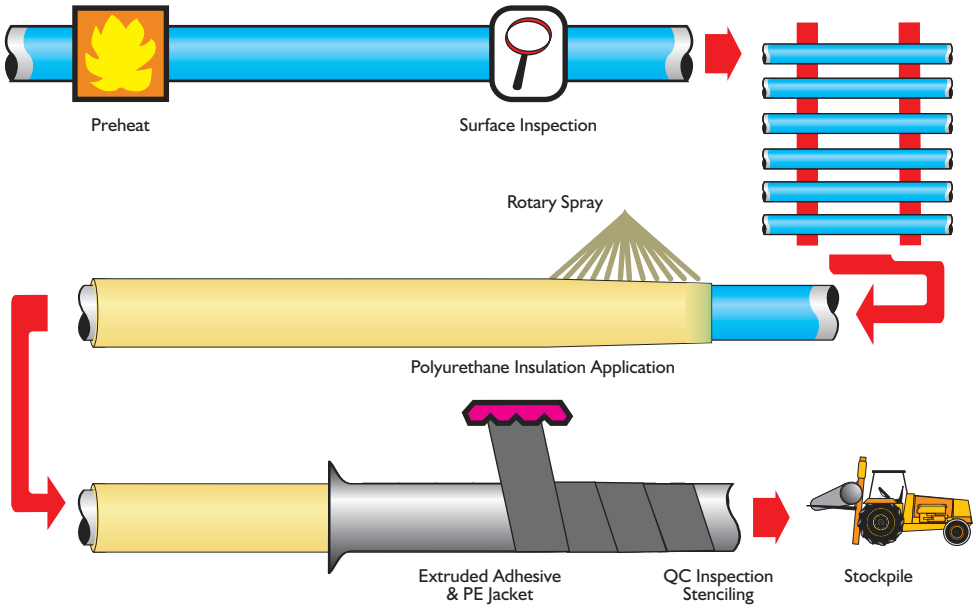
Values shown are typical and may vary from plant to plant. Consult Shaw for special requirements.
**Larger diameters may be possible - contact Shaw for confirmation*

QUALITY ASSURANCE

Quality System Compliant to:

ISO 9001:2000

PRODUCT APPLICATION PROCESS



PLANTS

34th Street, Edmonton, Alberta	Kuantan, Malaysia
21st Street, Edmonton, Alberta	Kabil, Batam Island, Indonesia
Camrose II, Camrose, Alberta	Kembla Grange, Australia
Calgary, Alberta	

BREDERO SHAW: THE GLOBAL LEADER IN PIPE COATING SOLUTIONS

Bredero Shaw is the world leader in pipe coating solutions, with more than 75 years of experience, over 28 pipe coating facilities on 6 continents and the largest team of technical and service specialists in the business. Bredero Shaw offers technologically advanced solutions for anti-corrosion coatings, protective and weight coatings, thermal flow assurance coatings, internal coatings, custom coatings and field joints for both onshore and offshore applications. This broad range of products and services provides Bredero Shaw with the unique capability to service the full spectrum of pipeline protection and flow assurance requirements. Consult your Bredero Shaw representative for your unique project requirements.

Insul-8® Coating Systems

Product Description

Insul-8® 85

Insul-8® 85 is a thermal efficiency coating system that was developed as a cost-effective means to reduce overall heat losses of buried steel pipe operating at lower temperatures.

This insulation system consists of an inner anti-corrosion tape and primer, followed by a spray-applied polyurethane foam and finished with an extruded layer of high-density polyethylene.

Insul-8® 110/Insul-8® HT

Insul-8® 110 & Insul-8® HT thermal insulation systems were developed to reduce overall heat loss in buried steel pipe where high operating temperatures are required.

These insulation systems consist of an inner FBE layer, followed by a spray-applied polyurethane foam and finished with an extruded layer of high-density polyethylene. The Insul-8® HT system uses special heat resistant FBE as well as a polyurethane foam system certified in accordance with the European Standard EN253 for a service life of 30 years at 150°C.

Outstanding Thermal Efficiency

The closed cell and water resistant polyurethane foam serves to reduce heat loss which, in turn, prevents hydrate formation in gas pipelines, maintains viscosity of hot oil and bitumen lines as well as provides freeze protection for water and sewage lines. The polyethylene topcoat serves to protect the foam from mechanical damage during handling as well as preventing moisture ingress. The handling characteristics of all complete insulated pipe systems exhibited excellent impact, shear strength and flexibility characteristics at cold temperatures.

Features & Benefits

Polyethylene jacket provides a watertight barrier to prevent moisture ingress

Insul-8® 110 & Insul-8® HT Systems are compatible with and can be applied over a variety of anti-corrosion coatings.

Both the fusion bond epoxy anti-corrosion layer and the foam insulation of the Insul-8®110 & Insul-8®HT Systems can be tailored to meet project specific design temperature requirements.

- For Standard foam with an approximate compressive strength of 45psi, the typical initial thermal conductivity value is <0.023W/mK (0.160Btu. in/h.ft².°F), when measured at a mean temperature of 23.8°C (75°F).
- For Standard foam with an approximate compressive strength of 70psi, the typical initial thermal conductivity value is <0.024W/mK (0.167Btu. in/h.ft².°F), when measured at a mean temperature of 23.8°C (75°F).
- For High Temperature foam with an approximate compressive strength of 70psi, the typical initial thermal conductivity value is <0.026W/Mk (0.180Btu. in/h.ft².°F), when measured at a mean temperature of 23.8°C (75°F).

Options/Variations

- The polyurethane foam can be applied in a variety of insulation thicknesses such as 1", 1½" and 2", to meet specific project requirements

Operating, Handling and Installation Temperatures

- -35°C to 85°C* (Insul-8® 85)
- -35°C to 110°C* (Insul-8® 110)
- -35°C to 150°C* (Insul-8® HT)

*Excessive thermal cycling beyond maximum operating temperature limitations may reduce the overall maximum operating temperature rating.

Joint Protection & Repairs
Insul-8® 85 & Insul-8® 110

Corrosion Barrier: INR-110

Polyurethane Foam: Half shells are supplied or field foaming is arranged by the customer

Outer Polyethylene Jacket: K-60 Heat Shrink Sleeves

Refer to Canusa-CPS web site: http://www.shrinksleeves.com

Insul-8® HT

- "Insul-8® Field System" consisting of HBE-HT, Canusa HT Foam and Canusa SuperCase – CSC-X
- Refer to Canusa-CPS web site: http://www.shrinksleeves.com

Standard Cutbacks

- 178 +12/-0mm

Compliancy

- Insul-8® HT Polyurethane Foam Compliant to EN 253
- Insul-8® 110/HT Corrosion Layer Compliant to CSA Z245.20 (System 1A or 1B)
- Outer Jacket Layer Compliant to applicable sections of CSA Z245.21
- Quality System Compliant to ISO 9001:2000

CANUSA-CPS
A SHAWCOR COMPANY

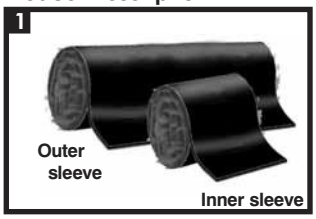
Installation Guide

Wrapid Sleeves™ for Insulated Pipelines

Heat shrinkable sleeve system for insulated steel pipe joints

Product Description

1



Canusa Inner & Outer Sleeves are shipped pre-cut with a pre-attached closure. The adhesive is protected from contamination by an inner liner.

Recommended Procedures

Canusa-CPS recommends the use of heat shrink sleeves for both the inner protection over the steel and for the outer protection over the polyurethane foam. For operating temperatures up to 110°C use the appropriate diameter 300mm wide Canusa INR-110 as the inner protection. The standard outer sleeve is a 600mm wide Canusa KTS.

Storage & Safety Guidelines

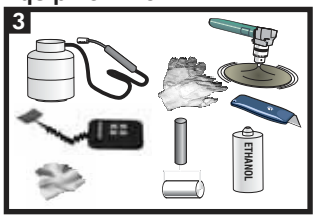
2

To ensure maximum performance, store Canusa products in a dry, ventilated area. Keep products sealed in original cartons and avoid exposure to direct sunlight, rain, snow, dust or other adverse environmental elements. Avoid storage at temperatures above 35°C (110°F) or below -20°C (-4°F). Product installation should be done in accordance with local health and safety regulations.

These installation instructions are intended as a guide for standard products. Consult your Canusa representative for specific projects or unique applications.

Equipment List

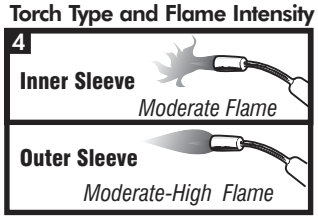
3



Propane tank, hose, torch & regulator
Power wire brush, knife, roller,
Rags & ethanol (min. 94%) cleanser
Temperature measuring device
Standard safety equipment; gloves, goggles, hard hat, etc.

Torch Type and Flame Intensity

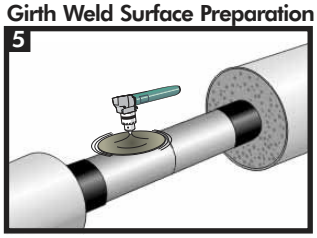
4



Canusa recommends a short handled, short tip with a maximum 400,000 BTU torch size. Long handled, heavy torches such as "Tiger Torches" are *not* recommended. Contact your Canusa representative for your nearest approved torch dealer.

Girth Weld Surface Preparation

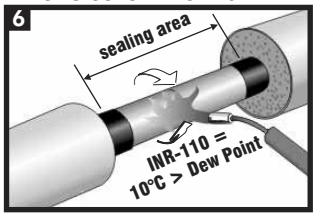
5



Using a power wire brush, clean the steel and corrosion coating to a minimum of St 2 (SP2) to remove mill scale and surface rust. Clean the abraded surface with a clean cloth to remove dust, dirt and debris.

Inner Sleeve - Pre-Warm

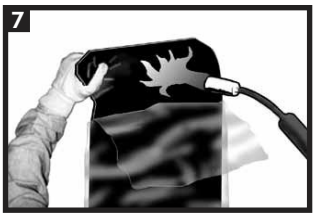
6



For INR-110, use a propane torch to heat the sealing area to a temperature of 10°C (18°F) above the dew point temperature. For other inner sleeves, check the recommended preheat temperature table. Using a temperature measuring device, ensure that the correct temperature is reached on the steel. Direct the flame towards the centre of the cutback to prevent damage to the insulate layer.

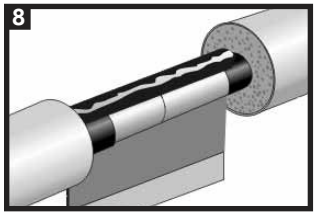
Inner Sleeve Installation

7



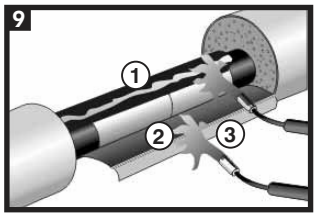
Partially remove the release liner and gently heat the underlap approximately 150 mm (6") from the edge.

8



Centre the inner sleeve on the service pipe, ensuring it overlaps onto the factory coating. Remove the release liner from the sleeve.

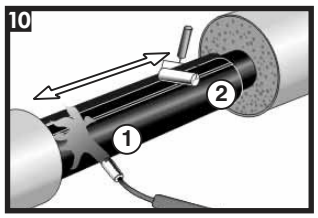
9



Wrap the sleeve loosely around the pipe, ensuring the appropriate overlap.

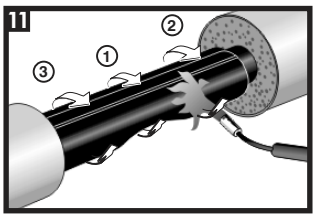
1. Gently heat the backing side of the underlap
2. Genly heat the adhesive side of the overlap
3. Gently heat the adhesive (green) side of the closure until it becomes glossy.

10



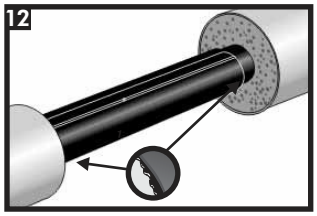
Press the closure firmly into place. Gently heat the closure and pat it down with a gloved hand. Repeating this procedure, move from one side to the other. Smooth any wrinkles by gently working them outward from the centre of the closure with a roller.

11



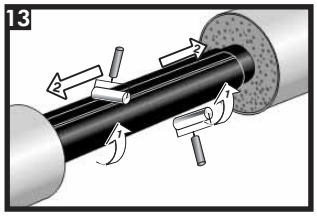
Using the appropriate torch, begin at the centre of the sleeve and heat circumferentially around the pipe. Use broad strokes. Continue heating from the centre toward one end of the sleeve until recovery is complete. In a similar manner, heat and shrink the remaining side.

12



Shrinking is complete when the adhesive begins to ooze out the edges and the sleeve is in full contact with the pipe.

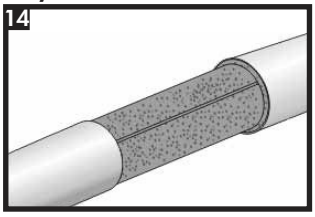
13



While the sleeve is still hot & soft, use a roller to roll the sleeve surface and push any entrapped air up and out of the sleeve.

Polyurethane Foam Installation

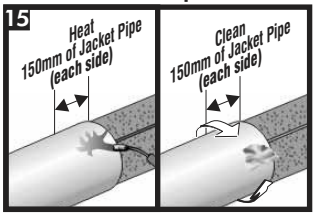
14



Install the polyurethane foam as per the manufactures instructions.

Outer Jacket Preparation

15



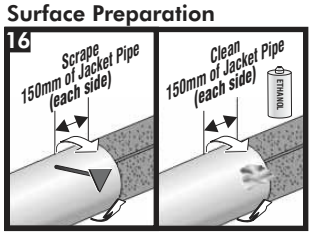
Use a propane torch with a **low** flame to dry the jacket pipe and service pipe. Use a dry, grease and lint-free rag to wipe clean the jacket pipe and service pipe.

Wrapid Sleeves™ for Insulated Pipelines

Heat shrinkable sleeve system for insulated steel pipe joints

Surface Preparation

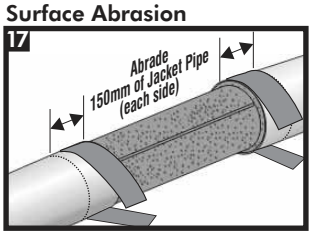
16



Using a scraper, remove any burrs from the edges of the jacket pipe. Clean 150mm (6") of the jacket pipe surface, on each side of the cutback, with a solvent.

Surface Abrasion

17



Using grit paper, roughen 150mm (6") of the jacket pipe surface, and all of the polyurethane foam. Using a dry rag - free of lint and grease - clean the roughened surface to remove any loose particles.

Sleeve Preheat Requirements

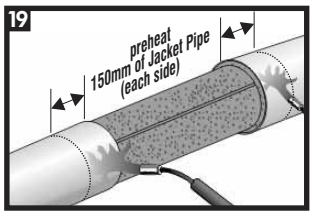
18

Sleeve	Minimum Preheat Temp.
K-60/K-60UV	65°C (140°F)
TBK-60	75°C (167°F)

Use the above table to determine the outer sealing sleeve's preheat requirement.

Outer Sleeve - Preheat

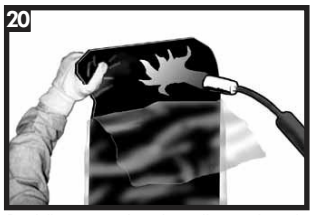
19



Using a propane torch warm 150mm (6") of the jacket pipe surface to the temperature shown above. **Do not heat the polyurethane foam.**

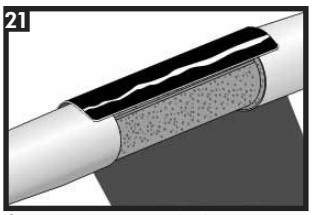
Outer Sleeve Installation

20



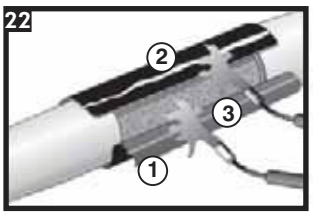
Partially remove the release liner and gently heat the underlap approximately 150 mm (6") from the edge.

21



Centre the sleeve over the foam ensuring equal overlap onto the jacket. Press the underlap firmly into place.

22

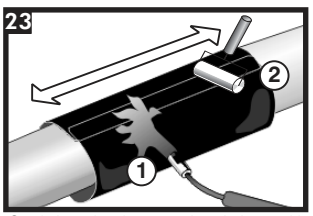


Wrap the sleeve loosely around the pipe, ensuring the appropriate overlap.

1. Remove any release liners from the closure
2. Gently heat the backing of the underlap
3. Gently heat the adhesive side of the overlap

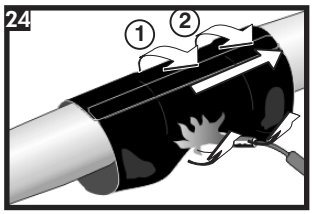
Ensure not to damage the polyurethane foam insulation during heating.

23



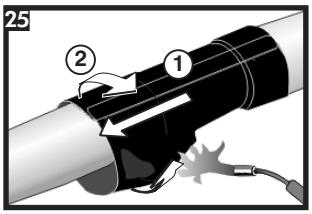
Gently heat the closure and pat it down with a gloved hand. Repeating this procedure, move from one side to the other. Smooth any wrinkles by gently working them outward from the centre of the closure with a roller.

24



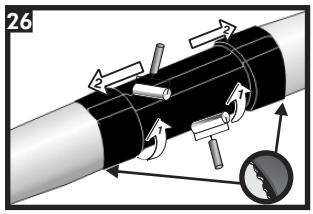
Using the appropriate torch, begin at the centre of the sleeve and heat circumferentially around the pipe. Use broad strokes. Continue heating from the centre toward one end of the sleeve until recovery is complete.

25



Continue heating from the centre toward the remaining side.

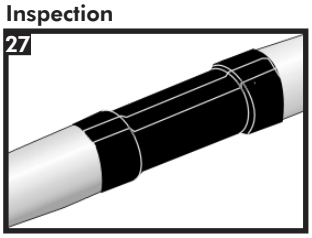
26



Shrinking has been completed when the adhesive begins to ooze out the edges and the sleeve is in full contact with the pipe. While the sleeve is still hot & soft, use a roller to roll the sleeve surface and push any entrapped air up and out of the sleeve.

Inspection

27



Visually inspect the installed sleeve for the following:

- Sleeve is in full contact with polyurethane foam and jacket pipe surface.
- Adhesive flows beyond both sleeve edges.
- No cracks or holes in sleeve backing.

Backfilling Guidelines

After shrinking is complete, allow the sleeve to cool for 2 hours prior to lowering and backfilling. To prevent damage to the sleeve, use selected backfill material, (no sharp stones or large particles) otherwise an extruded polyethylene mesh or other suitable shield should be used.

CANUSA-CPS
A SHAWCOR COMPANY

www.canusacps.com

Canada
CANUSA-CPS
a division of SHAWCOR LTD.
25 Bethridge Road
Toronto, Ontario
M9W 1M7,
Canada
Tel: +1 (416) 743-7111
Fax: +1 (416) 743-5927

U.S.A./Latin America
CANUSA-CPS
a division of SHAWCOR INC.
2408 Timberloch Place
Building C-8
The Woodlands, Texas
77380, U.S.A.
Tel: +1 (281) 367-8866
Fax: +1 (281) 367-4304

Europe/Middle East
CANUSA-CPS
a division of Canusa Systems Ltd.
Unit 3, Sterling Park
Gatwick Road
Crawley, West Sussex
England RH10 9QT
Tel: +44 (1293) 541254
Fax: +44 (1293) 541777

Asia/Pacific
CANUSA-CPS
a division of SHAWCOR LTD.
#05-31, Blk 52, Frontier
Ubi Avenue 3
Singapore
408867
Tel: +65-6749-8918
Fax: +65-6749-8919

IG-WS4PIP-Can-rev016