



## Covalence® Heat Shrinkable Sleeves for Flanges

A wraparound heat-shrinkable sleeve with high shrink ratio and a protective cardboard under-sheet.

The heat-shrinkable sleeve consists of an irradiation cross-linked, high density polyethylene with a low preheat visco-elastic sealant that keep the flange bolts and nuts free from foreign substances such as mastics.



## COVALENCE<sup>®</sup> FCWS

### Product Information

**Product description:** FCWS, is a thick wall, heat-shrinkable wraparound sleeve with high shrink ratio allowing irregular shapes to be coated easily. It is specifically useful for corrosion prevention and sealing of flanges in water distribution networks.

Construction: Two-layer system

- **First layer:** Visco-elastic mastic sealant.
- **Second layer:** Thick wall, radiation-cross-linked, high density polyethylene.

The installation is carried out directly on the cleaned and dried (pre-heated) flange & pipe surface without any primer being required. When heated, the FCWS sleeve shrinks and the sealant melts and flows forming a tight bond. A heat-activated, pre-attached closure is used to bond the sleeve ends together. In addition, a corrugated cardboard support sheet adds structural support in the transition area, keeping nuts and bolts free from adhesive. The bond strength builds up during cooldown, forming a moisture-proof seal that is mechanically strong and resistant to vibration, impact, abrasion and corrosive gases & fluids.

#### Features:

- No primer required.
- Low preheat sensitivity & proven high functionality.
- Highly resistant.
- Copes with high transitions (high shrink ratio)
- Self-healing effect.
- No special equipment or skills required.

#### Benefits:

- No drying time and easy application.
- Ensures a strong bond & impervious seal.
- Minimizes inventory, thus economical.
- Makes installation fast and easy. Keeps installation costs low.

### Product selection guide

<b>Max. operating temperature</b>	65°C (149°F)
<b>Compatible line coatings</b>	PE, PP, Fibre-Cement Zinc, Bitumen Paint, Cold tape.
<b>Min. preheat temperature</b>	60°C (140°F)
<b>Recommended pipe preparation</b>	ST3
<b>Soil stress restrictions</b>	None
<b>Performance</b>	EN12068 C30 ISO21809-3 Type 14A2

### Product properties

#### Backing

Property	Test method	Typical value
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<b>Tensile strength at break</b>	ASTM D-638 EN 60684-2	22.8 MPa
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<b>Elongation at break</b>	ASTM D-638 EN 60684-2	600%
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<b>Hardness, Shore D</b>	ASTM D-2240/ISO 868	57
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<b>Shrink force</b>	ASTM D-638, 150° C (302°F)	40 psi
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<b>Dielectric strength</b>	ASTM D-149 EN 60684-2	35 kV/mm
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<b>Moisture absorption</b>	ASTM D-570	0.04%
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#### Adhesive

Property	Test method	Typical value
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<b>Softening point</b>	ASTM E-28	134°C (273°F)
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<b>Lap shear</b>	EN 12068 @ 10 mm/min	> 0.1 N/mm <sup>2</sup>
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#### Installed sleeve

Property	Test method	Typical value
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<b>Peel to steel</b>	EN 12068 @ 10 mm/min	1.1 N/mm
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<b>Impact resistance</b>	EN 12068, Class C	> 15 J
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<b>Indentation resistance</b>	EN 12068, Class C30	> 0.6 mm*
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<b>Resistance to joint deflection and displacement</b>	DIN 30672	Pass
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<b>Cathodic disbondment</b>	EN 12068 30 days	9 mm radius
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\* Remaining coating thickness

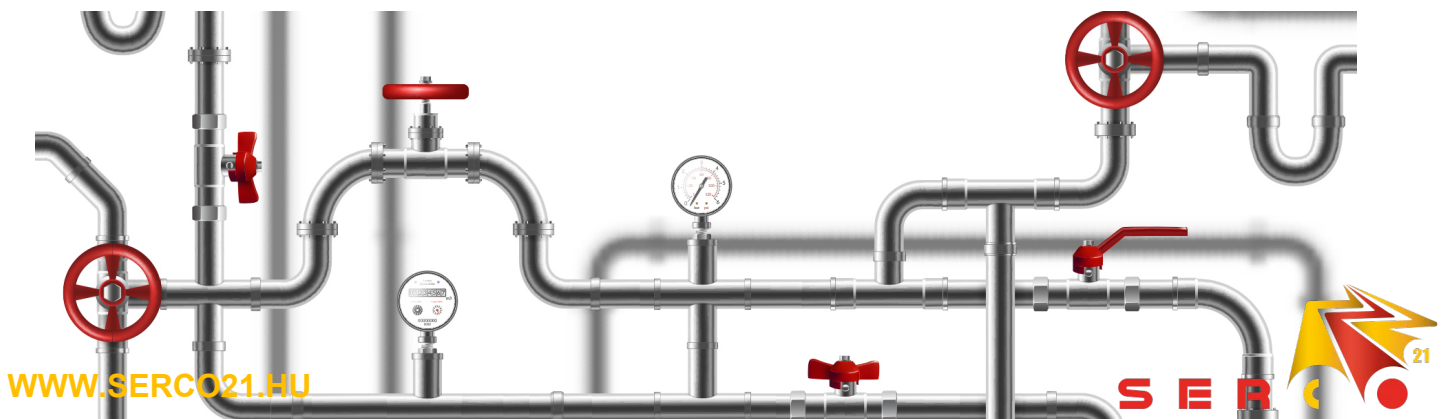
Note: The typical values in this data sheet are based on lab prepared samples. Values shown are not to be interpreted as product specifications.

### Product thickness

	HEPS-C30-E*	MEPSC30-E**
<b>Backing as supplied</b>	0.7 mm (0.028 in)	0.9 mm (0.035 in)
<b>Backing fully free recovered</b>	1.4 mm (0.055 in)	1.4 mm (0.055 in)
<b>Adhesive as supplied</b>	1.5 mm (0.059 in)	1.5 mm (0.059 in)
<b>Shrinkage</b>	45%	36%

\* used for FCWS sizes up to DN250

\*\* used for FCWS sizes > DN250



**Ordering information**

Covalence® FCWS products are available as a kit with:

- a HEPS-C30-E or MEPS-C30-E Uni-sleeve (pre-cut with attached closure patch)
- a support sheet

**FCWS**

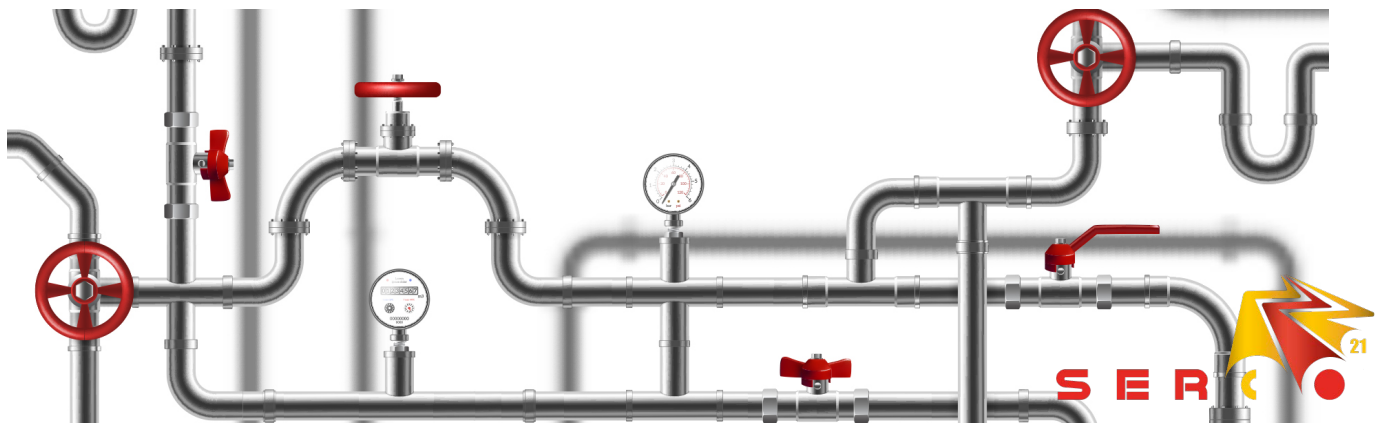
<b>Example</b>	<b>FCWS-DN600-600</b>	
	<b>Designation</b>	<b>Standard ordering options</b>
<b>DN600</b>	Nominal pipe diameter	DN200-1200 (8.625"-48")
<b>600</b>	Sleeve width	450 mm, 600 mm

**General information**

<b>Product dimension</b>	Sleeve cut lengths and appropriate closure patch widths depend on pipe size and product construction, see application table AT-MEPS/MPSM.
<b>Installation guide</b>	For proper product installation, see latest installation instruction.
<b>Application table</b>	See AT-COVALENCE-FCWS-CUT-LENGTH
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	Store indoor, clean and dry, away from direct sunlight in a cool place below +50°C. Unlimited shelf life.

**Information**

<b>Documentation</b>	Extensive information is available on our website. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system shall be carried out by certified personnel.



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DISCLAIMER: Seal For Life Industries warrants that the product conforms to its chemical and physical description and is appropriate for the use stated on the technical data sheet when used in compliance with Seal For Life Industries' written instructions. Because many installation factors are beyond the control of Seal For Life Industries, the user shall determine the suitability of the products for the intended uses and assume all risks and liabilities in connection herewith. Seal For Life's liability is stated in its General Terms and Conditions of Sale. Seal For Life Industries makes no other warranty either express or implied. All information contained in this document is to be used as a guide and is subject to change without notice. This technical data sheet supersedes all previous data sheets on this product.

## COVALENCE® FCWS-F

### Product Information

**Product description:** The FCWS-F is a wrap-around heat-shrinkable sleeve, with a specially designed zipper closing system, allowing a fast and simple installation. FCWS-F products are used for protection of flanges, adaptors, collars and couplers. The fiberglass-reinforced woven backing gives the FCWS-F a high mechanical resistance as well as a high recovery capacity. In addition to the sleeve, a cardboard sheet is supplied to keep the flange nuts & bolts clean, allowing easy re-entry and disassembly when necessary.

Construction: two-layer system.

- **First layer:** Visco-elastic sealant.
- **Second layer:** Fiberglass reinforced, radiation cross-linked, polyethylene backing.

FCWS-F is installed using standard gas torches. The installation is carried out directly on the cleaned and prepared pipe surface and flange. After preheating, the corrugated cardboard sheet is wrapped around the flange to be sealed. The heat-shrinkable sleeve is positioned centrally over the flange and closed, using the zipper closure. When heated above 125°C (257°F), the sleeve shrinks tightly around the substrate. During recovery, the adhesive softens and flows to form a tight bond. The bond strength builds up during cool down and is fully retained after completion of the job.

#### Features:

- Backing with integrated fiberglass reinforcement.
- 65% shrink ratio – conforms to high transitions.
- High mechanical resistance backing.
- No primer required.
- Specially formulated sealant.
- Sealing adhesive automatically flows and repairs minor mechanical damages.
- Low preheat sensitivity & proven functionality.
- Zipper closure system.
- No special equipment required.

#### Benefits:

- Tough and long lasting. Provides a high recovery capacity.
- Reduces inventory & logistics costs.
- Resists abrasion, impact and penetration.
- No drying time and easy application.
- Ensures a strong bond & tight seal to virtually any substrate. Maintains its elasticity and sealing characteristics over a wide temperature range.
- "Self-healing effect."
- Simple & fast installation.

### Product selection guide

<b>Max operating temperature</b>	50°C (122°F).
<b>Compatible line coatings</b>	PE, PP, FBE, Coal Tar, Tape, Asphalt & Plastics
<b>Min. preheat temperature</b>	50°C (122°F)
<b>Recommended pipe preparation</b>	ST3

### Product properties

#### Backing

Property	Test method	Typical value
<b>Burstring strength</b>	DIN 30672	3500 N

#### Adhesive

Property	Test method	Typical value
<b>Softening point</b>	ASTM E-28	92° C (198°F)
<b>Shear strength</b>	DIN 30672	8 N/cm <sup>2</sup>

#### Installed sleeve

Property	Test method	Typical value
<b>Peel strength</b>	DIN 30672 @ 100 mm/min EN12068 @ 10 mm/min	25 N/cm  0,9 N/mm

### Product thickness

<b>Backing as supplied</b>	1.30 mm (0.051 in)
<b>Adhesive as supplied (mm)</b>	1.2 mm (0.047 in)

### Ordering information

Covalence® FCWS-F type products are available as a kit containing

- A sleeve (pre-cut sleeve with zipper closure)
- A corrugated cardboard sheet

#### Example FCWS-F-DN1600-600

Designation	Standard ordering options
<b>DN1600</b> Outside pipe diameter	DN50 (2.375) – DN2000 (80")
<b>600</b> Sleeve width (mm)	12 (300 mm), 17" (425 mm), 24" (600 mm)

### General Information

<b>Installation guide</b>	For proper product installation, see latest installation instruction.
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	Store indoor, clean and dry, away from direct sunlight in a cool place below +50°C. Unlimited shelf life.
<b>Documentation</b>	Extensive information is available on our website. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system should be carried out by certified personnel.

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## COVALENCE<sup>®</sup> FCTS

### Product Information

**Product description:** FCTS, is a thick wall, heat-shrinkable tubular sleeve with high shrink ratio allowing irregular shapes to be coated easily. It is specifically useful for corrosion prevention and sealing of flanges in water distribution networks. The design of FCTS/FCWS flange protection products keeps nuts and bolts free from foreign substances (such as mastics), allowing easy re-entry and disassembly when necessary.

Construction: Two-layer system

- **First layer:** Visco-elastic mastic sealant.
- **Second layer:** Thick wall, radiation-cross-linked, high density polyethylene.

The installation is carried out directly on the cleaned and dried (pre-heated) flange & pipe surface without any primer being required. When heated, the FCTS sleeve shrinks and the sealant melts and flows forming a tight bond. The bond strength builds up during cooldown, forming a moisture-proof seal that is mechanically strong and resistant to vibration, impact, abrasion and corrosive gases & fluids.

#### Features:

- No primer required.
- Low preheat sensitivity & proven high functionality.
- Highly resistant.
- Copes with high transitions (high shrink ratio)
- Self-healing effect.
- No special equipment or skills required.

#### Benefits:

- No drying time and easy application.
- Ensures a strong bond & impervious seal.
- Minimizes inventory, thus economical.
- Makes installation fast and easy. Keeps installation costs low.

### Product selection

<b>Max operating temperature</b>	65°C (149°F)
<b>Compatible line coatings</b>	PE, PP, FBE, Tape, Coal tar, Asphalt
<b>Min. preheat temperature</b>	60°C (140°F)
<b>Recommended pipe preparation</b>	Clean, dry and free of grease
<b>Soil stress restrictions</b>	None
<b>Performance</b>	EN12068 class C30

### Product thickness

<b>Backing as supplied</b>	0.7 mm (DN80/100) 1 mm (DN150, DN200)
<b>Backing fully free recovered</b>	2 mm
<b>Adhesive as supplied</b>	1 mm

### Product properties

#### Backing

Property	Test method	Typical value
<b>Tensile strength at break</b>	EN 60684-2	13 MPa min.
<b>Elongation at break</b>	EN 60684-2	350 % min.
<b>Dielectric strength</b>	EN 60684-2	10 kV/mm min.
<b>Hardness, Shore D</b>	ISO 868	50

#### Adhesive

Property	Test method	Typical value
<b>Softening Point</b>	ASTM E-28	134°C (273°F)
<b>Shear strength</b>	EN 12068 @10mm:min	0.1 N/mm <sup>2</sup>

#### Installed sleeve

Property	Test method	Typical value
<b>Peel to Steel</b>	EN 12068 @10 mm /min	1.1 N/mm
<b>Impact resistance</b>	EN 12068	> 15 J
<b>Indentation resistance</b>	EN 12068 Class C30 (10N/mm <sup>2</sup> )	> 0.6 mm*

\* Remaining coating thickness

Note: The typical values in this data sheet are based on lab prepared samples. Values shown are not to be interpreted as product specifications.

### Ordering information

Covalence<sup>®</sup> FTS type products are available as kit with:

- a ready-to-size tubular sleeve
- a support sheet

**Example FCTS-DN150**

	Designation	Standard ordering options
<b>DN150</b>	Pipe size	DN80/100 DN150 DN200

### Application Table

Pipe OD	Max Flange OD (mm)	Min FCTS ID as supplied (mm)	FCTS width as supplied (mm)	FCTS Shrinkratio
DN80	200	245	300	67%
DN100	220	245	300	67%
DN150	285	300	300	45%
DN200	340	385	300	45%.

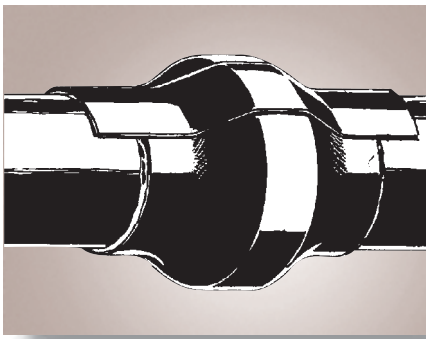
### Handling and Storage

<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	Store indoor, clean and dry, away from direct sunlight in a cool place below +50°C. Unlimited shelf life.

### Information

**Documentation** Extensive information is available on our web-site. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to [info@sealforlife.com](mailto:info@sealforlife.com)

**Certified staff** Application of the described coating system should be carried out by certified personnel.



Heat shrinkable corrosion protection sleeve specifically developed for installation on thrust-secured TIS socket joints or flange couplings that are already in place.

## Product description

**TISW-F Wraparound sealing and protection.**

**Construction:** Two-layer system:

**First layer:** Visco-elastic sealant.

**Second layer:** Glassfiber reinforced, radiation cross-linked, polyethylene backing.

The TISW-F is a wraparound heatshrinkable sleeve, with a special designed zipper closing system, allowing a fast and simple installation. The glassfiber reinforced woven backing gives to the TISW-F a high mechanical resistance as well as a high recovery capacity.

TISW-F is installed using standard gas torches. The installation is carried out directly on the cleaned and prepared pipe surface and flange. After preheating, the corrugated cardboard sheet is wrapped around the flange to be sealed. The heat-shrinkable sleeve is positioned centrally over the flange and closed using the zipper closure. When heated above 125°C (257°F) the sleeve shrinks tightly around the substrate. During recovery, the adhesive softens and flows to form an intimate bond. The bond strength builds up during cool down and is fully retained after completion of the job.

## Product features/benefits

- **Backing with integrated glassfiber reinforcement**  
Provides high mechanical resistance.  
Provides a high recovery capacity.
- **65% shrinkage ratio – copes with high transitions**  
Reduces inventory logistics & costs.
- **High mechanical resistance backing**  
TISW-F resists abrasion, impact and penetration.
- **No primer required**  
No drying time and easy application.
- **Specially formulated sealant**  
Ensures a strong bond & impervious seal to virtually any substrate.  
Maintains its elasticity and sealing characteristics over a wide temperature range.
- **Sealing adhesive automatically flows and repairs minor mechanical damages**
- **"Self-healing effect " Saves extra intervention steps**
- **Low preheat sensitivity & proven functionality**  
Allows easy application combined with high functional performance.
- **Zipper closure system**  
Allows simple & fast installation.
- **No elaborate equipment required**  
Makes installation fast and easy.  
Keeps installation costs low.

## Product selection guide

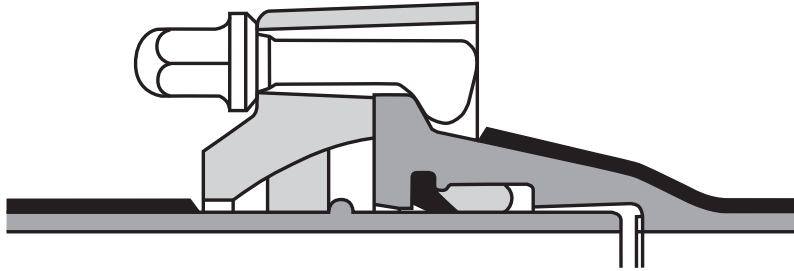
	TISW-F
<b>Max operating temperature</b>	30°C
<b>Compatible line coatings</b>	PE, PP, FBE, Tape, Coal tar, Asphalt, Plastics
<b>Min preheat temperature</b>	60°C
<b>Recommended pipe preparation</b>	ST3

## Product thickness

	TISW-F
<b>Backing (as supplied)</b>	1.3 mm
<b>Backing (fully free recovered)</b>	3.25 mm
<b>Adhesive (as supplied)</b>	1.2 mm

## Product properties: TISW-F

Property	Test method	Typical value
<b>Backing</b>		
Bursing strength	DIN 30672	3500 N
<b>Adhesive</b>		
Softening point	ASTM E-28	92°C
Shear strength	EN 12068 @ 10 mm/min.	8 N/cm <sup>2</sup>
<b>Sleeve</b>		
Peel strength	EN 12068 @ 10 mm/min.	9 N/cm



**TISW-F type products are available:**

- as a kit, containing:
  - a sleeve (pre-cut sleeve with zipper closure)

Example: TISW-F-DN150/200-425		
TISW-F	Product type	Standard ordering options
DN150/200	Min Pipe diameter in DN / Max Pipe diameter in DN	DN100, DN150/200, DN250/300, DN350, DN400/500, DN600, DN700, DN800, DN900, DN1000
425	Sleeve width in mm	425 mm, 600 mm

For proper product selection, see latest application table AT-MPSM-MEPS-TISW-F.  
For proper product installation, see latest installation instruction.

DS-TISW-F-REV6-MAR11 - LEXPS-0103



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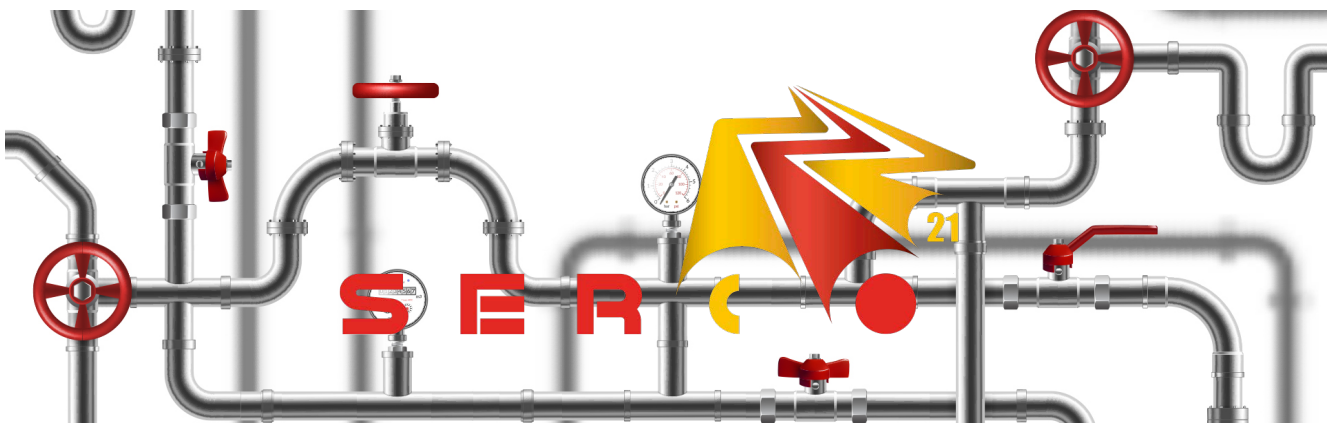
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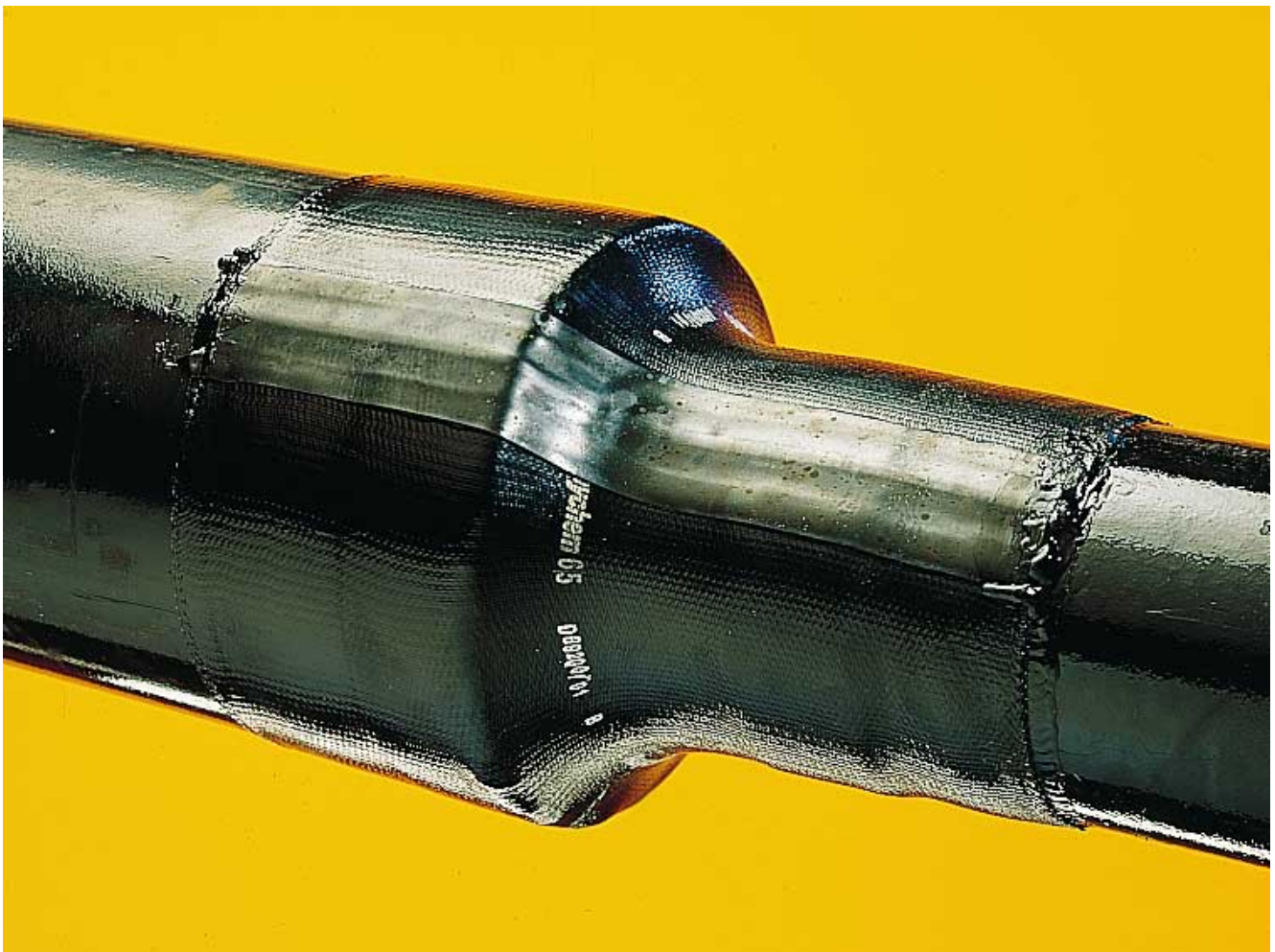
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## **Covalence® Pipe Casing End Seals** **A heat-shrinkable, wrap-around, fibre-reinforced sleeve for casing/service pipe sealing.**

The fiberglass reinforced woven structure generates a high expansion ratio to accommodate the diameters of casing and service pipe and the visco-elastic adhesive assures an excellent bond between the sleeve and bare- or pre-coated pipe.





## COVALENCE® CSEM-F

### Product Information

**Product description:** CSEM-F is a heat-shrinkable, wrap-around sleeve with a very high shrink ratio, specially developed for casing/service pipe sealing. The special adhesive inside the thick-wall CSEM-F assures an excellent bond between the sleeve and bare or pre-coated pipes. The fiberglass reinforced woven and laminated backing gives the CSEM-F sleeve a high mechanical resistance as well as a high recovery capacity. A zipper closing system allows a simple and fast installation. In addition to the CSEM-F sleeve, a support sheet is supplied which provides a smooth step-down in the transition area to ensure a tight closure and enhances the mechanical strength.

Construction: Two-layer system

- **First layer:** Visco-elastic mastic sealant.
- **Second layer:** Fiberglass reinforced, radiation cross-linked, polyethylene backing.
- **Additional kit component:** Non-shrinkable, polypropylene support sheet.

Optional a high shear hotmelt is added on the casing pipe side of the sleeve to increase the anchoring on the casing pipe for harsh soil conditions.

CSEM-F is installed using standard gas torches. After pipe surface preparation and preheating, the support sheet is wrapped around the transition to be sealed followed by the heat-shrinkable sleeve. The sleeve is zipper-closed, forming a tube, and shrunk in place tightly fitting around the substrate. During recovery, the adhesive softens and flows to form a tight bond. The bond strength builds up during cool down and is fully retained after completion of the job.

#### Features:

- Fiberglass reinforced backing.
- 65% shrinkage ratio – conforms to high transitions.
- Resists a wide range of environmental and mechanical forces.
- Sealing adhesive automatically flows and repairs minor mechanical damages.
- Usable also when service pipe is not concentric with the casing.
- No special equipment required.

#### Benefits:

- Provides high mechanical resistance. Provides a high recovery capacity.
- Reduces inventory & logistics costs.
- Reliable, moisture-proof seal! Extremely tough.
- Ensures a strong bond & tight seal to virtually any substrate. Maintains its elasticity and sealing characteristics over a wide temperature range.
- "Self-healing effect". Saves time.
- Highly versatile.
- Makes installation fast and easy. Keeps installation costs low.

### Product selection guide

<b>Max operating temperature</b>	50°C (122°F).
<b>Compatible line coatings</b>	PE, PP, FBE, Coal Tar, Tape, Asphalt & Plastics
<b>Min. preheat temperature</b>	50°C (122°F)
<b>Recommended pipe preparation</b>	ST3, SA 2 1/2

### Product properties

#### Backing

Property	Test method	Typical value
<b>Bursting strength</b>	DIN 30672	3500 N

#### Adhesive

Property	Test method	Typical value	
		<b>Visco-Elastic</b>	<b>Hotmelt (optional)</b>
<b>Softening Point</b>	ASTM E28	92°C	94°C
<b>Shear strength</b>	EN 12068 @10 mm	0.08 N/mm <sup>2</sup>	2.6 N/mm <sup>2</sup>

#### Installed sleeve

<b>Peel strength to PE</b>	EN 12068 @10 mm	0.9 N/mm	7 N/mm
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Note: The typical values in this data sheet are based on lab prepared samples. A one-by-one adoption in product specifications is therefore not recommended.

### Product thickness

<b>Backing as supplied</b>	1.30 mm
<b>Backing fully free recovered</b>	3.25 mm
<b>Visco-elastic as supplied</b>	1.20 mm
<b>Hotmelt as supplied</b>	0.80 mm
<b>Support sheet</b>	1.10 mm

### Ordering information

Covalence® CSEM-F type products are available as a kit, containing

- A Uni-sleeve (pre-cut sleeve with integrated zipper closure system)
- A support sheet

Example	CSEM-F-280/110-425		Standard ordering options
<b>280/110</b>	Recovery ratio (mm)		See application table
<b>425</b>	Sleeve width (mm)		See application table

### Application table

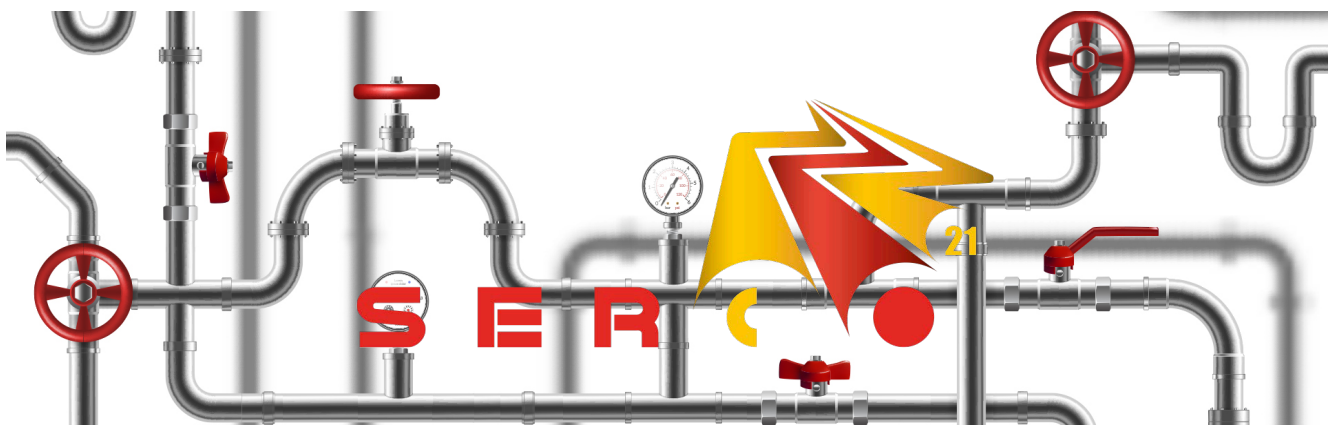
CSEM-F*	Min.Pipe diameter	Max.Casing diameter
280/110-425	114.3 mm (4.50")	250 mm (10")
380/140-425	139.7 mm (5.50")	355 mm (14")
540/180-425	219.1 mm (8.75")	508 mm (20")
600/215-425	273.0 mm (10.75")	560 mm (22")
760/270-600	323.9 mm (12.75")	710 mm (28")
880/320-600	355.6 mm (14.00")	813 mm (32")
1050/370-600	406.4 mm (16.00")	1016 mm (40")
1150/410-600	457.2 mm (18.00")	1118 mm (44")
1300/470-600	508.0 mm (20.00")	1270 mm (50")
1600/900-600	914.4 mm (36.00")	1524 mm (60")
1900/1140-600	1118 mm (44.00")	1828 mm (72")

\* Special casing sizes can be made on request.

<b>Installation guide</b>	For proper product installation, see latest installation instruction.
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	Store indoor, clean and dry, away from direct sunlight in a cool place below +50°C. Unlimited shelf life.
<b>Documentation</b>	Extensive information is available on our web-site. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system should be carried out by certified personnel.

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## Covalence® Tubular Shrink Sleeves

**A thick wall, heat-shrinkable tubular sleeve with high shrink ratio allowing irregular shapes to be coated easily**

The tubular sleeves are typically used for small diameters and high percentage transitions. They can also be used on small diameter bends, like riser bends and as protection of anchor tie rods.



## COVALENCE® CPSM-C30

### Product Information

**Product description:** CPSM, is a thick wall, heat-shrinkable tubular sleeve with high shrink ratio allowing irregular shapes to be coated easily. It is specifically useful for corrosion prevention and sealing of screw- or other mechanical couplers in distribution networks. CPSM is typically used for small diameters and high percentage transitions. CPSM can also be used on small diameter bends, like riser bends and as protection of anchor tie rods.

Construction: Two-layer system

- **First layer:** Visco-elastic mastic sealant.
- **Second layer:** Thick wall, radiation-cross-linked, high density polyethylene.

The installation is carried out directly on the cleaned and dried (pre-heated) coupler & pipe surface without any primer being required. CPSM is positioned on the pipes prior to coupling them together and, after installation of the coupler, slid centrally over the joint to be protected. When heated, the CPSM sleeve shrinks and the sealant melts, encapsulating mechanical couplings and straight pipes with a strong impervious seal. While the sleeve conforms to the shape of the coupling or pipe, the melted sealant is forced into all surface irregularities providing a permanent environmental seal.

#### Features:

- No primer required.
- Low preheat sensitivity & proven high functionality.
- Highly resistant.
- Copes with difficult shapes and high transitions (high shrink ratio)
- Self-healing effect.
- No special equipment or skills required.

#### Benefits:

- No drying time and easy application.
- Trustful as CPSM resists bending, impact, abrasion, penetration, corrosive gases or fluids, disbonding and long-term storage. Remains user-friendly (even at low temperatures).
- Ensures a strong bond & impervious seal.
- Minimizes inventory, thus economical.
- Makes installation fast and easy. Keeps installation costs low.

### Product selection

<b>Max operating temperature</b>	65°C (149°F)
<b>Compatible line coatings</b>	PE, PP, FBE, Tape, Coal tar, Asphalt
<b>Min. preheat temperature</b>	60°C (140°F)
<b>Recommended pipe preparation</b>	Clean, dry and free of grease
<b>Soil stress restrictions</b>	None
<b>Performance</b>	EN12068 class C30

### Product thickness

<b>Backing as supplied</b>	0.70 – 1.20 mm*
<b>Backing fully free recovered</b>	2.0- 3.20 mm*
<b>Adhesive as supplied</b>	0.70 mm

\* Backing thickness depends on tubing diameter

### Product properties

#### Backing

Property	Test method	Typical value
<b>Tensile strength at break</b>	EN 60684-2	13 MPa min.
<b>Elongation at break</b>	EN 60684-2	350 % min.
<b>Dielectric strength</b>	EN 60684-2	10 kV/mm min.
<b>Hardness, Shore D</b>	ISO 868	50

#### Adhesive

Property	Test method	Typical value
<b>Softening Point</b>	ASTM E-28	134°C (273°F)
<b>Shear strength</b>	EN 12068 @10mm:min	0.1 N/mm <sup>2</sup>

#### Installed sleeve

Property	Test method	Typical value
<b>Peel to Steel</b>	EN 12068 @10 mm /min	1.1 N/mm
<b>Cathodic disbondment</b>	EN 12068 30 days	4 mm radius
<b>Impact resistance</b>	EN 12068	> 15 J
<b>Indentation resistance</b>	EN 12068 Class C30 (10N/mm <sup>2</sup> )	> 0.6 mm*

\* Remaining coating thickness

Note: The typical values in this data sheet are based on lab prepared samples. Values shown are not to be interpreted as product specifications.

### General order information

Covalence® CPSM type products are available  
– As ready-to-size tubular sleeves

**Example CPSM-C30-75/22-1000**

	Designation	Standard ordering options
<b>C30</b>	Performance classification	C30
<b>75/22</b>	Recovery ratio (in mm) (supplied diameter/ recovered diameter)	50/16 75/22 95/29 140/42 180/60 245/80
<b>1000</b>	Tubing length (in mm)*	330 mm** 500 mm** 1000 mm

\* Take a 15% shrinkage during installation of sleeve width into account when calculating the minimum sleeve width.

\*\* Only made to order. Minimum order quantities apply.

### Handling and Storage

<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	Store indoor, clean and dry, away from direct sunlight in a cool place below +50°C. Unlimited shelf life.

### Information

**Documentation** Extensive information is available on our website. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to [info@sealforlife.com](mailto:info@sealforlife.com)

**Certified staff** Application of the described coating system should be carried out by certified personnel.

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## COVALENCE<sup>®</sup> MPSM, MEPS-C30-E, HEPS-C30-E

### Product Information

**Product description:** The wrap-around HEPS & MEPS and the tubular MPSM are heat-shrinkable socket joint corrosion protection coatings. HEPS/MEPS/MPSM are typically used on steel or ductile iron pipes coated with PE, concrete or other coatings, i.e. paint and zinc. HEPS/MEPS/MPSM are also used to coat reducers, bends and dielectrical joints. For specially designed bell & spigot type joints, please refer to our special range of products (TISK, TISW-F, TISKW-F).

**Construction:** Two-layer system

- *First layer:* Visco-elastic butyl based adhesive.
- *Second layer:* Thick-walled, radiation cross-linked, high density polyethylene.

The installation is carried out directly on the cleaned and prepared pipe surface without any primer being required. Heating with a regular gas torch lets the high shrink-ratio backing reduce in size to form a tight and clean fit around the socket joint. While shrinking, the sealant, with its superior flow and fill characteristics, spreads evenly over the complete pipe surface and into all cavities.

**Features:**

- Backing with enhanced shrink ratio.
- High impact strength & high penetration resistance.
- Fully retains the deflection and longitudinal movement of the socket joint.
- Seal resists vibration, deflection and axial movement.
- No special filler needed.
- No primer needed.
- No special equipment needed.
- Low preheat requirements.

**Benefits:**

- Conforms easily to socket joint shapes.
- Virtually no risk of damage during operation.
- No break of the sealing ring.
- Reliable, high-performance seal stops water ingress.
- Simple 1 part installation.
- Keeps installation costs low.
- Fast installation – saves time.

### Product selection guide

<b>Max. operating temperature</b>	65°C (149°F)
<b>Compatible line coatings</b>	PE, PP, Fibre-Cement Zinc, Bitumen Paint, Cold tape.
<b>Min. preheat temperature</b>	60°C (140°F)
<b>Recommended pipe preparation</b>	ST3
<b>Soil stress restrictions</b>	None
<b>Performance</b>	EN12068 C30 DIN30672 C30 for socket joints AWWA C216 ISO21809-3 Type 14A2

### Product properties

Backing			
Property	Test method	Typical value MPSM**	Typical value MPSM/MEPS/HEPS
<b>Tensile strength at break</b>	ASTM D-638		22.8 MPa
	EN 60684-2	≥13 MPa	
<b>Elongation at break</b>	ASTM D-638		600%
	EN 60684-2	≥ 350 %	
<b>Hardness, Shore D</b>	ASTM D-2240/ISO 868	50	57
<b>Shrink force</b>	ASTM D-638, 150° C (302°F)		40 psi
<b>Dielectric strength</b>	ASTM D-149		35 kV/mm
	EN 60684-2	≥ 10 kV/mm	
<b>Moisture absorption</b>	ASTM D-570	0.04%	0.04%

### Adhesive

Property	Test method	Typical value
<b>Softening point</b>	ASTM E-28	134°C (273°F)
<b>Lap shear</b>	EN 12068	> 0.1 N/mm <sup>2</sup>
	@ 10 mm/min	
	ASTM D1002 @ 50 mm/min	50 psi

### Installed sleeve

Property	Test method	Typical value		
		MPSM	MEPS	HEPS
<b>Peel to steel</b>	EN 12068 @ 10 mm/min	1.1 N/mm	1.1 N/mm	1.1 N/mm
<b>Impact resistance</b>	EN 12068, Class C	> 15 J	> 15 J	> 15 J
<b>Indentation resistance</b>	EN 12068, Class C30	> 0.6 mm*	> 0.6 mm*	> 0.6 mm*
<b>Resistance to joint deflection and displacement</b>	DIN 30672	Pass	Pass	Pass
<b>Cathodic disbondment</b>	EN 12068 30 days	4 mm radius	9 mm radius	9 mm radius
<b>Longitudinal shrinkage</b>	(Supplied length- Fully recovered length) / Supplied length	Min 45% (< DN300) Min 36% (> DN300)	Min 36%	Min 45%

\* Remaining coating thickness

Note: The typical values in this data sheet are based on lab prepared samples. Values shown are not to be interpreted as product specifications.

### Product thickness

	HEPS C30-E	MEPS C30-E	MPSM** ≤ DN100	MPSM DN150- DN300	MPSM > DN300
<b>Backing as supplied</b>	0.7 mm (0.028 in)	0.9 mm (0.035 in)	0.7 mm (0.027 in)	0.8 mm (0.031 in)	0.9 mm (0.035 in)
<b>Backing fully free recovered</b>	1.4 mm (0.055 in)	1.4 mm (0.055 in)	2.4 mm (0.095 in)	1.4 mm (0.055 in)	1.4 mm (0.055 in)
<b>Adhesive as supplied</b>	1.5 mm (0.059 in)	1.5 mm (0.059 in)	0.7 mm (0.027 in)	0.9 mm (0.035 in)	0.9 mm (0.035 in)

## 1. PRODUCT DATA SHEET

### Ordering information

Covalence® HEPS products are available

- As a roll (closure patches to be ordered separately)

Covalence® MEPS products are available

- As a roll (closure patches to be ordered separately)
- As Uni-sleeve (pre-cut with attached closure patch)

MPSM type products are available

- As ready-to-size tubular sleeves

Rolls can have a splice. Max 10% of the roll order will have a splice.  
Min partial length will be 5M or 15 ft.

#### MPSM (tubular)

Example	MPSM C30-UNIV-300-DN100	
	Designation	Standard ordering options
C30	Performance classification	C30
300	Sleeve width	300 mm*(12") * nominal width
DN100	Nominal pipe diameter	DN80-700 (3.50"-30")

#### MEPS (wrap-around) Uni-sleeve

Example	MEPS-C30-E-(UNIV)-DN150-300	
	Designation	Standard ordering options
C30	Performance class	C30
(UNIV)	Universal socket joint (special cut length)	
DN150	Nominal pipe diameter	DN150-1000 (6.625-40") (>DN1000 (40") on request only)
300	Sleeve width	300 mm*(12") * nominal width

#### MEPS roll form (closure patch to be ordered separately)

Example	MEPS-C30-E-12X100-RL	
	Designation	Standard ordering options
C30-E	Performance class	C30
12	Roll width (in)	12, 17, 24 (300, 450, 600 mm*) * nominal width
100	Roll length	100 ft (30 m)
RL	Unit of measure	Roll

#### HEPS roll form (closure patch to be ordered separately)

Example	HEPS-C30-E-17X100-RL	
	Designation	Standard ordering options
C30-E	Performance class	C30-E
17	Roll width (in)	17, 24 (450, 600 mm*) * nominal width
100	Roll length	100 ft (30 m)
RL	Unit of measure	Roll

#### HEPS & MEPS closure patches (to be ordered separately)

Example	WPCP-IV-6x12	
	Designation	Standard ordering options
6	Patch width (in)	6, 8 (150, 200 mm)
12	Patch length (in)	12, 17, 24 (300, 450, 600 mm*) * nominal width

### General information

<b>Product dimension</b>	Sleeve cut lengths and appropriate closure patch widths depend on pipe size and product construction, see application table AT-MEPS/MPSM.
<b>Installation guide</b>	For proper product installation, see latest installation instruction.
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	Store indoor, clean and dry, away from direct sunlight in a cool place below +50°C. Unlimited shelf life.

### Information

<b>Documentation</b>	Extensive information is available on our website. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system shall be carried out by certified personnel.



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## COVALENCE<sup>®</sup> TPSEM-C30

### Product Information

**Product description:** Covalence<sup>®</sup> TPSEM is a heat-shrinkable, tubular sleeve which prevents corrosion of welded pipe joints in distribution lines. This mechanically strong and flexible sleeve is compatible with most standard pipeline coatings and outer jackets.

Construction: Two-layer system

- *First layer:* Visco-elastic mastic sealant.
- *Second layer:* Radiation-cross-linked, high density polyethylene.

The installation is carried out directly on the cleaned and dried (pre-heated) pipe surface without primer. Heat is applied to the sleeve, which shrinks to form a tight fit around the joint. While shrinking, the visco-elastic sealant homogeneously flows to cover the complete surface and fills in all surface irregularities.

#### Features:

- Dimpled backing provides a "Permanent Change Indicator" (PCI) for application of heat.
- No primer required.
- No special equipment or skills required.
- Low preheat sensitivity.
- Mechanically strong & resists abrasion, impact and penetration.
- Sealing adhesive automatically flows and repairs minor mechanical damages.

#### Benefits:

- Ensures correct application of heat & allows easy post-heat inspection. Reliable inspectability at any time.
- Makes installation fast and easy. Keeps installation costs low.
- Allows easy application combined with high functional performance.
- Reliable and tough. Remains user-friendly (even at low temperatures).
- "Self-healing effect".

### Product selection

<b>Max operating temperature</b>	65°C (149°F)
<b>Compatible line coatings</b>	PE, PP, FBE, Tape, Coal tar, Asphalt
<b>Min. preheat temperature</b>	60°C (140°F)
<b>Recommended pipe preparation</b>	Clean, dry and free of grease
<b>Soil stress restrictions</b>	None
<b>Performance</b>	EN12068 class C30

### Product thickness

<b>Backing as supplied</b>	0.9 mm
<b>Backing fully free recovered</b>	1.4 mm
<b>Adhesive as supplied</b>	0.9 mm

### Product properties

#### Backing

Property	Test method	Typical value
<b>Tensile strength at break</b>	EN 12068	24 MPa
<b>Elongation at break</b>	EN 12068	600%
<b>Hardness, Shore D</b>	ASTM D2240	58

#### Adhesive

Property	Test method	Typical value
<b>Softening Point</b>	ASTM E28	134°C (273°F)
<b>Lap shear</b>	EN 12068	0.07 N/mm <sup>2</sup> 0.01 N/mm <sup>2</sup> at 65°C (149°F)

#### Installed sleeve

Property	Test method	Typical value
<b>Peel strength</b>	EN 12068 @ 10 mm /min	1.1 N/mm
<b>Cathodic disbondment</b>	En 12068, 30 days	4 mm radius
<b>Impact resistance</b>	EN 12068	> 15 J
<b>Indentation resistance</b>	EN 12068 Class C (10 N/mm <sup>2</sup> )	> 0.6 mm*

\* Remaining coating thickness.

Note: The typical values in this data sheet are based on lab prepared samples.

Values shown are not to be interpreted as product specifications.

### General order information

Covalence<sup>®</sup> TPSEM-C30 products are available

– As ready-to-size tubular sleeves

Take a 10% shrinkage during installation of sleeve width into account when calculating the minimum sleeve width.

**Example TPSEM-C30-450-DN100**

	Designation	Standard ordering options
<b>DN100</b>	Outside pipe diameter (DN)	DN80 (3.500") DN100 (4.500") DN150 (6.625") DN200 (8.625") Other sizes available on request, consult your Covalence representative.
<b>450</b>	Sleeve width	450 mm (17.75") (DN50-DN200), 600 mm (23.50") (DN100-DN200) * nominal width

For pipe sizes exceeding DN200, the use of wraparound WPC sleeves is recommended.

### Handling and Storage

<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	Store indoor, clean and dry, away from direct sunlight in a cool place below +50°C. Unlimited shelf life.

### Information

<b>Documentation</b>	Extensive information is available on our website. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system should be carried out by certified personnel.

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## COVALENCE® TPS

### Product Information

One-piece heat-shrinkable sleeve for corrosion protection of girth weld joints on various types of piping systems.

**Product description:** Covalence® TPS are heat-shrinkable, tubular sleeves which prevent corrosion of welded pipe joints in distribution lines for sizes up to 4.500"/DN100. For larger sizes, the use of the Covalence® wraparound sleeve, WPC, is recommended. This mechanically strong and flexible sleeve is compatible with all standard pipeline coatings and outer jackets.

Construction: Two-layer system

- **First layer:** Butyl based low preheat adhesive
- **Second layer:** Thick-walled, radiation-cross-linked, high density polyethylene.

The installation is carried out directly on the cleaned and dried (pre-heated) pipe surface without primer. Heat is applied to the sleeve, which shrinks to form a tight fit around the joint. While shrinking, the visco-elastic sealant homogeneously flows to cover the complete surface and fills in all surface irregularities.

#### Features:

- Dimpled backing provides a "Permanent Change" Indicator for application of heat.
- Excellent aging performance.
- Superior cathodic disbondment and hot water immersion resistance.
- No primer required.
- Low preheat sensitivity & proven functionality.
- No special equipment or skills required (standard gas torch).

#### Benefits:

- Ensures correct application of heat & allows easy post-heat inspection. Reliable inspectability at any time.
- No shelf life issues.
- Ensures a strong bond and a tight seal. Provides high peel and shear values after installation.
- Makes installation fast and easy. Keeps installation costs low.

### Product selection guide

<b>Max operating temperature</b>	65°C (149°F).
<b>Compatible line coatings</b>	PE, PP,FBE, Tape, Coal Tar
<b>Min. preheat temperature</b>	60°C (140°F)
<b>Recommended pipe preparation</b>	Clean, dry and free of grease
<b>Soil stress restrictions</b>	Moderate
<b>Performance</b>	EN 12068, Class B30

### Product thickness

<b>Backing as supplied</b>	0.64 mm (0.025 in)
<b>Backing fully free recovered</b>	1.00 mm (0.039in)
<b>Adhesive as supplied</b>	0.76 mm (0.030 in)

### Product properties

#### Backing

Property	Test method	Typical value
<b>Tensile strength at break</b>	ASTM D638	3300 psi 22.8 MPa
<b>Elongation at break</b>	ASTM D638	600%
<b>Hardness, Shore D</b>	ASTM D2240	57
<b>Shrink force</b>	ASTM D638 150°C (302°F)	40 psi
<b>Water absorption</b>	ISO 62	0.04%

#### Adhesive

Property	Test method	Typical value
<b>Softening point</b>	ASTM E28	134°C (273°F)
<b>Shear strength</b>	ASTM D1002 EN 12068 @ 10 mm (0.4")/min	50 psi > 0.1 N/mm <sup>2</sup>

#### Installed sleeve

Property	Test method	Typical value
<b>Peel strength</b>	ASTM D1000 EN 12068 @ 10 mm (0.4")/min	50 lb/in 1.1 N/mm
<b>Cathodic disbondment</b>	ASTM G42 @65°C(149°F), 30 days	7 mm radius
<b>Hot water immersion</b>	ASTM D870 @ 65°C (149°F), 120 days	No delamination, no blisters or water ingress
<b>Low temperature flexibility</b>	ASTM D2671, procedure C	-14°C (6.8°F)
<b>Impact resistance</b>	ASTM G14	50 in-lb
<b>Penetration resistance</b>	ASTM G17	No holiday with 10 kV detector

*Note: The typical values in this data sheet are based on lab prepared samples. Values shown are not to be interpreted as product specifications.*

### General order information

Covalence® TPS type products are available  
– As ready-to-size tubular sleeves

Drawing sleeve width, pipe diameter.

Take a 10% shrinkage during installation of sleeve width into account when calculating the minimum sleeve width.

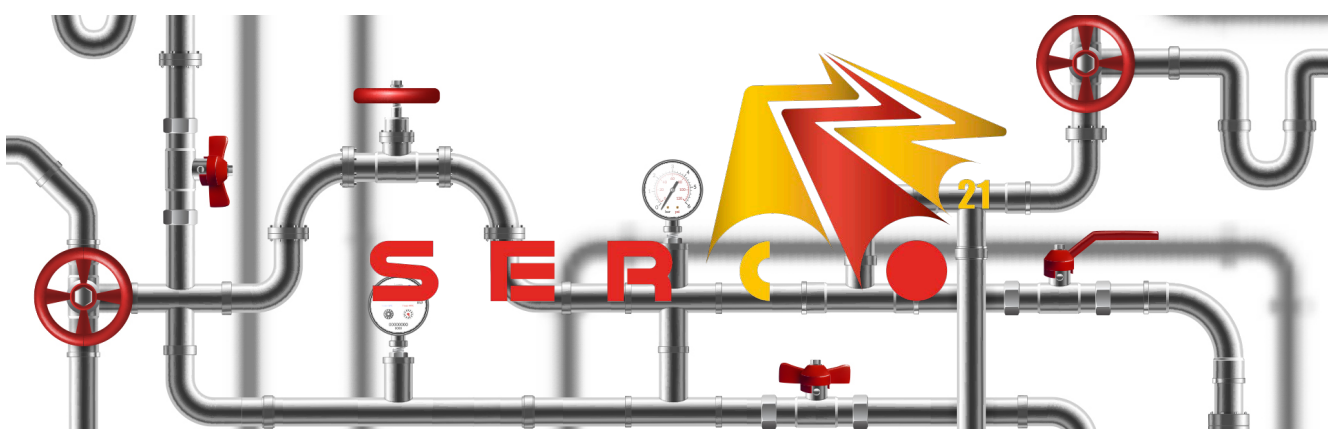
Example	TPS-4500X18	
	Designation	Standard ordering options
<b>4500</b>	Outside pipe diameter	2.375" (DN50), 3.500" (DN80), (mils) 4.500" (DN100)
<b>18</b>	Sleeve width (in)	18 (460 mm) * nominal width

\* For pipe sizes exceeding DN100, the use of wraparound WPC sleeves is recommended.

### Information

<b>Documentation</b>	Extensive information is available on our website. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system shall be carried out by certified personnel.

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## Covalence® Heat Shrinkable Tapes and Molded Parts

### A stretchable, hand-wrapped, heat-shrinkable tape or a shrinkable moulded part

Consists of a flexible, irradiation cross-linked, low density polyethylene backing and a high-shear strength co-polymer adhesive. Applicable in corrosion protection of pipe bends up to 12" or DN300 pipes and corrosion protection of small house tap tees in distribution networks.







## Heat-shrinkable molded part for corrosion protection of weld-on blocking tees.

### Product description

#### BLOT blocking tee coating.

**Construction:** Two-layer system:

**First layer:** High-viscosity, high strength mastic (collar & flap).  
High performance copolymer (cap).

**Second layer:** Thick-walled, radiation cross-linked, high density polyethylene.

BLOT is a heat-shrinkable, two-piece molded part kit pre-shaped to encapsulate blocking tees in gas distribution networks and thus protect from corrosion. The BLOT components are fabricated from a special compound, that fit the contours of the metal tee-pieces. BLOT consists of a "saddle" (a  $\pm 30$  mm (1.25") high collar provided with a square flap) and a separate cap provided with a tightly fitting plug cover.

The "saddle" is internally coated with a high-viscosity, high-strength mastic to secure the bond to the pre-coated pipe. This also makes the installation easy. The high performance copolymer coating of the cap ensures an excellent bond to the bare steel of the tee-piece.

BLOT is installed using regular propane gas torches. The installation is carried out directly on the cleaned and preheated substrate surface. The BLOT "saddle" is fit over the tee-piece and shrunk to firmly adhere onto the service pipe and the tee base. Then the BLOT cap is put onto the blocking tee and, beginning from the plug, shrunk tightly around. During recovery, the adhesive softens and flows to form a tight bond with the substrate. The bond strength builds up during cool down and is fully retained after completion of the job.

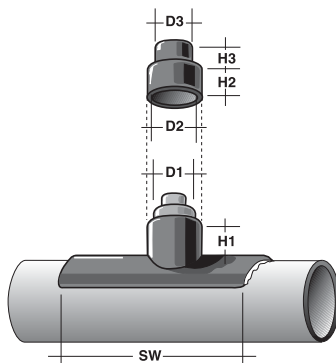
### Product features/benefits

- **No primer required**  
No drying time and easy application.
- **Pre-shaped mold system**  
Makes installation easy.  
Provides accurate protection.
- **Controlled high wall thickness**  
Provides accurate & reliable protection.
- **Small number of sizes for a large number of applications**  
Reduced inventory & logistics costs.
- **Specially formulated sealant**  
Ensures a strong bond & reliable protection.  
Provides high peel and shear values after installation.
- **No special equipment or skills required**  
Makes installation fast and easy.  
Keeps installation costs low.

### Product selection guide

	BLOT
Max operating temperature	30°C (86°F)
Compatible line coatings	PE, FBE, Tape, Coal tar, Asphalt
Min preheat temperature	70°C (158°F)
Recommended pipe preparation	ST3
Soil stress restrictions	None
Performance	DIN30672 C30

### Product dimensions



Sw: sleeve width: 300 mm (12")  
Flap dimensions: 300 mm (12") x 320 mm (12.75")

BLOT	D1		H1		D2		H2		D3		H3	
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
	sup.	rec.	rec.	sup.	rec.	sup.	rec.	rec.	sup.	rec.	rec.	sup.
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
BLOT 200	100	55	30	87	55	47	24	12				
BLOT 300	100	70	32	110	70	42	40	28				
BLOT 400	100	70	38	110	70	80	40	28				

Note: diameters are inside diameters

## Product properties: BLOT

Property	Test method	Typical Value	
<b>Backing</b>			
Tensile strength	DIN 30672	410 N/cm	
Elongation	DIN 30672	490%	
<b>Adhesive</b>		<b>Copolymer</b>	<b>Mastic</b>
Softening point	ASTM E-28	94°C (201°F)	118°C (244°F)
Shear strength	EN 12068	120 N/cm <sup>2</sup>	8 N/cm <sup>2</sup>
<b>Sleeve</b>			
Peel to Steel	EN 12068	7.6 N/mm	0.9 N/mm
Impact resistance	EN 12068	> 15 Nm	
Penetration resist.	EN 12068 class C30 (10 N/mm <sup>2</sup> )	> 0.6 mm *	

\* remaining thickness

## Ordering information

**BLOT type products are available as a kit, containing:**

- a collar with square flap
- a cap with plug cover

### Example: BLOT-100

		Standard Ordering options
100	Blot size	100, 200, 300, 400 See product dimension table

**Note:** When no more than a window has been cut out of the original mill-applied coating, the BLOT moulded part is suitable for the purpose of complete coating. When the mill-applied coating has been completely peeled off all round to allow for the welding work, WPC-05 sleeve is used in addition to BLOT:

Nominal $\varnothing$ of the mains supply	Order description
DN 80	WPC-C30-DN80-450-05
DN100	WPC-C30-DN100-450-05
DN150	WPC-C30-DN150-450-05
DN200	WPC-C30-DN200-450-05

For proper product installation, see latest installation instruction.

Berry Plastics warrants that the product conforms to its chemical and physical description and is appropriate for the use stated on the technical data sheet when used in compliance with Berry Plastics written instructions. Since many installation factors are beyond the control of Berry Plastics, the user shall determine the suitability of the products for the intended use and assume all risks and liabilities in connection herewith. Berry Plastics liability is stated in the standard terms and conditions of sale. Berry Plastics makes no other warranty either expressed or implied. All information contained in this technical data sheet is to be used as a guide and is subject to change without notice. This technical data sheet supersedes all previous data sheets on this product.



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DS-BLOT-REV-5-0309



## Heat-shrinkable molded part for the corrosion protection of house connection tees

### Product description

#### HTTE House Tap Tee.

**Construction:** Two-layer system

**First layer:** Copolymer adhesive

**Second layer:** Thick walled, radiation cross-linked, high density polyethylene.

HTTE is a heat-shrinkable molded part, pre-shaped to encapsulate house connection weld-on tees. The thick-walled, highly expanded molded part is coated with a specially formulated hot-melt adhesive for this application. The adhesive melts during installation and, under pressure from the shrinking sleeve, is forced into surface irregularities, thus providing an excellent seal. The HTTE part can be delivered with or without a cap.

To prevent corrosion of the service pipe where the house connection is made, the use of a compatible PERP patch or WPC heat-shrinkable wraparound sleeve is recommended.

HTTE is installed using regular propane gas torches. The installation is carried out directly on the cleaned and preheated substrate. The part is positioned on the branch-off pipe and slid over the tee-piece to be protected. Using a torch, the HTTE is then shrunk in place. During recovery, the adhesive softens and flows to form a tight bond with the substrate. The bond strength builds up during cool down and is fully retained after completion of the job.

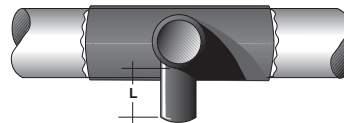
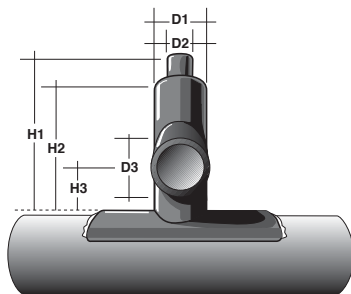
### Product features/benefits

- **No primer required**  
No drying time and easy application.
- **Pre-shaped mold system**  
Makes installation easy.  
Provides accurate protection.
- **Controlled high wall thickness**  
Provides accurate & reliable protection.
- **HTTE-kit available**  
An all-in-one product to protect the house tap tee.

### Product selection guide

	HTTE
<b>Max. operating temperature</b>	50°C
<b>Compatible line coatings</b>	PE, FBE, Tape, Coaltar, Asphalt
<b>Min. preheat temperature</b>	70°C
<b>Recommended pipe preparation</b>	ST3
<b>Soil stress restrictions</b>	None
<b>Performance</b>	DIN30672 C30

### Product dimensions



- 01: with cap  
02: without cap  
04: without cap with tubular CPSPM

HTTE	D1		D2		D3		H1	L	H2	H3
	sup. min. mm	rec. max. mm	sup. min. mm	rec. max. mm	sup. min. mm	rec. max. mm	rec. mm	rec. mm	rec. mm	rec. mm
HTTE-1500-02*	80	37	No	Cap	70	23	137	48	137	53
HTTE-1600**	110	37	110	27	65	32	90	45	78	40
HTTE-1600-OE-02*	110	37	No	Cap	75	32	78	45	78	40
HTTE-1700**	160	58	160	35	95	45	116	41	95	51
HTTE-4000**	160	58	160	35	85	33	187	47	155	61
HTTE-4051	160	45	160	35	85	27	150	47	135	60
HTTE-4500**	160	58	160	35	85	33	169	47	145	68
HTTE-5010-02	160	58	no cap	no cap	95	45	170	41	170	92

\* only available in 02 or 04 version

\*\* 01, 02 and 04 version available

sup: as supplied

rec.: after full unrestricted recovery

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## Product properties: HTTE

Property	Test method	Typical value
<b>Backing</b>		
Tensile strength	DIN 30672	410 N/cm
Elongation	DIN 30672	490%
<b>Adhesive</b>		
Softening point	ASTM E-28	94°C
Shear strength	EN 12068	120 N/cm <sup>2</sup>
<b>Sleeve</b>		
Peel to Steel	EN 12068	7.6 N/mm
Impact resistance	EN 12068	> 15 Nm
Penetration resistance	EN 12068	> 0.6 mm*

\* remaining thickness

## Ordering information

### HTTE type products are available:

- as a molded part with or without cap
- as a kit (P-kit and G-kit)

**Example: HTTE-4000-01-P05 / HTTE-4000-01-G05-DN100**

		Standard ordering options
4000	HTTE size	See product dimension table
01	Code referring to cap	01 : HTTE with cap; 02 : HTTE without cap; 04 : HTTE without cap with CPSM tubular
P05	Code to indicate kit content	Kit contains PERP patch + S1052 mastic strip
G05		Kit contains WPC-C30 unisleeve
DN100	Service pipe diameter in DN	DN80, DN100, DN150, DN200

For proper selection of HTTE size and kit content, see latest application table AT-HTTE.  
For proper product installation, see latest installation instruction.



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## COVALENCE® FLEXCLAD-II

### Product Information

**Product description:** Covalence® FLEXCLAD –II tapes are stretchable, hand-wrapped, heat-shrinkable tapes used for corrosion protection of pipe bends and also for small diameter straight pipes in distribution networks.

Construction: Multi wrap construction:

- **Adhesive:** High-Shear strength copolymer adhesive).
- **Backing:** Flexible, radiation cross-linked, low density polyethylene.

The installation is carried out directly on the cleaned and prepared pipe surface without any primer. During installation, FLEXCLAD-II is to be wrapped spirally around the bend with a 50% overlap. The carrier is heated and shrinks tightly around the substrate; at the same time, the sealing adhesive melts and is forced into all surface irregularities, forming a thorough coating and a complete bond with the substrate.

#### Features:

- Different mechanical classes.
- Highly flexible.
- Compatible with varying pipe diameters.
- Self-tensioning, heat-shrinkable backing.
- No special equipment required.

#### Benefits:

- Provides options to the customer and allows cost savings.
- Easy to apply at both low or high temperatures & on pipes of small diameter.
- Minimizes inventory, thus saving money.
- Easy to use. Saves time.
- Keep installation costs low.

### Product selection guide

	FLEXCLAD-II-C30
<b>Max operating temperature</b>	60°C
<b>Compatible line coatings</b>	PE, FBE, Tape & Coal Tar
<b>Min. preheat temperature</b>	90°C (194°F)
<b>Recommended pipe preparation</b>	ST3 or SA2½
<b>Soil stress restrictions</b>	None
<b>Performance</b>	EN 12068 C30 <sup>(1)</sup> EN 12068 C50 <sup>(3)</sup>

### General order information (continued)

<b>Installation guide</b>	For proper product installation, see latest installation instruction.
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	Store indoor, clean and dry, away from direct sunlight in a cool place below +50°C. Unlimited shelf life.

### Information

<b>Documentation</b>	Extensive information is available on our web-site. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system should be carried out by certified personnel.

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### Product properties

Backing		
Property	Test method	Typical value
<b>Tensile strength at break</b>	ASTM D-638	22 MPa
<b>Elongation at break</b>	ASTM D-638	900%
Adhesive		
Property	Test method	Typical value
<b>Softening point</b>	ASTM E-28	94°C
<b>Shear strength</b>	EN 12068 @10 mm/min	1.20 N/mm <sup>2</sup> @ 23°C 0.5 N/mm <sup>2</sup> @ 50°C
Installed sleeve		
Property	Test method	Typical value
<b>Peel to steel</b>	EN 12068 @10 mm/min	7.6 N/mm @ 23°C 1.3 N/mm @ 50°C
<b>Cathodic disbondment</b>	EN 12068 30 days	11 mm radius @ 23°C ≤ 20 mm radius @ 50°C
<b>Impact resistance</b>	EN 12068 Class C, @ 23°C	> 15 J <sup>(1)</sup>
<b>Indentation resistance</b>	EN 12068 Class C, >10N/mm <sup>2</sup> @ 23°C @ 50°C	> 0.6 mm <sup>(1)(2)</sup> > 0.6 mm <sup>(3)</sup>

(1) 50 % overlap

(2) Remaining coating thickness

(3) 66% overlap

Note: The typical values in this data sheet are based on lab prepared samples. Values shown are not to be interpreted as product specifications.

### Product thickness

	FLEXCLAD-II-C30
<b>Backing as supplied</b>	0.5 mm (0.020 in)
<b>Adhesive as supplied</b>	0.7 mm (0.028 in)

### General order information

Covalence® FLEXCLAD type products are available  
– As a roll (closure patches included)

Example	FLEXCLAD-II-C30-50X15000	
	Designation	Standard ordering options
<b>50</b>	Roll width (mm)	35 mm (1.5"), 50 mm (2.0"), 75 mm (3.0"), 100 mm (4")
<b>15000</b>	Roll length (mm)	15000 mm = 15 m (50 ft)

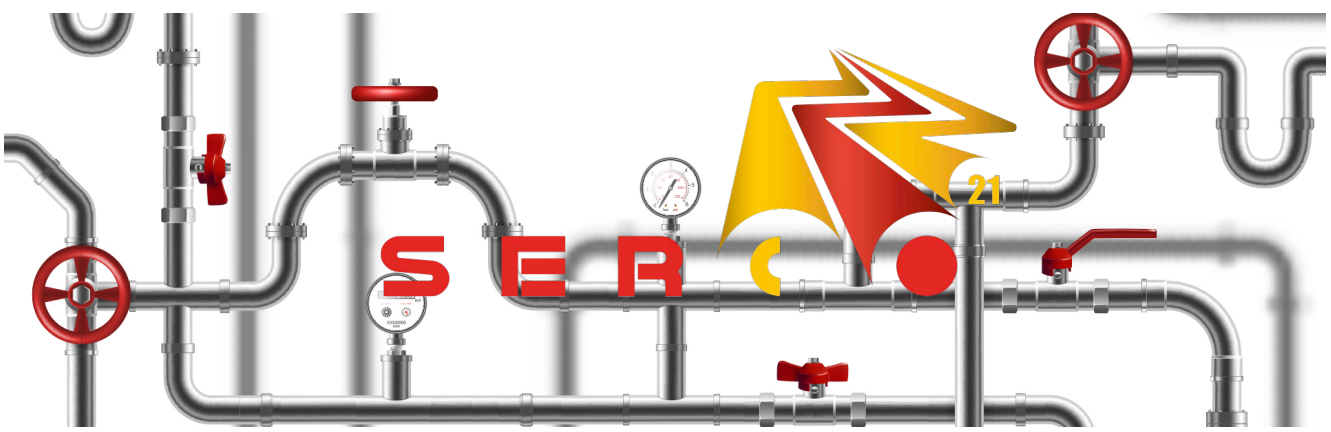
### Calculated material usage

(including 50 mm overlap on the mill-applied coating)

Pipe diameter	Recommended tape width (mm)	3 D-Bend	5 D-Bend
		Tape length FLEXCLAD-II (m)	Tape length FLEXCLADII (m)
DN 25	35	3.10	3.40
DN 40	35	4.80	5.40
DN 50	35	6.30	7.30
DN 80	50	7.50	9.00
DN 100	50	10.60	13.20
DN 125	50	14.50	18.50
DN 150	50	18.80	24.40
DN 200	75	19.10	25.40
DN 250	75	27.20	37.00
DN 300	100	27.30	37.60

Note: For pipe sizes exceeding DN 300, the use of MEPS, WPC or HTLP is recommended.

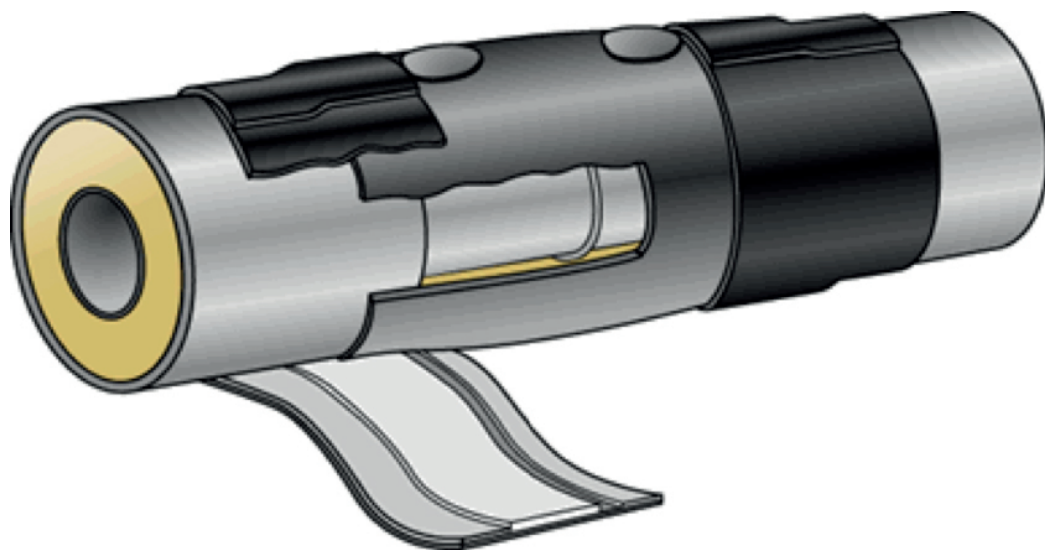
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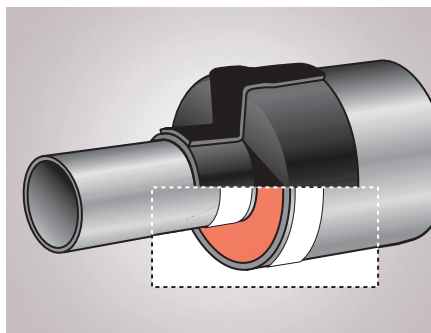
## **Covalence<sup>®</sup> Heat-Shrinkable Sleeves for Pre-insulated Pipe**

### **Heat-shrinkable, wraparound sleeves for pre-insulated pipe joint sealing applications**

The product range includes joint casings, sealing heat-shrink sleeves (wrap-around and tubular), foaming hole closures, primary joint foam seal, end caps and sealants.



District Heating end cap for sealing the pipe ends of pre-insulated pipes.



## Product description

### CCS-DHEC pre-insulated pipe end seal.

**Adhesive:** High temperature high viscosity sealant strips coating at the edges.

**Backing:** Heat-shrinkable, radiation cross-linked, high density polyethylene with fibre glass reinforcement.

CCS-DHEC is a heat-shrinkable pipe end seal preventing water ingress in the pipe insulation between casing and service pipe resp. photo degradation during transport, storage and construction of the pipelines. CCS-DHEC is used for pre-insulated pipes carrying fluids at continuous operating temperatures of up to 110°C (230°F). It is the perfect end seal at all house connections and man holes protecting the integrity of the thermal insulation end.

CCS-DHEC is zipper-closed, its wrap-around design allows installation after welding or repairing similar applications. The fibre glass reinforced woven structure generates a high expansion ratio to accommodate the diameters of jacket and service pipe. The elastomeric adhesive is specially designed for performance at high temperature conditions. The uncoated edges prevent the sleeve from slipping off the casing pipe during installation.

The installation is carried out directly on the prepared and preheated pipe surface. CCS-DHEC is wrapped around the transition and zipper-closed. Heating with a regular gas torch lets the high shrink ratio backing shrink and tightly fit one outlet onto the pipe jacket and the other onto the service pipe. During recovery, the adhesive softens and flows to form an intimate bond, providing and maintaining a waterproof seal between the sleeve and both jacket and service pipe.

## Product features/benefits

- **High shrink ratio backing**  
Copes easily with the transition of jacket and service pipe. Accommodates easily to dimensional variations and pipe ovality. One product covering several different pipe sizes---simple inventory & logistics.
- **High performance against water ingress**  
In case of transport, storage and construction: assures permanent waterproof seal keeping thermal insulation intact all time long!

In case of leakage: limits insulation degradation to one pipe length---reduces repair costs!

- **Wrap-around system with zipper closure**  
Allows for installation after welding of service pipes ("just-in-time"). Simple and fast installation---minimizes costs!
- **No special equipment required**  
Keeps installation costs low.

## Product selection guide

	CCS-DHEC
Max. operating temperature	110°C
Compatible	PE outer jacket Steel, Copper
Min. preheat temperature	60°C
Recommended pipe preparation	Cleaning & Abrading
Soil stress restrictions	None

## Product thickness

	CCS-DHEC
Backing (as supplied)	0.051 in. (1.3 mm)
Backing (fully free recovered)	0.128 in. (3.25 mm)
Adhesive (as supplied)	0.039 in. (1.0 mm)

## Product properties: CCS-DHEC District Heating End Cap

Property	Test method	Typical Value
<b>Backing</b>		
Bursting strength	ISO 3303	2500 N
Cold crack	ISO 4675	-60°C
Thermal ageing	ISO 188	
Followed by bursting strength	@ 150°C, 7 days ISO 3303	> 2000 N
<b>Adhesive</b>		
Softening point	ASTM E-28	150°C
Shear strength	ASTM D-1002 @ 50 mm/min	30 N/cm <sup>2</sup>
Peel strength	ASTM D-1000 @ 50 mm/min	30 N/cm
<b>Sleeve</b>		

Special functional tests are described in the technical specification RUD 6050.

## Ordering information

CCS-DHEC type products are available:

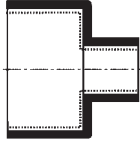
- as Uni-sleeve (pre-cut sleeve with pre-attached patch & zipper closure)

Example: CCS-DHEC-128-48

CCS-DHEC-..	Product type	Standard Ordering options
128-48	Recovery ratio (supplied ∅ in mm - recovered ∅ in mm)	CCS-DHEC 110-26, 128-48, 163-60, 186-70, 200-76, 225-89, 250-108, 280-133, 315-168, 400-219, 560-273, 710-355, 900-457, 1200-610

# APPLICATION TABLE

Selection of CCS-DHEC depending on the service pipe and the casing pipe



Service pipe OD (mm)	Casing Pipe OD (mm)															
	90	95	110	125	128	140	150	163	180	186	200	225	250	266	280	
27																
34	110/26*															
42	110/26*															
48																
54			128/48													
60			128/48													
70							163/60									
76							163/60									
89								186/70								
108									200/76							
114										225/89						
133											250/108					
139												250/108				
168														280/133		
193															280/133	

\* CCS-DHEC-110/26: conical cut sleeve, needs special installation instruction CCS-DHEC/C

Service pipe OD (mm)	Casing Pipe OD (mm)														
	297	315	334	355	400	450	500	560	630	710	800	900	1000	1200	
168															
193	315/168														
219	315/168														
273			400/219												
324			400/219												
355			400/219												
406							560/273								
457							560/273								
508								710/355							
610									710/355						
813										900/457					
1016											900/457			1200/610	

For proper product installation, see latest installation instruction.

Berry Plastics warrants that the product conforms to its chemical and physical description and is appropriate for the use stated on the technical data sheet when used in compliance with Berry Plastics written instructions. Since many installation factors are beyond the control of Berry Plastics, the user shall determine the suitability of the products for the intended use and assume all risks and liabilities in connection herewith. Berry Plastics liability is stated in the standard terms and conditions of sale. Berry Plastics makes no other warranty either expressed or implied. All information contained in this technical data sheet is to be used as a guide and is subject to change without notice. This technical data sheet supersedes all previous data sheets on this product.



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DS-CCS-DHEC-REV-5-0309



## DHEC

### Product Information

**Product description:** Covalence® DHEC is a District Heating End Cap for sealing the pipe ends of pre-insulated pipes carrying fluids at various operating temperatures up to 120°C and occasionally with a peak temperature up to 140°C.

**Construction:** Two-layer system

- **Adhesive:** High temperature, high viscosity sealant strips.
- **Backing:** Radiation cross-linked, polyethylene.

DHEC is a molded part with different outlet diameters on each end to accommodate the diameters on both casing and service pipe.

DHEC *Single* is designed for pre-insulated pipes having one service pipe. DHEC *Twin* has two outlets and is designed for pre-insulated pipes with two service pipes.

The elastomeric adhesive is specially designed for high temperature performance. The uncoated edges prevent the sleeve from slipping off the casing pipe during installation.

The installation is carried out directly on the prepared and preheated pipe surface, DHEC is slid over service and casing pipe and positioned in place. The DHEC is then heated with a regular gas torch. The high shrink ratio backing shrinks and forms a tight fit onto the pipe and casing. During recovery, the adhesive softens and flows to form a waterproof seal.

**Features:**

- High shrink ratio backing offering optimum conformability to transitions and variations.
- One product covering several different pipe sizes.
- High performance against water ingress.
- Tubular mold system (just "slide over & shrink").
- No special equipment required.

**Benefits:**

- Easily adapts to dimensional variations and pipe ovality.
- Reduces inventory costs. Simplifies logistics.
- Thermal insulation remains functional.
- Easy and fast installation---minimizes costs;

### Product selection guide

<b>Max operating temperature</b>	120°C (with occasional peaks up to 140°C)
<b>Compatible line coatings</b>	PE outer jacket, Steel, Copper
<b>Min. preheat temperature</b>	60°C
<b>Recommended pipe preparation</b>	Cleaning & abrading
<b>Soil stress restrictions</b>	None

### Product thickness

	DHEC
<b>Backing as supplied (mm)</b>	0.5 – 1.65*
<b>Backing fully free recovered (mm)</b>	2.5
<b>Adhesive as supplied (mm)</b>	1.0

\* Backing thickness is function of the product diameter

### Product properties

Property	Test method	Typical value
<b>Backing</b>		
<b>Tensile strength at break</b>	ISO 37 @ 50 mm/min	20 MPa
<b>Elongation at break</b>	ISO 37 @ 50 mm/min	> 400 %
<b>Hardness, Shore D</b>	ASTM D-2244	54
<b>Water absorption</b>	ISO 62, 24 hrs	0.1 %
<b>Thermal ageing</b>	ISO 188 150°C, 7 days	
<b>Followed by elongation</b>	ISO 37 @ 50 mm/min	350%
<b>Adhesive</b>		
<b>Softening Point</b>	ASTM E-28	155°C
<b>Lap shear</b>	ISO 21809-3	0.13 N/mm <sup>2</sup>
<b>Installed sleeve</b>		
<b>Peel strength</b>	ISO 21809-3	0.7 N/mm
<b>Low temperature flexibility</b>	ASTM D-2671, C	-40°C

*Note: The typical values in this data sheet are based on lab prepared samples. Values shown are not to be interpreted as product specifications.*

### Ordering information

Single Outlet DHEC		
Example	DHEC-2200	
	Designation	Standard ordering options
<b>2200</b>	Size code	2000, 2060, 2100, 2200, 2300, 2340, 2400, 2500, 2600, 2630, 2700, 2800, 2900, 3000
Double Outlet DHEC		
Example	DHEC-3280	
	Designation	Standard ordering options
<b>3280</b>	Size code	3200, 3250, 3250-P604, 3280, 3300, 3350-01, 3350-02, 3350-03, 3350-05, 3360-01

### General information

<b>Product dimension</b>	For proper product selection, see latest application table AT-DHEC.
<b>Installation guide</b>	For proper product installation, see latest application guideline.
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	To ensure maximum performance, store Covalence products in a dry, ventilated area. Keep products sealed in original boxes and avoid exposure to direct sunlight, rain, snow, dust or other adverse environmental elements. Avoid prolonged storage temperatures above 40°C or below -10°C. Unlimited shelf life.
<b>Documentation</b>	Extensive information is available on our web-site. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system shall be carried out by certified personnel.

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## COVALENCE<sup>®</sup> DualSeal RJS-E

### Product Information

**Tested & Certified in accordance to EN489:2009!**

#### Description

DualSeal RJS-E is a high-performance wrap-around PE-X sleeve with special fixation & sealing system (Hotmelt & Sealant adhesive concept) for sealing of all-kind joint casings in pre-insulated pipe systems.

#### Construction

- **Adhesives**
  - I. **Fixation system:** High shear-strength, thermoplastic copolymer.
  - II. **Sealing system:** Pure, visco-elastic sealant of perfect long-term stability.
- **PE-X-Backing**  
Radiation cross-linked, high density polyethylene (HD-PE) with thermosensitive embossed profile („PCI” – **Permanent Change Indicator**).

#### Functioning

- **Thermoplastic Hotmelt Adhesive** at the sleeve edges as force-locked and high shear-strong anchoring against tangential & axial soil movement – next to secondary sealing.
- **Visco-elastic Sealant** in the sleeve centre as premium and reliable main moisture seal. Excellent surface wetting and fill behaviour, especially at joint casing/jacket pipe transition.
- **PE-X-Backing of modified HDPE** as optimum ring contraction pressure around casing and jacket pipe, for increased diffusion tightness and reinforced resistance against relevant stresses at handling and in service.
- **Adhesive-free Strip („Anti-slip zone”)** \* for immediate anchoring to the casing at shrinking start. Keeps the sleeve in place ensuring speedy installation without slippage.  
\* Sleeve widths 155, 230 and 300 mm
- **Dimpled Embossing (PCI)** over the entire sleeve backing. Upon proper heating, the dimples permanently disappear visibly and tangibly, indicating appropriate adhesive activation and rendering inspectable any time during or after installation.

#### Features

- Radiation cross-linked HDPE backing
  - mechanically and chemically extremely resistant
  - higher shrink force
  - permanent higher hoop stress
  - increased resistance to diffusion
  - very low water permeable
  - Permanent Change Indicator (dimpled backing).
- High performance visco-elastic sealant.
- Specially designed hotmelt against displacement.
- Anti-slip zone.
- Applicable for test hole, casing and pipe repair.
- Extremely resistant to any job site and in-service relevant stresses.
- Over 30 years in service sealing.

#### Benefits

- Field-proven, installation-friendly and tolerant to field conditions!
- Resists highest mechanical, chemical and soil stresses (**EN489:2009 certified**).
- Permanent safe sealing against water and moisture at earth laying.
- Provides strong, permanent bond and keeps sleeve firmly in place.
- Ensures correct application heat and allows easy post-heat inspection. Reliable inspectability at any time. (**PCI**)
- Allows for axial movements and outer casing expansion stresses.
- High shear-strong anchoring of the sleeve with jacket pipe and casing.
- Full sealing system on its own without the need for casing innerseals.
- Continuous, step-free and reliable installability.
- Extremely versatile applicability (also for special applications and stresses).
- Effective sealing with long-run experience.

Product selection guide	DualSeal RJS-E
<b>Max operating temperature</b>	50°C (60°C under expansion cushion)
<b>Compatible joint systems</b>	PE & PEX shrink casing, Oversized casing, Metal casing, PUR half shells.
<b>Min. preheat temperature</b>	65°C (149°F)
<b>Recommended pipe preparation</b>	Cleaning & Abrading
<b>Soil shear stress</b>	Excellent
<b>Product recommended for</b>	Transportation, distribution and service lines
<b>Performance</b>	<b>According to EN 489:2009.</b> FFI tested & certified. “Without” and “With” casing innerseal.

Product properties			
Backing			
Property	Test method	Typical value	
<b>Tensile strength at break</b>	ASTM D-638	22.8 MPa	
<b>Elongation at break</b>	ASTM D-638	600%	
<b>Hardness, Shore D</b>	ASTM D-2240	57	
<b>Shrink force</b>	ASTM D-638, 150°C	0.276 MPa	
<b>Thermal ageing followed by elongation</b>	ASTM D-3045, 150°C, 21 days	>450%	
<b>Weathering (UV) resistance followed by elongation</b>	ASTM D-2565, 30 days	>450%	
<b>Water absorption</b>	ASTM D-570	0.04%	
Adhesive			
Property	Test method	Typical value	
		Visco-elastic	Copolymer
<b>Softening point</b>	ASTM E-28	92°C	94°C
<b>Shear strength</b>	EN12068 @ 23°C @ 50°C	0.08 N/mm <sup>2</sup>	2.6 N/mm <sup>2</sup> 0.75 N/mm <sup>2</sup>
Sleeve system			
Property	Test method	Typical value	
		Visco-elastic	Copolymer
<b>Peel strength (to PE)</b>	EN 12068 @10 mm (0.4")/min ISO 21809-3 @ 50mm/min	0.9 N/mm 1.2 N/mm	7 N/mm
<b>Soil stress resistance</b>	Acc. EN 489:2009 Max 0.5% sand humidity 100 cycles	Pass	
<b>followed by Water tightness test</b>	Acc. EN 489:2009 23°C, 0.3 bar, 24 hr	Pass	

Note: The typical values in this data sheet are based on lab prepared samples. A one-by-one adoption in product specifications is therefore not recommended.

Product thickness (in mm)	/A	/B	/C
<b>Backing</b>			
- as supplied	0.55	0.75	0.90
- fully free recovered	0.75	1.00	1.20
<b>Visco-elastic sealant (as supplied)</b>	1.10	1.50	1.50
<b>Copolymer adhesive (as supplied)</b>	0.70	0.80	0.80

Order information		
<b>DualSeal RJS-E</b> type products are available		
– as UNI-sleeve (pre-cut with pre-attached closure patch)		
– on Roll (closure patches to be ordered separately)		
Uni-sleeve		
<b>Example</b>	<b>RJS-E-155-DIA140/A(S2-C60)</b>	
	<b>Designation</b>	<b>Standard ordering options</b>
<b>155</b>	Sleeve width (mm)	155, 230 (/A and /B) 300 (/C) 640, 770, 900 (/B or /C)
<b>DIA140</b>	Casing pipe diameter	∅ 90 - ∅ 1200 mm
<b>/A</b>	Thickness construction	/A, /B, /C
<b>S2-C60</b>	Packaging quantity	S2: Packing by pairs C60: Case quantity (2x30p.)
Roll (closure patch to be ordered separately)		
<b>Example</b>	<b>RJS-E-155X40M/A-RL(C2)</b>	
	<b>Designation</b>	<b>Standard ordering options</b>
<b>155</b>	Roll width (mm)	155, 230 (/A and /B) 300 (/C) 640, 770, 900 (/B or /C)
<b>40</b>	Roll length	40 m (/A) 30 m (/B and /C), 20 m (770/C, 900/B&C)
<b>/A</b>	Thickness construction	/A, /B, /C
<b>C2</b>	Packaging quantity	C2: 2 rolls/case (155 & 230) Without notation: 1 roll/case
Closure patches (to be ordered separately)		
<b>Example</b>	<b>WPCP-IV-100X153 (S50)</b>	
	<b>Designation</b>	<b>Standard ordering options</b>
<b>100</b>	Patch width (mm)	100, 150, 200
<b>153</b>	Patch length (mm)	153, 228, 298, 638, 768,898
<b>S50</b>	Packaging quantity	50 pc per bag

General information	
<b>Product dimension</b>	Sleeve cut lengths and appropriate closure patch widths depend on the pipe size, see latest application table AT-RJS-E.
<b>Installation guide</b>	For proper product installation, see latest installation instruction.
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	To ensure maximum performance, store Covalence products in a dry, ventilated area. Keep products sealed in original boxes and avoid exposure to direct sunlight, rain, snow, dust or other adverse environmental elements. Avoid prolonged storage temperatures above 40°C or below -20°C. Unlimited shelf life.

Information	
<b>Documentation</b>	Extensive information is available on our web-site. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described <b>DualSeal RJS-E</b> sealing sleeve system should be carried out by certified personnel.



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## COVALENCE® EasySeal TPSPM-PE

### Product Information

Tubular sleeve with wide installation window for sealing of pipe joints in pre-insulated pipe system.

**Product description:** EasySeal TPSPM-PE is a heat-shrinkable, tubular sleeve for joint sealing of heat-shrinkable and oversized casings in standard conditions. Generally, EasySeal TPSPM-PE is used as an additional outside seal against moisture ingress at casing ends.

#### Construction:

- **Adhesive:** High strength, visco-elastic sealant with low preheat for easy application..
- **Backing:** Radiation cross-linked, high density polyethylene with PCI (Permanent Change Indicator). Upon proper heating the dimples disappear permanently. Any time after, it is possible to inspect whether the sleeve during installation has been well heated and fully shrunk leaving any cold spots over its entire surface

During shrinking, the adhesive easily melts and flows, filling in the transition between the pipe jacket and the oversized casing. The adhesive ensures a firm bond between the sleeve and the pipe/casing surface. The dimpled backing permanently indicates that the sleeve is completely shrunk.

#### Features:

- High shrink force HDPE backing.
- Permanent high hoop stress of cross-linked HDPE backing.
- High mechanical resistance HDPE backing.
- No special installation equipment required.
- Individual packaging precludes contamination prior to application.
- Permanent Change Indicator.
- Over 25 years in service sealing.

#### Benefits:

- Creates tight, high performance bond and a strong seal. Secures anchoring of casing and pipe jacket.
- Easily survives temperature cycling, soil stresses, pipe movements & chemical attack. Extremely resistant!
- Easy installation: just 'slide over & shrink'.
- Stays clean and uncomplicated. Less work.
- Ensures correct application heat and allows easy post-heat inspection. Reliable inspectability at any time.
- Effective long term sealing.

### Product selection guide

<b>Max operating temperature</b>	50°C (60°C under expansion cushion)
<b>Compatible joint system</b>	Heat-shrinkable casing
<b>Recommended preheat temperature</b>	60°C
<b>Recommended pipe preparation</b>	Cleaning & Abrading
<b>Soil stress resistance</b>	Moderate
<b>Pressure testing after installation</b>	Optional
<b>Product recommended for</b>	Service lines
<b>Performance</b>	> 100 cycles acc. EN 489*

### Product properties

Backing		
Property	Test method	Typical value
<b>Tensile strength at break</b>	ASTM D-638	22.8 MPa
<b>Elongation at break</b>	ASTM D-638	600%
<b>Hardness, Shore D</b>	ASTM D-2240	57
<b>Shrink force</b>	ASTM D-638, 150°C	0.276 MPa
<b>Thermal ageing followed by elongation</b>	ASTM D-3045, 150°C ASTM D-638, 23°C	21 days > 450%
<b>Moisture absorption</b>	ASTM D-570	0.04%
Adhesive		
Property	Test method	Typical value
<b>Softening Point</b>	ASTM E-28	135°C
<b>Lap shear</b>	EN 12068	0.09 N/mm <sup>2</sup>
Installed sleeve		
Property	Test method	Typical value
<b>Peel to PE</b>	EN 12068, 10mm/min DIN 30672, 100 mm/min	1.1 N/mm 40 N/cm
<b>Soil stress resistance</b>	EN 489 – 100 cycles*	Pass
<b>External pressure test after soil stress</b>	EN 489 23°C, 30 kPa, 24 hrs	Pass

\* 8% sand humidity

Note: The typical values in this data sheet are based on lab prepared samples. Values shown are not to be interpreted as product specifications.

### Product thickness

<b>Backing as supplied</b>	0.65 mm
<b>Backing fully free recovered</b>	1.00 mm
<b>Mastic sealant as supplied</b>	0.88 mm

### Product order information

EasySeal TPSPM-PE type products are available  
 – As ready-to-size tubular sleeve

Example	TPSPM-210/135-150PE160/180(C60)	
	Designation	Standard ordering options
<b>210/135</b>	Recovery ratio (mm)	See application table on next page
<b>150</b>	Sleeve width (mm)	150, 225, (450)**
<b>PE160/180</b>	Outside diameter(s) of insulated pipe(s)	See application table on next page
<b>C60</b>	Packaging quantity	C60: 60 pc per case

\*\* no inside-out packaging, only adhesive liner, made to order only



**Application Table**

Max. Casing diameter before shrinkage (mm)	Insulated pipe outside diameter (mm)	TPSM-PE Product Size	Product width XXX (mm)	Min. Supplied diameter TPSM-PE (mm)	Max. Recovered diameter TPSM-PE (mm)
80	65	TPSM-85/60-XXXPE65 (C150)	150	85	60
90	65 – 75	TPSM-95/65-XXXPE65/75(C125)	150	95	65
105	90	TPSM-115/80-XXXPE90(C90)	150 or 225	115	80
125	90 – 110	TPSM-130/90-XXXPE90/110(C90)	150 or 225	130	90
145	110 – 125	TPSM-155/100-XXXPE110/125(C90)	150 or 225	155	100
160	125 – 140	TPSM-170/110-XXXPE125/140(C90)	150 or 225	170	110
180	140 – 160	TPSM-190/125-XXXPE140/160(C90)	150 or 225	190	125
200	160 – 180	TPSM-210/135-XXXPE160/180(C60)	150 or 225	210	135
220	180 – 200	TPSM-225/145-XXXPE180/200(C60)	150 or 225	225	145
245	200 – 225	TPSM-260/165-XXXPE200/225(C60)	150 or 225	260	165
265	225 – 250	TPSM-290/185-XXXPE225/250(C40)	150 or 225	290	185
300	250 – 280	TPSM-330/210-XXXPE250/280(C44)	150 or 225	330	210
335	280 -315	TPSM-370/235-XXXPE280/315(C44)	150 or 225	370	235
370	315 -355	TPSM-395/250-XXXPE315/355(C30)	150 or 225	395	250
420	355 – 400	TPSM-450/285-XXXPE355/400(C30)	225	450	285
470	400 – 450	TPSM-505/315-XXXPE400/450(C20)	225	505	315
525	450 – 500	TPSM-555/350-XXXPE450/500(C20)	225	555	350
585	600 – 560	TPSM-625/385-XXXPE500/560(C14)	225	625	385
650	560 -630 -710	TPSM-775/480-XXXPE560/710(C10)	225	775	480
735	560 -630 -710	TPSM-775/480-XXXPE560/710(C10)	225	775	480
825	710 – 800	TPSM-865/525-XXXPE710/800(C10)	225	865	525

**General information**

<b>Installation guide</b>	For proper product installation, see latest installation instruction.
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	To ensure maximum performance, store Covalence products in a dry, ventilated area. Keep products sealed in original boxes and avoid exposure to direct sunlight, rain, snow, dust or other adverse environmental elements. Avoid prolonged storage temperatures above 40°C or below -10°C. Unlimited shelf life.

**Information**

<b>Documentation</b>	Extensive information is available on our web-site. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system should be carried out by certified personnel.



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Anodeflex® - Stopaq® - Polyken® - Covalence® - Powercrete® - Sealtaq® - Blockr® - Easy.Qote®

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## COVALENCE® EasySeal WPSM-PE

### Product Information

Wrap-around sleeve with wide installation window for sealing of pipe joints in pre-insulated pipe system.

**Product description:** EasySeal WPSM-PE is a heat-shrinkable, wrap-around sleeve for joint sealing of heat-shrinkable and oversized casings in standard conditions. Generally, EasySeal WPSM-PE is used as an additional outside seal against moisture ingress at casing ends.

#### Construction:

- **Adhesive:** High strength, visco-elastic sealant with low preheat for easy application.
- **Backing:** Radiation cross-linked, high density polyethylene with PCI (Permanent Change Indicator). Upon proper heating the dimples disappear permanently. Any time after, it is possible to inspect whether the sleeve during installation has been well heated and fully shrunk leaving any cold spots over its entire surface

During shrinking, the adhesive easily melts and flows, filling in the transition between the pipe jacket and the heat-shrinkable casing. The adhesive ensures a firm bond between the sleeve and the pipe/casing surface.

#### Features:

- High shrink force HDPE backing.
- Permanent high hoop stress of cross-linked HDPE backing.
- High mechanical resistance HDPE backing.
- No special installation equipment required.
- Low preheat sensitivity.
- Permanent Change Indicator.

#### Benefits:

- Creates a tight, high performance bond and a strong seal. Secures anchoring of casing and pipe jacket.
- Easily survives temperature cycling, moderate soil stresses, pipe movements & chemical attack. Extremely resistant!
- Easy installation: just 'wrap around & shrink'.
- Ensures correct application heat and allows easy post-heat inspection. Reliable inspectability at any time.
- Effective long term sealing.

### Product selection guide

<b>Max operating temperature</b>	50°C (60°C under expansion cushion)
<b>Compatible joint system</b>	Heat-shrinkable casing
<b>Recommended preheat temperature</b>	60°C
<b>Recommended pipe preparation</b>	Cleaning & Abrading
<b>Soil stress resistance</b>	Moderate
<b>Pressure testing after installation</b>	Optional
<b>Product recommended for</b>	Service lines
<b>Performance</b>	EN 489:2009

### Product properties

Backing		
Property	Test method	Typical value
<b>Tensile strength at break</b>	ASTM D-638	22.8 MPa
<b>Elongation at break</b>	ASTM D-638	600%
<b>Hardness, Shore D</b>	ASTM D-2240	57
<b>Shrink force</b>	ASTM D-638, 150°C	0.276 MPa
<b>Thermal ageing followed by elongation</b>	ASTM D-3045, 150°C, 21 days ASTM D-638, 23°C	> 450%
<b>Moisture absorption</b>	ASTM D-570	0.04%
Adhesive		
Property	Test method	Typical value
<b>Softening Point</b>	ASTM E-28	135°C
<b>Lap shear</b>	EN 12068	0.09 N/mm <sup>2</sup>
Installed sleeve		
Property	Test method	Typical value
<b>Peel to PE</b>	EN 12068, 10mm/min DIN 30672, 100 mm/min	1.1 N/mm 40 N/cm
<b>Soil stress resistance</b>	EN 489:2009 * Max 0.5% sand humidity 100 cycles	Pass
<b>External pressure test after soil stress</b>	EN 489:2009 23°C, 30 KPa, 24 hrs	Pass

\* as part of joint casing system

Note: The typical values in this data sheet are based on lab prepared samples. Values shown are not to be interpreted as product specifications.

Product thickness	155/A	230/B
<b>Backing as supplied</b>	0.75 mm	0.75 mm
<b>Mastic sealant as supplied</b>	1.00 mm	1.20 mm

### Product order information

- EasySeal WPSM-PE type products are available
- As Uni-sleeve (pre-cut with pre-attached closure patch)
  - As a roll (closure patches to be ordered separately)

#### Uni-sleeve

Example	WPSM-PE-155-DIA140/A(S2-C60)	
	Designation	Standard ordering options
<b>155</b>	Sleeve width	155 mm (/A) , 230 mm (/B)
<b>DIA140</b>	Casing pipe diameter (mm)	Ø 90 - Ø 560
<b>/A</b>	Sleeve construction	/A for 155mm /B for 230 mm
<b>S2-C60</b>	Packaging quantity	S2: 2 pc per plastic bag – C60: 60 pc or 2x30 pairs per case

#### Roll form (closure patch to be ordered separately)

Example	WPSM-PE-155X40M/A-RL(C2)	
	Designation	Standard ordering options
<b>155</b>	Sleeve width	155 mm (/A) , 230 mm (/B), 300 mm (/B)*
<b>40</b>	Roll length	40 m (/A), 30 m (/B)
<b>/A</b>	Roll construction	/A for 155 mm /B for 230 mm & 300 mm*
<b>C2</b>	Packaging quantity	2 rolls per case

\* Made to order only

Rolls can have a splice. Min partial length is 5 M.

#### Closure patches (to be ordered separately)

Example	WPCP-IV-100X153 (S50)	
	Designation	Standard ordering options
<b>100</b>	Patch width (mm)	100, 150
<b>153</b>	Patch length (mm)	153, 228, 300
<b>S50</b>	Packaging quantity	50 pc per bag

**Application table**

Sleeve cut length

Jacket pipe Ø

≤ 200: circumference of casing\* + 75 mm  
 225-500: circumference of casing\* + 100 mm  
 ≥ 560: circumference of casing\* + 150 mm

Patch width

≤ Ø450: 100 mm x SW\*\*  
 ≥ Ø500: 150 mm x SW\*\*



\*: circumference of the casing ends after shrinking of the casing  
 \*\*: SW = Sleeve Width

Sleeve width depending on jacket pipe diameter

In combination with SHRINKABLE CASING

Sleeve Width:	Jacket Pipe Ø:															
	90	110	125	140	160	180	200	225	250	280	315	355	400	450	500	560
155	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	White	White	White	White	White
230	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Red	Red	Red	Red	Red	Red
	Red	Recommended application														
	Yellow	Possible application														
	Dimensions in mm															

General information	
<b>Installation guide</b>	For proper product installation, see latest installation instruction.
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	To ensure maximum performance, store Covalence products in a dry, ventilated area. Keep products sealed in original boxes and avoid exposure to direct sunlight, rain, snow, dust or other adverse environmental elements. Avoid prolonged storage temperatures above 40°C or below -10°C. Unlimited shelf life.

Information	
<b>Documentation</b>	Extensive information is available on our website. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system should be carried out by certified personnel.



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## COVALENCE® FOPS

### Product Information

Sealing system for foam injection holes in thermally insulated PE jacket pipes & casings.

**Product description:** Covalence® FOPS is a watertight and Mechanically strong seal of foaming holes for pre-insulated pipe casings. FOPS is a hot applied, heat-stable patch.

- **Market:** Pre-insulated pipes.
- **Applications:** Foaming hole sealing.

Construction: Two-layer system

- **First layer:** High-shear resistant thermoplastic adhesive.
- **Second layer:** Thick-walled, radiation-cross-linked, high density polyethylene.

The installation involves removing excess foam and abrading & cleaning the foaming hole area. The hole is filled with a FOPS plug or special mastic putty. The FOPS is placed centrally over the hole to be sealed. When heated, the FOPS adhesive softens and flows to form a tight bond with the substrate. The bond strength builds up during cooldown and is fully retained after completion of the job.

#### Features:

- No special equipment required (standard gas torch).
- Heat-and UV-stable.
- Highly shear-resistant & mechanically strong.
- No gas build-up during preheating and installation.

#### Benefits:

- Makes installation fast, easy and low cost.
- Acts as moisture barrier. Insulation remains functional!
- Prevents insulation from degrading. Superior sealing! Unaffected by high or low temperatures. Reliable performance!
- Secure installation.

### Product selection guide

<b>Max. operating temperature</b>	50°C (60°C under expansion cushion)
<b>Joint design</b>	Standard, oversized, heat-shrinkable PE casings
<b>Min. preheat temperature</b>	60°C
<b>Recommended pipe preparation</b>	Abrading & Cleaning
<b>Soil stress restrictions</b>	None
<b>Performance</b>	300 cycles, 0.5% sand humidity 1000 cycles, 8.0% sand humidity

### General information

<b>Installation guide</b>	For proper product installation, see latest installation instruction.
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	To ensure maximum performance, store Covalence products in a dry, ventilated area. Keep products sealed in original boxes and avoid exposure to direct sunlight, rain, snow, dust or other adverse environmental elements. Avoid prolonged storage temperatures above 40°C or below -20°C. Unlimited shelf life.

### Product properties

Backing		
Property	Test method	Typical value
<b>Tensile strength at break</b>	ASTM D638	22.8 MPa
<b>Elongation at break</b>	ASTM D638	600%
<b>Hardness, Shore D</b>	ASTM D2240	57
<b>Thermal ageing</b>	ASTM D3045, 150°C, 21 days	
<b>Followed by elongation</b>	ASTM D638, 23°C	> 450%
<b>Weathering (UV) resistance</b>	ASTM D2365, 30 days	
<b>Followed by elongation</b>	ASTM D638, 23°C	> 450%
<b>Water absorption</b>	ASTM D570	0.05%
Adhesive		
Property	Test method	Typical value
<b>Softening point</b>	ASTM E28	94°C
<b>Shear strength</b>	EN 12068	2.6 N/mm <sup>2</sup> @ 23°C 0.75 N/mm <sup>2</sup> @ 50°C
<b>Peel strength to PE</b>	EN12068, 10 mm/min	7 N/mm
Installed sleeve		
Property	Test method	Typical value
<b>Soil stress resistance</b>	EN 489	
	0.5% sand humidity	Min 300 cycles
	8.0% sand humidity	Min 1000 cycles
<b>External water pressure after soilstress</b>	EN 489 @ 23°C, 0.7 bar, 24 hr	Pass

### Ordering information

Covalence® FOPS products are available  
– As finished unit

Example	FOPS
	<b>Standard ordering options</b>
<b>FOPS 100 PRT (S100)</b>	Foaming hole closure patch (standard pack is 100 pc in a bag)
Accessories (to be ordered separately)	
<b>EQ-PRESS-FOPS</b>	<b>Standard ordering options</b> PU-foam press with silicone bottom layer and aluminium top plate & handle

### Product thickness

<b>Backing as supplied</b>	0.75 mm
<b>Adhesive as supplied</b>	0.80 mm
<b>Patch diameter as supplied</b>	92.5 mm

### Information

<b>Documentation</b>	Extensive information is available on our web-site. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system should be carried out by certified personnel.

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## COVALENCE® RFS

### Product Information

**Product description:** Covalence® Fast Sleeves are stretchable, hand-wrapped, heat-shrinkable sleeves specifically designed for the protection of the insulation used in insulated joint system. The RFS sleeve can be installed without the need of a closure patch thus makes installation simple and fast.

Construction: Two-layer system

- **Backing:** Flexible, radiation cross-linked, low density polyethylene.
- **Adhesive:** High viscosity mastic sealant.

The installation is carried out directly on the insulation without any primer. During installation, RFS is to be wrapped tightly around the insulation with a min 50 mm overlap onto itself. The backing is heated and shrinks tightly around the substrate; at the same time the sealing adhesive melts forming a thorough coating and a complete bond with the substrate.

**Features:**

- Highly flexible
- High viscosity adhesive keeps the sleeve together without the need of a closure patch.
- Radiation cross-linked, heat-shrinkable backing.

**Benefits:**

- Easy to apply.
- Keeps installation very simple. Minimizes inventory, thus saving money.
- Simple torch installation, keeps installation costs low.

### Product properties

#### Backing

Property	Test method	Typical value
<b>Tensile strength at break</b>	ASTM D-638	17 MPa
<b>Elongation at break</b>	ASTM D-638	650%

#### Adhesive

Property	Test method	Typical value
<b>Softening point</b>	ASTM E-28	203°C
<b>Shear strength</b>	ASTM D-1002	12 psi

#### Installed sleeve

Property	Test method	Typical value
<b>Peel to PE</b>	ASTM D-1000	>15 lb/in

*Note: The typical values in this data sheet are based on lab prepared samples. Values shown are not to be interpreted as product specifications.*

### Order information

Covalence® RFS products are available  
 – As a roll (no closure patch needed)

Example	RFS-400X30M-RL	Standard ordering options	
<b>400</b>	<b>Designation</b>		
	Sleeve width	400 (406 mm*) 500 (508 mm*) 550 (559 mm*) 600 (609 mm*) * nominal width	
	<b>30</b>	Roll length	30 m

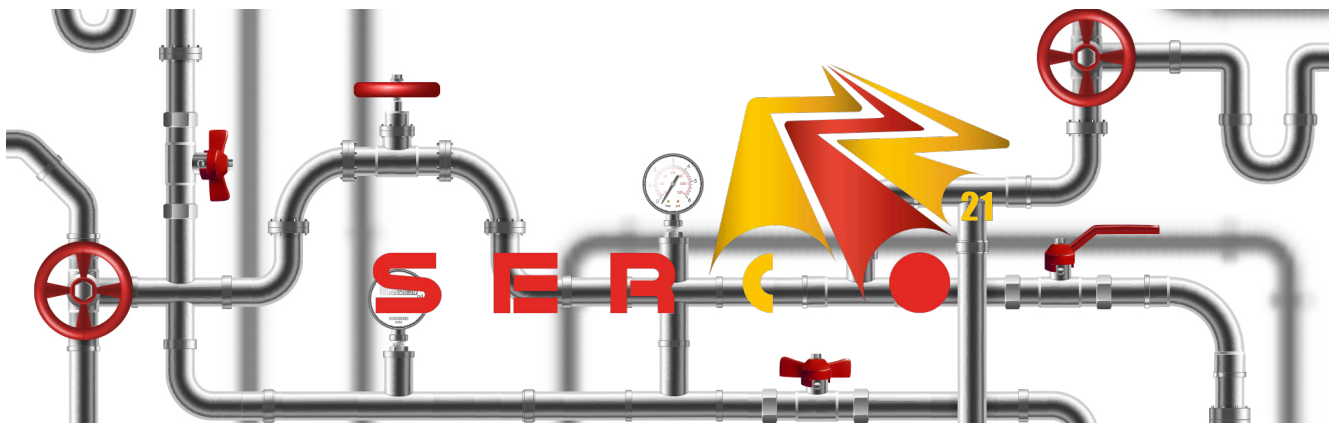
### General order information

<b>Installation guide</b>	For proper product installation, see latest installation instruction.
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	Store indoor, clean and dry, away from direct sunlight in a cool place below +50°C. Unlimited shelf life.

### Information

<b>Documentation</b>	Extensive information is available on our website. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system shall be carried out by certified personnel.

Product thickness	
<b>Backing as supplied</b>	0.38 mm
<b>Adhesive as supplied</b>	0.62 mm



## Covalence® 2 Layer Series

# Wraparound heat-shrinkable sleeves, ready-to-fit assembly for corrosion protection

The products are two-layer field-joint coating systems designed for corrosion protection of pipelines operating at ambient to moderate temperatures on field girth weld joints in distribution and transmission pipeline systems.



## COVALENCE<sup>®</sup> HTLP60-DCS 2 LAYERS

### Product Information

**Product description:** Covalence<sup>®</sup> HTLP60-DCS system is a wrap-around heat-shrinkable sleeve field-joint coating system for pipeline operating at ambient and elevated temperatures.

Construction: Two-layer system

- **First layer:** High shear strength copolymer adhesive.
- **Second layer:** Radiation cross-linked, high density polyethylene with permanent Change Indicator (PCI).

The HTLP60-DCS is compatible with most commonly used steel pipe coatings and is used for offshore and onshore girth weld protection or to recoat (rehabilitate) long pipe sections and large radius bends. The installation is carried out directly on the cleaned and pre-heated pipe surface without any primer required. During installation, heat-shrinkable sleeve is wrapped around the joint. Heat is then applied to the sleeve which shrinks to form a tight fit around the joint. The cross-linked outer layer forms a tough barrier against mechanical damage and moisture transmission.

Note HTLP60-DCS can also be applied with liquid epoxy primer as 3-layer coating. See PDS HTLP60-DCS for more info.

#### Features:

- Fully resistant to shear forces induced by soil and thermal movements.
- Sleeve allows fast installation and formation of strong mechanical & chemical bonds.
- Superior cathodic disbondment and hot water immersion resistance.
- No special equipment (standard gas torch & a roller).
- Dimpled backing provides a "permanent change" indicator for application of heat.

#### Benefits:

- The HTLP is tough & lasts as long as a 3-layer, factory applied coating.
- Allows fast application combined with high performance.
- No primer required. Makes installation fast and easy. Keeps installation costs low.
- Offers the optimum barrier protection against corrosion.
- Dimpled backing allows easy post-heat inspection and offers a reliable inspectability at any time.

### Product selection guide

<b>Max operating temperature</b>	65°C.
<b>Compatible line coatings</b>	PE, PP
<b>Min. preheat temperature</b>	80°C
<b>Recommended pipe preparation</b>	Sa 2½ or ST3
<b>Soil stress restrictions</b>	None
<b>Performance</b>	EN 12068 C50 UV ISO21809-3 14 A1

### Product properties

Backing		
Property	Test method	Typical value
<b>Tensile strength at break</b>	ASTM D-638	3300 psi (22.8 MPa)
<b>Elongation at break</b>	ASTM D-638	600 %
<b>Hardness, Shore D</b>	ASTM D-2240	57
<b>Density</b>	ASTM D-792	0.97 kg/dm <sup>3</sup>
<b>Shrink force</b>	ASTM D-638, @ 150°C	40 psi
<b>Dielectric Strength</b>	ASTM D-149	900 volts/mil (35 kV/mm)
<b>Moisture absorption</b>	ASTM D-570	0.04%
Adhesive		
Property	Test method	Typical value
<b>Softening Point</b>	ASTM E-28	110°C
<b>Lap shear</b>	EN12068 @ 50°C @ 60°C	0.06 N/mm <sup>2</sup> 0.05 N/mm <sup>2</sup>
Installed sleeve		
Property	Test method	Typical value
<b>Peel to Steel</b>	EN12068 @ 10 mm/min DIN30672 @ 100 mm/min	2 N/mm 7 N/mm
<b>Cathodic disbondment</b>	EN12068 / ISO21809-3 @ 50°C, 28 days	13 mm radius
<b>Hot water immersion</b>	ISO21809-3 @ 50°C, 100 days 60°C, 100 days	P100/P0 ≥ 0.75 P100/P0 ≥ 0.75
<b>Impact resistance</b>	EN12068 class C	> 15 J
<b>Indentation resistance</b>	EN12068, Class C, @ 50°C ISO21809-3, 14A1 @ 60°C	Residual thickness > 0.6 mm > 0.6 mm

Note: The typical values in this data sheet are based on lab prepared samples. Values shown are not to be interpreted as product specifications. All properties are at 23°C unless otherwise specified.

### Product thickness

	/E	/C	/F
<b>Backing as supplied</b>	0.9 mm (0.035 in)	1.04 mm (0.041 in)	1.04 mm (0.041 in)
<b>Backing fully free recovered</b>	1.2 mm (0.047 in)	1.4 mm (0.055 in)	1.4 mm (0.055 in)
<b>Adhesive as supplied</b>	1.3 mm (0.051 in)	1.5 mm (0.060 in)	1.8 mm (0.071 in)

\* Other thickness available on request. Minimum order quantities apply.

Product order information		
Covalence® HTLP60-DCS products are available <ul style="list-style-type: none"> <li>As cut piece (pre-cut, no cut corners, with separate closure patch)</li> <li>As Uni-sleeve (pre-cut, with cut corners, with attached closure patch)</li> <li>As a roll (closure patches to be ordered separately)</li> </ul> Select sleeve width that will overlap onto the mill-applied coating by 50 mm (2 inches) minimum on each side of the weld joint. Take a 10% shrinkage during installation of sleeve into account when calculating minimum sleeve width.		
Cut piece / Uni-sleeve		
<b>Example</b>	<b>HTLP60-DCS-DN200-450/E(/UNI)</b>	
	Designation	Standard ordering options
<b>DN200</b>	Outside pipe diameter	DN50 – DN1500 (2.375" – 60.000")
<b>450</b>	Sleeve width (mm)	450 mm (17.75") 500 mm (19.75")
<b>/E</b>	Product thickness	/E /C /F
<b>UNI</b>	Designates pre-attached closure patch	Optional
Roll form (closure patch to be ordered separately)		
<b>Example</b>	<b>HTLP60-DCS-450X30M/C-RL</b>	
	Designation	Standard ordering options
<b>450</b>	Sleeve width (mm)	450 mm (17.75") 500 mm (19.75")
<b>30M</b>	Roll length	30M (100ft)
<b>/C</b>	Product thickness	/E /C /F
<i>Rolls can have a splice. Max 10% of the roll order will have a splice. Min partial length will be 5M or 15 ft.</i>		
Closure patches (to be ordered separately)		
<b>Example</b>	<b>WPCP-IV-4x17(S50)</b>	
	Designation	Standard ordering options
<b>4</b>	Patch width (in.)	4 (100 mm) 6 (150 mm) 8 (200 mm)
<b>17</b>	Patch length (in.)	17: 450 mm (17.75") 20S: 500 mm (19.75")
<b>(S50)</b>	Packaging quantity in plastic bag.	50 pc

General information	
<b>Product dimension</b>	Sleeve cut lengths and appropriate closure patch widths depend on the pipe size and product construction, see latest application table AT-GIRTHWELD.
<b>Installation guide</b>	For proper product installation, see latest application guideline.
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	Store indoor, clean and dry, away from direct sunlight in a cool place below +50°C. Unlimited shelf life.
<b>Documentation</b>	Extensive information is available on our website. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system shall be carried out by certified personnel.

## COVALENCE<sup>®</sup> PPS120-OS

### Product Information

**Product description:** The PPS120-OS is a 3-component field-joint coating system for high temperature, polypropylene coated or FBE coated offshore pipelines with Marine Mastic or PU infill, operating at up to 121°C (250°F) temperature.

Construction: Three-component system

- *First component:* High shear strength copolymer adhesive layer.
- *Second component:* Thick, radiation cross-linked polyethylene layer with PCI (Permanent Change Indicator).
- *Third component:* High Temperature Adhesive Strips.

PPS120-OS with PCI is a wrap-around, heat-shrinkable sleeve designed for corrosion prevention and sealing of girthweld joints. The system is designed to be applied with special and user-friendly preheating methods. While installing, PPS120-OS with PCI is wrapped around the joint, a closure patch is then installed (already pre-attached if Uni-sleeve) forming a tube, and the sleeve is shrunk in place. Using installation components provided with the PPS120-OS.

#### Features:

- Dimpled backing provides a “permanent change” indicator for application of heat.
- Available as a one-piece wrap-around unit or in roll form.
- Specially designed application tools usable for all diameters.
- High shear resistance.
- High operating temperature rating.

#### Benefits:

- Ensures correct application heat & allows easy post-heat inspection. Reliable inspectability at any time.
- Saves money by keeping inventory and logistics costs low.
- Provides high functional performance and safety.
- Top performance in demanding conditions.

### Product selection guide

<b>Max operating temperature</b>	121°C (250°F).
<b>Compatible line coatings</b>	PP, FBE
<b>Min. preheat temperature</b>	200-210°C (392-410°F)
<b>Recommended pipe preparation</b>	Sa 2½ or ST3

### Product properties

#### Backing

Property	Test method	Typical value
<b>Tensile strength at break</b>	ASTM D-638	2700 psi @ 23°C (73°F) 660 psi @ 120°C (248°F)
<b>Elongation at break</b>	ASTM D-638	580% @ 23°C (73°F) 560° @ 120°C (248°F)
<b>Hardness, Shore D</b>	ASTM D-2240	57
<b>Shrink force</b>	ASTM D-638, 150° C (302°F)	40 psi
<b>Dielectric strength</b>	ASTM D-149	800 V/mil 31.5 kV/mmm
<b>Moisture absorption</b>	ASTM D570	0.06%

#### Adhesive

Property	Test method	Typical value
<b>Softening point</b>	ASTM E-28	175°C (347°F)
<b>Lap shear</b>	ASTM D-1002	1300 psi @ 23°C (73°F) 100 psi @ 120°C (248°F)
<b>Shear resistance</b>	EN 12068, 10 mm/min	7 N/mm <sup>2</sup> @ 23°C (73°F) 0.7 N/mm <sup>2</sup> @ 120°C (248°F)

#### Installed sleeve

Property	Test method	Typical value
<b>Peel to steel</b>	ASTM D-1000	30 lb/in
<b>Peel to steel</b>	EN 12068, 10 mm/min	4 N/mm @ 23°C (73°F) 0.7 N/mm @ 120°C (248°F)
<b>Cathodic disbondment</b>	ISO 21809-3, 28 days, @ 95°C (203°F)	17 mm radius
<b>Hot water immersion</b>	ASTM D-870 @ 90°C (194°F), 120 days	No delamination, no blisters or water under sleeves
<b>Soil stress creep resistance</b>	TP206 @ 120°C (248°F), 24 hr	0.002 in (0.051 mm)
<b>Impact resistance</b>	EN 12068	Pass 8 J
<b>Indentation resistance</b>	EN 12068, class B 2°C (248°F)	Pass

Note: The typical values in this data sheet are based on lab prepared SA 2 ½ samples.

Values shown are not to be interpreted as product specifications.

### Product thickness

	/B	/I -1.75
<b>Backing as supplied</b>	0.75 mm (0.030 in)	0.75 mm (0.030 in)
<b>Backing fully free recovered</b>	1.00 mm (0.039 in)	1.00 mm (0.039 in)
<b>Adhesive as supplied</b>	1.00 mm (0.039 in)	1.75 mm (0.069 in)

General order information		General order information (continued)																
<p>Covalence® PPS120-OS type products are available as a total system. The system includes the PPS120 sleeves, system accessories and installation accessories.</p> <p>The PPS120 sleeves are ordered</p> <ul style="list-style-type: none"> <li>As cut piece (pre-cut with separate closure patch)</li> <li>As Uni-sleeve (pre-cut with pre-attached closure patch)</li> <li>As a roll (closure patches to be ordered separately)</li> </ul> <p>System accessories</p> <ul style="list-style-type: none"> <li>S1135-50X1X30M-PL-RL or S1135-75X1X30M-RL mastic strip onto PP line coating to be ordered separately</li> <li>On FBE line coating no mastic strips are needed.</li> </ul> <p>Installation accessories</p> <ul style="list-style-type: none"> <li>EQ-HEAT-SHIELD-150X3X25 m to protect the PP and FBE line coating while preheating the steel area</li> <li>EQ-PP-PROTECT-150X0.25X30 m to wrap around the PP line coating while preheating steel area to 200°C (392°F) to prevent the glass fiber heat shield to stick into the PP line coating</li> </ul> <p>Select sleeve width that will overlap onto the mill-applied coating by 2 inches (50 mm) minimum on each side of the weld joint. Take a 15% shrinkage during installation of sleeve into account when calculating minimum sleeve width.</p>		<p><b>Product dimension</b> Sleeve cut lengths and appropriate closure patch widths depend on the pipe size and product construction, see latest application table AT-GIRTHWELD.</p> <p><b>Installation guide</b> For proper product installation, see latest installation instruction.</p> <p><b>Handling</b> Handle with care. Keep boxes upright.</p> <p><b>Storage</b> Store indoor, clean and dry, away from direct sunlight in a cool place below +50°C. Unlimited shelf life.</p>																
<p><b>Cut piece / Uni-sleeve</b></p> <table border="1"> <thead> <tr> <th>Example</th> <th>Designation</th> <th>Standard ordering options</th> </tr> </thead> <tbody> <tr> <td>10750</td> <td>Outside pipe diameter (mils)</td> <td>2.375" – 48.000" (DN50 – DN2500)</td> </tr> <tr> <td>17</td> <td>Sleeve width (in)</td> <td>11 (11.25" or 285 mm)*, 17 (17.75" or 450 mm)*, 24 (23.6" or 600 mm)*</td> </tr> <tr> <td>/B</td> <td>Product thickness</td> <td>/B, /1-1.75</td> </tr> <tr> <td>UNI</td> <td>Designates pre-attached closure patch</td> <td>Optional</td> </tr> </tbody> </table> <p>* nominal width</p>		Example	Designation	Standard ordering options	10750	Outside pipe diameter (mils)	2.375" – 48.000" (DN50 – DN2500)	17	Sleeve width (in)	11 (11.25" or 285 mm)*, 17 (17.75" or 450 mm)*, 24 (23.6" or 600 mm)*	/B	Product thickness	/B, /1-1.75	UNI	Designates pre-attached closure patch	Optional	<p><b>Information</b></p> <p><b>Documentation</b> Extensive information is available on our website. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a></p> <p><b>Certified staff</b> Application of the described coating system should be carried out by certified personnel.</p>	
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## COVALENCE® PPS120

### Product Information

The PPS120 is a 4-component field joint coating system for high temperature, polypropylene coated pipelines operating up to 121°C (250°F) temperature.

**Product description:** Covalence® PPS120 is a wrap-around, heat-shrinkable sleeve designed for corrosion prevention and sealing on high temperature, polypropylene coated piping systems, which operate at temperatures up to 121°C (250°F). PPS120 is specially suited for higher stress conditions caused both by elevated temperatures and by soils with severe contraction between wet-dry cycles. PPS120 is normally used for girth weld protection of steel pipes coated with polypropylene. PPS120 may be cut to appropriate length to cover all pipe diameters. The system is designed to be applied with special and user-friendly preheating methods.

Construction: Four-component system:

- *First component:* High shear strength copolymer adhesive layer.
- *Second component:* Thick, radiation cross-linked polyethylene layer with PCI (Permanent Change Indicator).
- *Third component:* High temperature adhesive strips.
- *Fourth component:* End seals composed of a two-component liquid epoxy with fiberglass reinforcement.

While installing, PPS120 is wrapped around the joint, a closure patch is then installed (already pre-attached if Uni-sleeve) forming a tube, and the sleeve is shrunk in place. Using special installation components provided with the PPS120, a two-component liquid epoxy is applied over the ends of the PPS120 and adjacent polypropylene coating in order to form the ultimate soil stress resistant high temperature girth weld protection. (See installation instruction for more detail).

#### Features:

- Dimpled backing provides a “permanent change” indicator for application of heat.
- Available as a one-piece wrap-around unit or in roll-form.
- Specially designed application tools usable for all diameters.
- High shear resistance.
- High operating temperature rating.

#### Benefits:

- Ensures correct application heat & allows easy post-heat inspection. Reliable inspectability at any time.
- Saves money by keeping inventory and logistics costs low.
- Makes installation fast and easy. Keeps installation costs low.
- Provides high functional performance and safety.
- Top performance in demanding conditions.

### Product selection guide

<b>Max operating temperature</b>	121°C (250°F).
<b>Compatible line coatings</b>	Polypropylene
<b>Min. preheat temperature</b>	200-210°C (392-410°F)
<b>Recommended pipe preparation</b>	Sa 2½
<b>Soil stress restrictions</b>	None

### Product properties

#### Backing

Property	Test method	Typical value
<b>Tensile strength at break</b>	ASTM D-638	2700 psi @ 23°C (73°F) 660 psi @ 120°C (248°F)
<b>Elongation at break</b>	ASTM D-638	580% @ 23°C (73°F) 560% @ 120°C (248°F)
<b>Hardness, Shore D</b>	ASTM D-2240	57
<b>Shrink force</b>	ASTM D-638, 150°C (302°F)	40 psi
<b>Dielectric strength</b>	ASTM D-149	800 V/mil 31.5 kV/mm
<b>Moisture absorption</b>	ASTM D-570, 24 hrs	0.06%

#### Adhesive

Property	Test method	Typical value
<b>Softening point</b>	ASTM E-28	175°C (347°F)
<b>Lap shear</b>	ASTM D-1002	1300 psi @ 23°C (73°F) 100 psi @ 120°C (248°F)
<b>Shear resistance</b>	EN 12068	7 N/mm <sup>2</sup> @ 23°C (73°F) 0.7 N/mm <sup>2</sup> @ 120°C (248°F)

#### Installed sleeve

Property	Test method	Typical value
<b>Peel to steel</b>	ASTM D-1000 EN 12068, 10 mm/min	30 pli 4 N/mm @ 23°C (73°F) 0.7 N/mm @ 120°C (248°F)
<b>Cathodic disbondment</b>	ISO 21809-3, 28 days, @ 95°C (203°F)	17 mm radius
<b>Hot water immersion</b>	ASTM D-870 @ 90°C (194°F), 120 days	No delamination, no blisters or water under sleeves
<b>Soil stress creep resistance</b>	TP206 @ 120°C (248°F), 24 hr	0.051 mm (0.002 in)
<b>Impact resistance</b>	EN 12068	Pass 8 J
<b>Indentation resistance</b>	EN 12068, class B, @ 120°C (248°F)	Pass

*Note: The typical values in this data sheet are based on lab prepared samples.*

*Values shown are not to be interpreted as product specifications.*

### Product thickness

	/B	/1-1.75
<b>Backing as supplied</b>	0.75 mm (0.030 in)	0.75 mm (0.030 in)
<b>Backing fully free recovered</b>	1.00 mm (0.039 in)	1.00 mm (0.039 in)
<b>Adhesive as supplied</b>	1.00 mm (0.039 in)	1.75 mm (0.069 in)

**Ordering information**

Covalence® PPS120 type products are available as a total system. The system includes the sleeves, system accessories and installation accessories.

The PPS120 sleeves are ordered

- As cut piece (pre-cut sleeve and separate closure patch)
- As Uni-sleeve (pre-cut with pre-attached closure patch)
- As a roll (closure patches to be ordered separately)

System accessories

- S1135-75x1x30M-PL-RL mastic strip onto PP line coating (for min 3" overlap onto the PP line coating)
- S1135-50x1x30M-PL-RL mastic strip onto PP line coating (for min 2" overlap onto the PP line coating)
- S1401-BLK 2-component epoxy onto installed sleeve edges
- FIBERMAT-100X100M woven mat to be laminated between the 2 epoxy layers

Installation accessories

- EQ-HEAT-SHIELD-150X3X25M to protect the PP line coating while preheating the steel area
- EQ-PP-PROTECT-150X0.25X30M to wrap around the PP line coating while preheating steel area to prevent the glass fiber heat shield to stick into the PP line coating

Min.sleeve width = (bare steel dimension + 50 mm (2") on each side of the fieldjoint) + 10%

**Cut piece / Uni-sleeve**

Example	PPS120-10750X17/B/UNI	
	Designation	Standard ordering options
10750	Outside pipe diameter	2.375"-48.000" (DN50-DN1200)
17	Sleeve width (in)	17 (17.75" or 450 mm)*, 20 (20.25" or 514 mm)*, 24 (23.6 " or 600 mm)* * nominal width
/B	Product thickness	/B, /1-1.75
UNI	Designates pre-attached closure patch	Optional

**Roll form (closure patches to be ordered separately)**

Example	PPS120-17X100/1-1.75-RL	
	Designation	Standard ordering options
17	Sleeve width (in)	17 (17.75" or 450 mm)*, 20 (20.25" or 514 mm)*, 24 (23.6 " or 600 mm)* * nominal width
100	Roll length	100 ft (= 30 m)
/1-1.75	Product thickness	/B, /1-1.75

**Closure patch (to be ordered separately)**

Example	WPCP-IV-4X17	
	Designation	Standard ordering options
4	Patch width (in)	4" (100 mm), 6" (150 mm)
17	Patch length (in)	17 (17.75" or 450 mm)*, 20 (20.25" or 514 mm)*, 24 (23.6 " or 600 mm)* * nominal length

**General information**

<b>Product dimension</b>	Sleeve cut lengths and appropriate closure patch widths depend on the pipe size and product construction, see latest application table AT-GIRTHWELD.
<b>Installation guide</b>	For proper product installation, see latest installation instruction.
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	Store indoor, clean and dry, away from direct sunlight in a cool place below +50°C. Unlimited shelf life.

**Information**

<b>Documentation</b>	Extensive information is available on our website. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system shall be carried out by certified personnel.

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DISCLAIMER: Seal For Life Industries warrants that the product conforms to its chemical and physical description and is appropriate for the use stated on the technical data sheet when used in compliance with Seal For Life Industries' written instructions. Because many installation factors are beyond the control of Seal For Life Industries, the user shall determine the suitability of the products for the intended uses and assume all risks and liabilities in connection herewith. Seal for Life's liability is stated in its General Terms and Conditions of Sale. Seal For Life Industries makes no other warranty either express or implied. All information contained in this technical data sheet is to be used as a guide and is subject to change without notice. This technical data sheet supersedes all previous data sheets on this product. Seal For Life Industries is a registered marks of the Berry Global Group, Inc. or its affiliates.

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## COVALENCE<sup>®</sup> WATERWRAP

### Product Information

WaterWrap with PCI (Permanent Change Indicator) is a 2-layer field-joint coating system designed for corrosion protection of buried large diameter water pipelines operating at ambient temperature.

**Product description:** Covalence<sup>®</sup> WaterWrap is a wrap-around heat-shrinkable, ready-to-fit assembly for the corrosion protection of field girth weld joints in water distribution and transmission systems. WaterWrap is compatible with standard pipe coatings. WaterWrap can also be used for coating bare, replacement pipe sections and large radius bends. WaterWrap is designed to be applied with a minimum preheating and is ideal for large diameter pipe.

Construction: Two-layer system

- **First layer:** Visco-elastic low preheat adhesive sealant.
- **Second layer:** Thick-walled, radiation-cross-linked, high density polyethylene with PCI (Permanent Change Indicator).

The installation is carried out directly on the cleaned and dried (pre-heated) pipe surface. The use of the 939-HT filler is required when the step down on the weld bead is  $\geq 1/4"$ . The filler 939-HT is a thick mastic-like butyl rubber designed to fill and smooth transition areas. The semi-tacky composition remains flexible and easily molded in place to conform around irregular shapes. During installation, the heat-shrinkable sleeve is wrapped around the pipe and heat is applied. The heat activated backing contracts to form a tight fit around the joint eliminating entrapped air and filling the smallest of crevices with a high quality, corrosion inhibiting Visco-elastic adhesive sealant. The permanently cross-linked polyolefin outer layer forms a tough barrier against mechanical damage and moisture.

#### Features:

- Contains no asphalt.
- Offers two Permanent Change Indicators (PCI).
- High modulus of elasticity backing.
- High impact and penetration resistance.
- High shrink force.
- Low application preheat.
- No special equipment or skills required.

#### Benefits:

- Does not off-gas toxic vapors. Safe to use.
- Underheat Indicator – ensures correct application heat to entire sleeve
- Overheat Indicator – ensures no excess heat
- Result – reliable installation and full inspectability at any time after installation.
- Greater soil stress resistance. Better overall performance.
- Tough, but flexible throughout.
- Optimizes flow & fill of visco-elastic adhesive sealant. Greater, long term protection.
- Makes installation fast and easy. Keeps installation costs low.
- Easy to install. Saves time.

### Product properties

Backing		
Property	Test method	Typical value
<b>Tensile strength at break</b>	ASTM D-638	3300 psi (22.8 MPa)
<b>Elongation at break</b>	ASTM D-638	600%
<b>Hardness, Shore D</b>	ASTM D-2240	55
<b>Shrink force</b>	ASTM D-638 150°C (302°F)	40 psi
<b>Dielectric strength</b>	ASTM D-149	900 V/mil (35 kV/mm)
<b>Water absorption</b>	ASTM D-570 23°C (73°F) 24 hr	0.04%
Adhesive		
Property	Test method	Typical value
<b>Softening point</b>	ASTM E-28	>205°C (401°F)
<b>Lap shear</b>	ASTM D-1002 EN 12068 @ 10 mm (0.4")/min	> 18 psi > 0.05 N/mm <sup>2</sup>
Installed sleeve		
Property	Test method	Typical value
<b>Peel to steel</b>	ASTM D-1000 EN12068 @ 10 mm (0.4")/min	> 20 pli > 0.4 N/mm
<b>Cathodic disbondment</b>	ASTM G-8, 30 days	<10 mm
<b>Impact resistance</b>	ASTM G-14 EN12068	70 in lbf >8 J for /B >15 J for /C
<b>Penetration resistance</b>	ASTM G-17 EN12068, Class B30 & C30	Pass, no holiday with 12.5 kV detector. 0.80-1.05 mm (0.032-0.041") residual thickness

Note: The typical values in this data sheet are based on lab prepared samples. Values shown are not to be interpreted as product specifications.

Product thickness	/B	/1-2
<b>Backing thickness as supplied</b>	0.7 mm (0.028 in)	0.7 mm (0.028 in)
<b>Backing fully free recovered</b>	1.0 mm (0.039 in)	1.0 mm (0.039 in)
<b>Adhesive thickness as supplied</b>	1.5 mm (0.060 in)	2.0 mm (0.079 in)
<b>Sleeve % recovery</b>	28 %	28 %

### Product selection guide

<b>Max operating temperature</b>	50°C (122°F).
<b>Compatible line coatings</b>	PE, PU, FBE, PP, Coal Tar, Tape & Asphalt
<b>Min. preheat temperature</b>	20°C (68°F)
<b>Recommended pipe preparation</b>	SP2 or SP3 Ref. AWWA C216
<b>Performance</b>	AWWA C216

Ordering information		
Covalence® WaterWrap type product is available – As Uni-sleeve (pre-cut sleeve with pre-attached closure patch) – As a roll (closure patches to be ordered separately)		
Select sleeve width that will overlap onto the mill-applied coating by 2 inches (50 mm) minimum on each side of the weld joint. Take a 5% shrinkage during installation of sleeve width into account when calculating the minimum sleeve width.		
Cut piece/Uni-sleeve		
Example	WaterWrap-56000X18/B/UNI	
	Designation	Standard ordering options
56000	Outside pipe diameter (mils)	Up to 144" (DN3600). Larger diameters available on request.
18	Sleeve width (in)	12 (12.25" or 311 mm) 18 ( 18.25" or 463 mm)* 24 (23.625" or 600 mm)* 30 (30.25 or 768 mm)* 36 (36.25 or 920 mm)* * Nominal width Other widths available on request, minimum order quantities apply.
/B	Product thickness construction	/B, /1-2
/UNI	Designates pre-attached closure patch	
Roll form (closure patches to be ordered separately)		
Example	WaterWrap-18X100/B-RL	
	Designation	Standard ordering options
18	Sleeve width (in)	18 (457 mm)* 20 (508 mm)* 24 (609 mm)* 30 (762 mm)* 36 (914 mm)* * Minimum width Other widths available on request, minimum order quantities apply.
100	Roll length (ft)	100 ft (30 m) 10% of supplied rolls can have max 1 splice.
Closure patches		
Example	WPCP-IV-4X18	
4	Closure patch width (in)	4 (100 mm), 6 (150 mm), 8 (200 mm)
18	Closure patch length (in)	Same as sleeve width: 18 ( 457 mm)* 20 (508 mm)* 24 (609 mm)* 30 (762 mm)* 36 (914 mm)* * Minimum length

General order information	
<b>Product dimension</b>	Sleeve cut lengths and appropriate closure patch widths depend on the pipe size and product construction, see latest application table AT-WATERWRAP
<b>Installation guide</b>	For proper product installation, see latest application guideline.
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	Store indoor, clean and dry, away from direct sunlight in a cool place below +50°C. Unlimited shelf life.

Information	
<b>Documentation</b>	Extensive information is available on our web-site. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system shall be carried out by certified personnel.



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DISCLAIMER: Seal For Life Industries warrants that the product conforms to its chemical and physical description and is appropriate for the use stated on the technical data sheet when used in compliance with Seal For Life Industries' written instructions. Many installation factors are beyond the control of Seal For Life Industries, the user shall determine the suitability of the products for the intended uses and assume all risks and liabilities in connection herewith. Seal For Life's liability is stated in its General Conditions of Sale. Seal For Life Industries makes no other warranty either express or implied. All information contained in this document is to be used as a guide and is subject to change without notice. This technical data sheet supersedes all prior sheets on this product.

## COVALENCE<sup>®</sup> WPC65M

### Product Information

**Product description:** Covalence<sup>®</sup> WPC65M system is a two-layer wrap-around heat-shrinkable sleeve field-joint coating system for pipeline operating at ambient and elevated temperatures.

Construction: Two-layer system

- **First layer:** Visco-elastic butyl based adhesive.
- **Second layer:** Radiation cross-linked, high density polyethylene with permanent Change Indicator (PCI).

The WPC65M is compatible with most commonly used steel pipe coatings and is used for offshore and onshore girth weld protection or to recoat (rehabilitate) long pipe sections and large radius bends. The installation is carried out directly on the cleaned and pre-heated pipe surface without any primer required. During installation, the heat-shrinkable sleeve is wrapped around and shrunk to form a tight fit around the joint. During recovery, the adhesive softens and flows to form a perfect bond with the pipe surface providing protection against corrosion. The radiation cross-linked outer layer forms a tough barrier against mechanical damage and moisture transmission.

#### Features:

- Low preheat sensitivity & proven functionality.
- Excellent aging performance.
- Superior cathodic disbondment and hot water immersion resistance.
- No special equipment (standard gas torch & a roller).
- Dimpled backing provides a "permanent change" indicator for application of heat.

#### Benefits:

- Installation friendly in combination with high functional performance.
- No shelf life issues.
- Offers the optimum barrier protection against corrosion.
- Makes installation fast and easy. Keeps installation costs low. Dimpled backing allows easy post-heat inspection and offers a reliable inspectability at any time.

### Product selection guide

<b>Max operating temperature</b>	65°C (149°F) 93°C (200°F) for offshore applications with infill.
<b>Compatible line coatings</b>	PE, PP, FBE, Coal Tar, AE, CTE, DFBE.
<b>Min. preheat temperature</b>	60°C (140°F)
<b>Recommended pipe preparation</b>	Sa 2½ or ST3
<b>Soil stress restrictions</b>	Moderate
<b>Performance</b>	ISO21809-3, Type 14A2* EN12068 UV

### Product thickness

	/B	/E*	/C**	/1.4-1.8**
<b>Backing as supplied</b>	0.75 mm (0.030 in)	0.90 mm (0.035 in)	1.04 mm (0.041 in)	1.04 mm (0.041 in)
<b>Backing fully free recovered</b>	1.0 mm (0.039 in)	1.2 mm (0.047 in)	1.4 mm (0.055 in)	1.4 mm (0.055 in)
<b>Adhesive as supplied</b>	1.0 mm (0.039 in)	1.3 mm (0.051 in)	1.5 mm (0.060 in)	1.8 mm (0.071 in)

\* Minimum order quantities apply

### Product properties

#### Backing

Property	Test method	Typical value
<b>Tensile strength at break</b>	ASTM D-638	3300 psi (22.8 MPa)
<b>Elongation at break</b>	ASTM D-638	600 %
<b>Specific gravity</b>	ASTM D-792	0.97 g/cm <sup>3</sup>
<b>Hardness, Shore D</b>	ASTM D-2240	57
<b>Shrink force</b>	ASTM D-638, @150°C (302°F)	40 psi
<b>Dielectric Strength</b>	ASTM D-149	900 V/mil (35 kV/mm)
<b>Moisture absorption</b>	ASTM D-570	0.04%

#### Adhesive

Property	Test method	Typical value
<b>Softening Point</b>	ASTM E-28	134°C (273°F)
<b>Lap shear</b>	ASTM D-1002 EN 12068 EN 12068 @ 35°C (95°F) EN 12068 @ 65°C (149°F) ASTM D-1002 @ 65°C (149°F)	50 psi > 0.1 N/mm <sup>2</sup> 0.02 N/mm <sup>2</sup> 0.01 N/mm <sup>2</sup> 3 psi

#### Installed sleeve

Property	Test method-	Typical value
<b>Peel to Steel</b>	ASTM D-1000 (@300 mm/min) EN 12068 DIN30672 (@100 mm/min) ASTM D-1000 @ 65°C (149°F) EN 12068 @ 35°C (95°F) EN 12068 @ 65°C (149°F)	50 pli (8.8 N/mm) 1.1 N/mm > 20 N/cm 3 pli (5.3 N/mm) 0.6 N/mm 0.2 N/mm
<b>Cathodic disbondment</b>	ASTM G-42 @ 65°C (149°F), 30 days	7 mm radius
<b>Hot water immersion</b>	ASTM D-870 @ 65°C (149°F), 120 days	No delamination, no blisters or water ingress
<b>Low temperature flexibility</b>	ASTM D-2671, C	-14°C (6.8°F)
<b>Impact resistance</b>	ASTM G-14 EN12068 class C	80 in lbf > 8 J > 15 J*
<b>Penetration resistance</b>	ASTM G-17 @ 65°C (149°F)	No holidays @ 10,000 v
<b>Indentation resistance</b>	EN 12068, Class C, @ 65°C (149°F)	Residual thickness > 0.6 mm*

\* Construction /E or thicker

Note: The typical values in this data sheet are based on lab prepared samples. Values shown are not to be interpreted as product specifications.

**Ordering information**

- Covalence® WPC65M products are available
- As cut piece (pre-cut with separate closure patch)
  - As Uni-sleeve (pre-cut with attached closure patch)
  - As a roll (closure patches to be ordered separately)

Select sleeve width that will overlap onto the mill-applied coating by 50 mm (2 inches) minimum on each side of the weld joint. Take a 10% shrinkage during installation of sleeve into account when calculating minimum sleeve width.

**Cut piece / Uni-sleeve**

Example	WPC65M-16000X17/C/(UNI) (-OS)	
	Designation	Standard ordering options
16000	Outside pipe diameter	2.375" – 100.000" (DN50 – DN2500)
17	Sleeve width (in)	17 (17.75" or 450 mm)* 20 (20.25" or 514 mm)* 24 (23.50" or 600 mm)*
/C	Product thickness	-, /C, /E, /1.4-1.8
UNI	Designates pre-attached closure patch	Optional
-OS	For off shore (OS) designates pre-attached closure patch (UNI) and cut corners	Optional

\* nominal width

**Roll form (closure patch to be ordered separately)**

Example	WPC65M-20X100/C-RL	
	Designation	Standard ordering options
20	Sleeve width (in)	17 (17.75" or 450 mm)* 20 (20.25" or 514 mm)* 24 (23.50" or 600 mm)*
100	Roll length	100 ft (= 30 m)
/C	Product thickness	-, /C, /E, /1.4-1.8

\* nominal width

Note: maximum up to 10% of the supplied rolls can have 1 splice. Min partial length is 5 m or 16.5ft.

**Closure patches (to be ordered separately)**

Example	WPCP-IV-4X17	
	Designation	Standard ordering options
4	Patch width (in)	4 (100 mm) 6 (150 mm) 8 (200 mm)
17	Patch length (in)	17 (17.75" or 450 mm)* 20 (20.25" or 514 mm)* 24 (23.50" or 600 mm)*

\* nominal width

**General order information**

<b>Product dimension</b>	Sleeve cut lengths and appropriate closure patch widths depend on the pipe size and product construction, see latest application table AT-GIRTHWELD.
<b>Installation guide</b>	For proper product installation, see latest application guideline.
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	Store indoor, clean and dry, away from direct sunlight in a cool place below +50°C. Unlimited shelf life.

**Information**

<b>Documentation</b>	Extensive information is available on our website. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system shall be carried out by certified personnel.



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## COVALENCE<sup>®</sup> WPC100M

### Product Information

**Product description:** Covalence<sup>®</sup> WPC100M system is a two-layer wrap-around heat-shrinkable sleeve field-joint coating system for pipeline operating at elevated temperatures.

Construction: Two-layer system

- *First layer:* Visco-elastic butyl based adhesive.
- *Second layer:* Radiation cross-linked, high density polyethylene with permanent Change Indicator (PCI).

The WPC100M is compatible with most commonly used steel pipe coatings and is used for offshore and onshore girth weld protection or to recoat (rehabilitate) long pipe sections and large radius bends. The installation is carried out directly on the cleaned and pre-heated pipe surface without any primer required. During installation, the heat-shrinkable sleeve is wrapped around and shrunk to form a tight fit around the joint. During recovery, the adhesive softens and flows to form a perfect bond with the pipe surface providing protection against corrosion. The radiation cross-linked outer layer forms a tough barrier against mechanical damage and moisture transmission.

#### Features:

- Low preheat sensitivity & proven functionality.
- No asphalt nor bitumen components in the adhesive.
- Covers a wide range of operating temperature ratings.
- Very good low temperature flexibility for installations in cold climates.
- No special equipment (standard gas torch & a roller).
- Dimpled backing provides a "permanent change" indicator for application of heat.

#### Benefits:

- Installation friendly in combination with high functional performance.
- No shelf life issues.
- Offers the optimum barrier protection against corrosion.
- Makes installation fast and easy. Keeps installation costs low.
- Dimpled backing allows easy post-heat inspection and offers a reliable inspectability at any time.

### Product properties

Backing		
Property	Test method	Typical value
<b>Tensile strength at break</b>	ASTM D-638	3300 psi (22.8 MPa)
<b>Elongation at break</b>	ASTM D-638	600 %
<b>Hardness, Shore D</b>	ASTM D-2240	57
<b>Shrink force</b>	ASTM D-638, @150°C (302°F)	40 psi
<b>Dielectric Strength</b>	ASTM D-149	900 V/mil (35 kV/mm)
<b>Moisture absorption</b>	ASTM D-570	0.04%
Adhesive		
Property	Test method	Typical value
<b>Softening Point</b>	ASTM E-28	155°C (311°F)
<b>Lap shear</b>	ASTM D-1002	47 psi @ 23°C (73°F) 5 psi @ 80°C (176°F)
	ISO 21809-3	0.2 N/mm <sup>2</sup> @ 23°C (73°F) 0.02 N/mm <sup>2</sup> @ 80°C (176°F)
Installed sleeve*		
Property	Test method-	Typical value
<b>Peel to Steel</b>	ASTM D-1000	42 pli
	ISO 21809-3 @ 10 mm/min	1.2 N/mm
	DIN 30672 @ 100 mm/min	50 N/cm
<b>Cathodic disbondment</b>	ISO 21809-3, 28 days @ 23°C (73°F)	9 mm
	@ 80°C (176°F)	7 mm
<b>Hot water immersion</b>	ISO 21809-3, 100 days @ 80°C (176°F)	P <sub>100</sub> /P <sub>0</sub> ≥ 0.75
<b>Low temperature flexibility</b>	ASTM D-2671, C	-40°C (-40°F)
<b>Impact resistance</b>	EN12068, class C	> 15 J
	ISO 21809-3	> 5 J/mm
<b>Indentation resistance</b>	ISO 21809-3, @ 80°C (176°F)	Residual thickness > 0.6 mm

\* Construction /C

Note: The typical values in this data sheet are based on lab prepared samples. Values shown are not to be interpreted as product specifications.

### Product selection guide

<b>Max operating temperature</b>	80°C (176°F) For offshore applications max.operating temperature 100°C (212°F)
<b>Compatible line coatings</b>	PE, PP, FBE, Asphalt Enamel, Tape & Coal Tar
<b>Min. preheat temperature</b>	100°C (212°F)
<b>Recommended pipe preparation</b>	ST3 or SA2 ½
<b>Soil stress restrictions</b>	Moderate
<b>Performance</b>	ISO 21809-3, type 14-A2 (80°C)

### Product thickness

	-	/1-1.5*	/C*
<b>Backing as supplied</b>	0.75 mm (0.030 in)	0.75 mm (0.030 in)	1.04 mm (0.041 in)
<b>Backing fully free recovered</b>	1.00 mm (0.039 in)	1.00 mm (0.039 in)	1.40 mm (0.055 in)
<b>Adhesive as supplied</b>	1.00 mm (0.039 in)	1.50 mm (0.060 in)	1.50 mm (0.060 in)

\* Minimum order quantities apply

### Ordering information

- Covalence® WPC100M products are available
- As cut piece (pre-cut with separate closure patch)
  - As Uni-sleeve (pre-cut with attached closure patch)
  - As a roll (closure patches to be ordered separately)

Select sleeve width that will overlap onto the mill-applied coating by 50 mm (2 inches) minimum on each side of the weld joint. Take a 10% shrinkage during installation of sleeve into account when calculating minimum sleeve width.

#### Cut piece / Uni-sleeve

Example	WPC100M-16000X17/C(/UNI)	
	Designation	Standard ordering options
16000	Outside pipe diameter	2.375" – 100.000" (DN50 – DN2500)
17	Sleeve width (in)	17 (17.75" or 450 mm)* 20 (20.25" or 514 mm)* 24 (23.50" or 600 mm)*
/C	Product thickness	-, 1-1.5, /C
UNI	Designates pre-attached closure patch	Optional

\* nominal width

#### Roll form (closure patch to be ordered separately)

Example	WPC100M-20X100-RL	
	Designation	Standard ordering options
20	Sleeve width (in)	17 (17.75" or 450 mm)* 20 (20.25" or 514 mm)* 24 (23.50" or 600 mm)*
100	Roll length	100 ft (= 30 m)
-	Product thickness	-, 1-1.5, /C

\* nominal width

Note: maximum up to 10% of the supplied rolls can have 1 splice. Min partial length is 5 m or 16.5ft.

#### Closure patches (to be ordered separately)

Example	WPCP-IV-4X17	
	Designation	Standard ordering options
4	Patch width (in)	4 (100 mm) 6 (150 mm) 8 (200 mm)
17	Patch length (in)	17 (17.75" or 450 mm)* 20 (20.25" or 514 mm)* 24 (23.50" or 600 mm)*

\* nominal width

### General information

<b>Product dimension</b>	Sleeve cut lengths and appropriate closure patch widths depend on the pipe size and product construction, see latest application table AT-GIRTHWELD.
<b>Installation guide</b>	For proper product installation, see latest application guideline.
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	Store indoor, clean and dry, away from direct sunlight in a cool place below +50°C. Unlimited shelf life.
<b>Documentation</b>	Extensive information is available on our web-site. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system should be carried out by certified personnel.

## COVALENCE® WPC120-OS

### Product Information

**Product description:** Covalence® WPC120 is a two-layer wrap-around heat-shrinkable sleeve field-joint coating system designed to meet the productivity and performance requirements of offshore pipelines.

Construction: Two-layer system

- *First layer:* High shear strength copolymer adhesive layer.
- *Second layer:* Radiation-cross-linked, high density polyethylene

Covalence® WPC120 is used for the girth weld protection of offshore pipelines and spools with and without concrete weight coatings. WPC120 is fully compatible with a wide range of infill systems for concrete weight coated pipe.

The system allows for ease of installation whilst ensuring long term corrosion protection in submerged conditions.

The pre-attached fibre reinforced closure patch is designed for fast and secure installation during sleeve recovery.

The adhesive technology is formulated to 'seal for life' guarding against long term heat induced brittleness and cathodic disbondment forces.

The HDPE radiation cross-linked, UV stabilised outer layer shrinks rapidly to form a chemically resistant barrier against mechanical damage and moisture transmission.

#### Features:

- High operating temperature rating.
- Excellent long term aging performance.
- Dimpled backing provides a "permanent change" indicator for application of heat.
- Available as a one-piece wrap-around unit or in roll form.
- No special equipment required (standard gas torch & roller).

#### Benefits:

- Provides high functional performance and safety.
- Ensures correct application heat & allows easy post-heat inspection. Reliable inspectability at any time.
- Saves money by keeping inventory and logistics costs low.
- Fast installation for the highest productivity rates.

### Product properties

#### Backing

Property	Test method	Typical value
<b>Tensile strength at break</b>	ASTM D-638	2700 psi @ 23°C (73°F) 660 psi @ 120°C (248°F)
<b>Elongation at break</b>	ASTM D-638	580% @ 23°C (73°F) 560% @ 120°C (248°F)
<b>Heat aging followed by Elongation at break</b>	ASTM D-3045, 21 days @ 150°C (302°F) ASTM D-638	450%
<b>Hardness, Shore D</b>	ASTM D-2240	57
<b>Shrink force</b>	ASTM D-638, 150° C (302°F)	40 psi
<b>Dielectric strength</b>	ASTM D-149	800 V/mil 31.5 kV/mm
<b>Moisture absorption</b>	ASTM D570	0.06%

#### Adhesive

Property	Test method	Typical value
<b>Softening point</b>	ASTM E-28	175°C (347°F)
<b>Lap shear</b>	ASTM D-1002	1300 psi @ 23°C (73°F) 100 psi @ 120°C (248°F)
<b>Shear resistance</b>	EN 12068, 10 mm/min	7 N/mm <sup>2</sup> @ 23°C (73°F) 0.7 N/mm <sup>2</sup> @ 120°C (248°F)

#### Installed sleeve

Property	Test method	Typical value
<b>Peel to steel</b>	ASTM D-1000	30 lb/in
<b>Peel to steel</b>	EN 12068, 10 mm/min	4 N/mm @ 23°C (73°F) 0.7 N/mm @ 120°C (248°F)
<b>Cathodic disbondment</b>	ISO 21809-3, 28 days, @ 95°C (203°F)	17 mm radius
<b>Hot water immersion</b>	ASTM D-870 @ 90°C (194°F), 120 days	No delamination, no blisters or water under sleeves
<b>Soil stress creep resistance</b>	TP206 @ 120°C (248°F), 24 hr	0.002 in (0.051 mm)
<b>Impact resistance</b>	EN 12068	Pass 8 J
<b>Indentation resistance</b>	EN 12068, class B 120°C (248°F)	Pass

*Note: The typical values in this data sheet are based on lab prepared SA 2 ½ samples. For project specific requirements please consult your local SFL representative..*

### Product selection guide

<b>Max operating temperature</b>	120°C (248°F)
<b>Compatible line coatings</b>	PE, FBE, RAYCLAD120
<b>Min. preheat temperature</b>	190-210°C (374-410°F)
<b>Recommended pipe preparation</b>	Sa 2½

### Product thickness

	/B	/1-1.75
<b>Backing as supplied</b>	0.75 mm (0.030 in)	0.75 mm (0.030 in)
<b>Backing fully free recovered</b>	1.00 mm (0.039 in)	1.00 mm (0.039 in)
<b>Adhesive as supplied</b>	1.00 mm (0.039 in)	1.75 mm (0.069 in)

Ordering information			General information									
<p>Covalence® WPC120 type products are available as uni-sleeve (pre-cut with pre-attached closure patch).</p> <p>Installation accessories EQ-HEAT-SHIELD-150X3X25 m to protect the line coating while preheating the steel area</p> <p>Select sleeve width that will overlap onto the mill-applied coating by 2 inches (50 mm) minimum on each side of the weld joint. Take a 15% shrinkage during installation of sleeve into account when calculating minimum sleeve width.</p>			<p><b>Product dimension</b> Sleeve cut lengths and appropriate closure patch widths depend on the pipe size and product construction, see latest application table AT-GIRTHWELD.</p>									
<p><b>Uni-sleeve</b></p>			<p><b>Installation guide</b> For proper product installation, refer latest application guideline.</p>									
<p><b>Example</b> <b>WPC120-10750X17/B-OS</b></p>			<p><b>Handling</b> Handle with care. Keep boxes upright.</p>									
<table border="1"> <thead> <tr> <th>Designation</th> <th>Standard ordering options</th> </tr> </thead> <tbody> <tr> <td>10750</td> <td>Outside pipe diameter (mils) 2.375" – 48.000" (DN50 – DN2500)</td> </tr> <tr> <td>17</td> <td>Sleeve width (in) 17 (17.75" or 450 mm)* 20 (20.25" or 514 mm)* * nominal width</td> </tr> <tr> <td colspan="2">Width can be tailored to the project subject to minimum order quantities.</td> </tr> </tbody> </table>			Designation	Standard ordering options	10750	Outside pipe diameter (mils) 2.375" – 48.000" (DN50 – DN2500)	17	Sleeve width (in) 17 (17.75" or 450 mm)* 20 (20.25" or 514 mm)* * nominal width	Width can be tailored to the project subject to minimum order quantities.		<p><b>Storage</b> Store indoor, clean and dry, away from direct sunlight in a cool place below +50°C. Unlimited shelf life.</p>	
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			<p><b>Certified Applicators</b> Application of the described coating system shall be carried out by certified personnel only.</p>									
			<p><b>Installation Training</b> Seal For Life specialists will train your appointed applicators to correctly install and test Covalence sleeve systems. On training completion project specific certificates will be issued.</p>									
			<p><b>Field Service Support</b> Seal For Life have a global team of specialists with appropriate offshore certification available to meet your project service needs.</p>									

Seal For Life Industries is a committed partner to the Offshore Industry with over 35 years of experience. With the broadest product range in the industry we offer corrosion protection/sealing solutions and services for a wide range of applications including field joint coatings, subsea installations, splash zone, topsides, coating repairs, J tube fillers and wind farm structures.



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## COVALENCE® WPCT

### Product Information

WPCT is a two-layer field-joint coating system for corrosion protection of pipelines operating at ambient temperature and elevated temperatures.

**Product description:** Covalence® WPCT is a wraparound heat-shrinkable, ready-to-fit assembly for the corrosion protection of field girth weld joints in distribution and transmission systems. WPCT is compatible with standard pipe coatings. WPCT can also be used for coating bare, replacement pipe sections and large radius bends. The system is designed to be applied with minimum preheating and is ideal for large diameter water pipe.

Construction: Two-layer system

- *First layer:* Visco-elastic butyl based low preheat adhesive.
- *Second layer:* Radiation-cross-linked, high density polyethylene with PCI (Permanent Change Indicator).

The installation is carried out directly on the cleaned and dried (pre-heated) pipe surface without any primer being required. During installation, the heat-shrinkable sleeve is wrapped and shrunk to form a tight fit around the joint. During recovery, the adhesive softens and flows to form a perfect bond with the pipe surface providing protection against corrosion. The radiation cross-linked outer layer forms a tough barrier against mechanical damage and moisture transmission.

#### Features:

- Low preheat sensitivity & proven functionality.
- Excellent aging performance.
- Superior cathodic disbondment and hot water immersion resistance.
- Dimpled backing provides a “permanent change” indicator for application of heat.
- No special equipment or skills required (standard gas torch & roller)
- Self-healing effect. Saves extra intervention steps.

#### Benefits:

- Installation friendly in combination with high functional performance.
- No shelf life issues.
- Offers the optimum barrier protection against corrosion.
- Dimpled backing allows easy post-heat inspection and offers a reliable inspectability at any time.
- Makes installation fast and easy. Keeps installation costs low.
- Tough, but flexible even at low temperatures!

### Product properties

#### Backing

Property	Test method	Typical value
<b>Tensile strength at break</b>	ASTM D638	3300 psi 22.8 MPa
<b>Elongation at break</b>	ASTM D638	600 %
<b>Hardness, Shore D</b>	ASTM D2240	57
<b>Shrink force</b>	ASTM D638 @ 150°C (302°F)	40 psi
<b>Dielectric Strength</b>	ASTM D149	900 V/mil 35 kV/mm
<b>Water absorption</b>	ISO 62	0.04%

#### Adhesive

Property	Test method	Typical value
<b>Softening point</b>	ASTM E28	134°C (273°F)
<b>Lap shear</b>	ASTM D1002 EN 12068/ @ 10 mm /min	50 psi > 0.1 N/mm <sup>2</sup>

#### Installed sleeve

Property	Test method	Typical value
<b>Peel to Steel</b>	ASTM D1000 EN 12068 @ 10 mm /min	50 lb/in 1.1 N/mm
<b>Cathodic disbondment</b>	ASTM G42 @65°C(149°F), 30 days	7 mm radius
<b>Hot water immersion</b>	ASTM D870 @ 65°C (149°F), 120 days	No delamination, no blisters or water ingress
<b>Impact resistance</b>	ASTM G14 EN 12068	80 in.lb >8 J
<b>Indentation resistance</b>	ASTM G17  EN 12068, Class B30	No holiday with 10 kV detector >0.6 mm remaining thickness
<b>Low temperature flexibility</b>	ASTM D2671, procedure C	-14°C (6.8°F)

*Note: The typical values in this data sheet are based on lab prepared samples. Values shown are not to be interpreted as product specifications.*

### Product selection guide

<b>Max operating temperature</b>	65°C (149°F)
<b>Compatible line coatings</b>	PE, PP, FBE, PU,Tape, Coal Tar & Asphalt
<b>Min. preheat temperature</b>	60°C (140°F)
<b>Recommended pipe preparation</b>	ST2 ½ -ST3 or SA2 ½
<b>Soil stress restrictions</b>	Moderate
<b>Performance</b>	EN12068 Class B30, AWWA-C-216

### Product thickness

	WPCT
<b>Backing as supplied</b>	0.75 mm (0.030 in)
<b>Backing fully free recovered</b>	1.00 mm (0.039 in)
<b>Adhesive as supplied</b>	1.20 mm (0.047 in)
<b>Finished Product as supplied</b>	1.95 mm (0.077 in)

Ordering information	
Covalence® WPCT type product are available	
<ul style="list-style-type: none"> <li>As Uni-sleeve (pre-cut sleeve with pre-attached closure patch)</li> <li>As a roll (closure patch to be ordered separately)</li> </ul>	
Min.sleeve width = (bare steel dimension + 50 mm (2") on each side of the fieldjoint) + 10%	
Maximum 10% of the supplied rolls can have a splice. Min length of a partial length is 5 M or 15 ft.	

Cut piece / Uni-sleeve	
<b>Example</b>	<b>WPCT-10750X17/UNI</b>
Designation	Standard ordering options
<b>10750</b>	Outside pipe diameter (mils) 2.375 – 68.000 (DN50-DN1700)
<b>17</b>	Sleeve width (in) 11 (11.25" or 285 mm)* 17 (17.75" or 450 mm)* 24 (23.625" or 600 mm)* 34 (34.25" or 870 mm)* * nominal width
<b>/UNI</b>	Designates pre-attached closure patch Optional

Roll form (closure patch to be ordered separately)	
<b>Example</b>	<b>WPCT-17X100-RL</b>
Designation	Standard ordering options
<b>17</b>	Sleeve width (in) 11 (11.25" or 285 mm)* 17 (17.75" or 450 mm)* 24 (23.625" or 600 mm)* 34 (34.25" or 870 mm)* * nominal width
<b>100</b>	Roll length (ft) 100 (30 m)
<i>Rolls can have a splice. Max 10% of the roll order will have a splice. Min partial length will be 5M or 15 ft.</i>	

Closure patches (to be ordered separately)	
<b>Example</b>	<b>WPCP-IV-4X17</b>
Designation	Standard ordering options
<b>4</b>	Patch width (in) 4 (100 mm), 6 (150 mm), 8 (200 mm)
<b>17</b>	Patch length (in) 11 (11.25" or 285 mm)* 17 (17.75" or 450 mm)* 24 (23.625" or 600 mm)* 34 (34.25" or 870 mm)* * nominal length

General information	
<b>Product dimension</b>	Sleeve cut lengths and appropriate closure patch widths depend on the pipe size and product construction, see latest application table AT-GIRTHWELD.
<b>Installation guide</b>	For proper product installation, see latest installation instruction.
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	Store indoor, clean and dry, away from direct sunlight in a cool place at temperatures between 0°C (32°F) and +50°C (122°F). Unlimited shelf life.

Information	
<b>Documentation</b>	Extensive information is available on our web-site. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system shall be carried out by certified personnel.



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## COVALENCE® WPC

### Product Information

The WPC is a two-layer field-joint coating system for pipeline operating at ambient and elevated temperatures.

**Product description:** Covalence® WPC is a wraparound heat-shrinkable, ready-to-fit assembly for the corrosion protection of field girth weld joints in distribution and transmission systems. WPC is compatible with standard pipe coatings. WPC can also be used for coating bare, replacement pipe sections and large radius bends. The system is designed to be applied with minimum preheating and is ideal for large diameter water pipe.

Construction: Two-layer system

- *First layer:* Visco-elastic low preheat sealant adhesive.
- *Second layer:* Thick-walled, radiation cross-linked, high density polyethylene with PCI (Permanent Change Indicator).

The installation is carried out directly on the cleaned and dried (pre-heated) pipe surface without any primer being required. During installation, the heatshrinkable sleeve is wrapped and shrunk to form a tight fit around the joint. During recovery, the adhesive softens and flows to form a perfect bond with the pipe surface providing protection against corrosion. The radiation cross-linked outer layer forms a tough barrier against mechanical damage and moisture transmission.

#### Features:

- Dimpled backing provides a "permanent change" indicator for application of heat.
- Low preheat sensitivity & proven functionality.
- High impact and penetration resistance.
- Available as all-in-one unit or roll form.
- Sealing adhesive automatically flows and repairs minor mechanical damages.
- No special equipment or skills required.

#### Benefits:

- Ensures correct application heat & allows easy post-heat inspection. Reliable inspectability at any time.
- Installation friendly in combination with high functional performance.
- Tough, but flexible even at low temperatures!
- Saves money by keeping inventory and logistics costs low.
- Self-healing effect. Saves extra intervention steps.
- Makes installation fast and easy. Keeps installation costs low.

### Product selection guide

<b>Max operating temperature</b>	65°C (149°F)
<b>Compatible line coatings</b>	PE, PP, FBE, PU, Coal Tar, Tape & Asphalt
<b>Min. preheat temperature</b>	60°C (140°F)
<b>Recommended pipe preparation</b>	ST2 ½ - ST3 or SA2 ½
<b>Soil stress restrictions</b>	Moderate
<b>Performance</b>	EN12068 Class B30 for WPCT Class C30 for WPC-C30-E

### Product properties

#### Backing

Property	Test method	Typical value
<b>Tensile strength at break</b>	ASTM D638	3300 psi 22.8 MPa
<b>Elongation at break</b>	ASTM D638	600%
<b>Hardness, Shore D</b>	ASTM D2240	57
<b>Shrink force</b>	ASTM D638, 150°C (302°F)	40 psi
<b>Dielectric strength</b>	ASTM D149	900 V/mil 35 kV/mm
<b>Water absorption</b>	ISO62	0.04%

#### Adhesive

Property	Test method	Typical value
<b>Softening point</b>	ASTM E28	134°C (273°F)
<b>Lap shear</b>	ASTM D1002 EN12068 @ 10 mm /min	50 psi > 0.1 N/mm <sup>2</sup>

#### Installed sleeve

Property	Test method	Typical value
<b>Peel to steel</b>	ASTM D1000 EN12068 @ 10 mm /min	50 lb/in 1.1 N/mm
<b>Cathodic disbondment</b>	ASTM G42 @65°C(149°F), 30 days	7 mm radius
<b>Hot water immersion</b>	ASTM D870 @ 65°C (149°F), 120 days	No delamination, no blisters or water ingress
<b>Impact resistance</b>	ASTM G14 EN12068	80 in-lb WPCT : >8 J C30-E : > 15 J
<b>Penetration resistance</b>	ASTM G17	No holiday with 10 kV detector
<b>Indentation resistance</b>	EN12068, Class B30 Class C30	WPCT : > 1N/mm <sup>2</sup> C30-E : > 10 N/mm <sup>2</sup>
<b>Low temperature flexibility</b>	ASTM D2671, procedure C	-14°C (6.8°F)

*Note: The typical values in this data sheet are based on lab prepared samples. Values shown are not to be interpreted as product specifications.*

### Product thickness

	WPCT	WPC-C30-E
<b>Backing as supplied</b>	0.75 mm (0.030 in)	0.9 mm (0.035 in)
<b>Backing fully free covered</b>	1.00 mm (0.039 in)	1.2 mm (0.047 in)
<b>Adhesive as supplied</b>	1.20 mm (0.047 in)	1.3 mm (0.051 in)
<b>Finished product as supplied</b>	1.95 mm (0.077 in)	2.3 mm (0.086 in)

Ordering information		
Covalence® WPC type products are available – As cut piece (pre-cut sleeve and separate closure patch) – As Uni-sleeve (pre-cut sleeve with pre-attached closure patch) – As a roll (closure patch to be ordered separately)		
Select sleeve width that will overlap onto the mill-applied coating by 2 inches (50 mm) minimum on each side of the weld joint. Take a 10% shrinkage during installation of sleeve width into account when calculating the minimum sleeve width.		
Cut piece/Uni-sleeve		
<b>Example</b>	<b>WPCT-10750X17/UNI</b>	
	<b>Designation</b>	<b>Standard ordering options</b>
<b>WPCT</b>	Product type	WPCT, WPC-C30-E
<b>10750</b>	Outside pipe diameter (mils)	2.375" – 68.000" (DN50-DN1700)
<b>17</b>	Sleeve width (in)	11 (11.25" or 285 mm)* for WPCT 17 (17.75" or 450 mm)* 24 (23.625" or 600 mm)* 34 (34.25" or 870 mm)* for WPCT * nominal width
<b>/UNI</b>	Designates pre-attached closure patch	Optional
Roll form (closure patches to be ordered separately)		
<b>Example</b>	<b>WPCT-17X100-RL</b>	
	<b>Designation</b>	<b>Standard ordering options</b>
<b>WPCT</b>	Product type	WPCT, WPC-C30-E
<b>17</b>	Roll width (in)	11 (11.25" or 285 mm)* for WPCT 17 (17.75" or 450 mm)* 24 (23.625" or 600 mm)* 34 (34.25" or 870 mm)* for WPCT * nominal width
<b>100</b>	Roll length (ft)	100 (30 m)
Rolls can have a splice. Max 10% of the roll order will have a splice. Min partial length will be 5M or 15 ft.		
Closure patches		
<b>Example</b>	<b>WPCP-IV-4X17</b>	
<b>4</b>	Patch width (in)	4 (100 mm), 6 (150 mm), 8 (200 mm)
<b>17</b>	Patch length (in)	11 (11.25" or 285 mm)* 17 (17.75" or 450 mm)* 24 (23.625" or 600 mm)* 34 (34.25" or 870 mm)* * nominal length

General information	
<b>Product dimension</b>	Sleeve cut lengths and appropriate closure patch widths depend on the pipe size and product construction, see latest application table AT-GIRTHWELD.
<b>Installation guide</b>	For proper product installation, see latest installation instruction.
<b>Handling</b>	Handle with care. Keep boxes upright.
<b>Storage</b>	Store indoor, clean and dry, away from direct sunlight in a cool place at temperatures between 0°C (32°F) and +50°C (122°F). Unlimited shelf life.

Information	
<b>Documentation</b>	Extensive information is available on our web-site. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending an email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system shall be carried out by certified personnel.



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