



**INSTALLATION & INSPECTION PROCEDURE  
FOR PPS120/WPC120 SHRINK SLEEVES ON  
POLYPROPYLENE COATED OFFSHORE PIPES WITH  
MARINE MASTIC OR PU INFILL  
OPERATING AT UPTO 120°C**

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## 1.0 Scope

This installation procedure describes the application of PPS120/WPC120 Heat-shrinkable sleeves on offshore Polypropylene coated pipes, with Marine Mastic or PU infill operating at up to 120°C. The system described herein comprises a wraparound heat shrink sleeve type PPS120/WPC120sleeve and S1113 adhesive strips applied on the PP line coating.

Only Berry Plastics CPG approved and equipped installers should perform the installation of PPS120/WPC120.

**Contact the Berry Plastics CPG Technical Services Department for crew training and certification.**

## 2.0 Material and Equipment

### 2.1 Materials

2.1.1 PPS120/WPC120UNI-sleeve or PPS120/WPC120sleeve with separate WPCP-IV closure

2.1.2 S1113 mastic strips (50mm width) in roll form

### 2.2 Equipment

2.2.1 Power sanding discs of P24 or P36 or equivalent.

2.2.2 Two BN 60 torches. Refer to table below

Torch Type	Number of Torches	Pipe Diameter
BN 40	1	< 10"
BN 60	2	12" – 38"
BN 80	2	>38"

2.2.3 Propane tanks with appropriate regulators (55psi) and propane hoses.

2.2.4 Calibrated surface pyrometers

2.2.5 Berry Plastics CPG approved flat silicone rollers

2.2.6 PP protective layer and thermal blankets to protect the PP line coating from direct flame

2.2.7 Heat Shield (EQ-HEAT-SHIELD-150x3x25M)

2.2.8 PP protection layer (EQ-PP-PROTECT-150x0,25x25M)

2.2.9 Paper or PE Tape

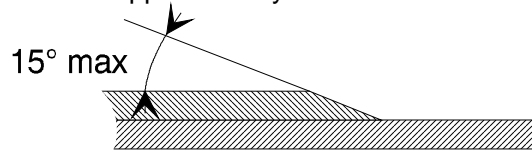
**IMPORTANT: For pipe diameters above 10 inch two equipped installers are required.**

### 3.0 Safety

It is the contractor's responsibility to ensure that all installers are well equipped for safety in accordance with local regulations such as heat resisting gloves, goggles and hard helmets.

### 4.0 Line Coating and Surface Preparation

- 4.1 If not factory beveled, using an appropriate tool, bevel line coating edges on both sides of the weld bead to approximately 15°.

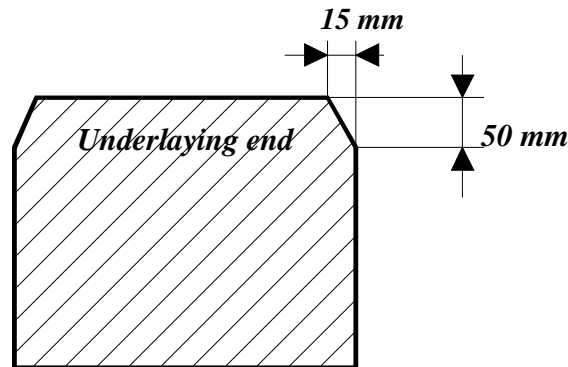


- 4.2 Ends of existing mill coating shall be inspected.
- 4.3 Unbounded portions of the coating shall be removed and then suitably beveled.
- 4.4 Portions where parent coating is removed shall be thoroughly beveled, and cleaned as specified.
- 4.5 Clean exposed steel area and adjacent pipe coating that will be covered by the PPS120/WPC120 sleeve from all dust, dirt, moisture, grease or other contaminations; if required use a non contaminating solvent - eg Xylene.
- 4.6 The exposed steel should be power wire brushed to grade ST3 (\*). Abrade the adjacent line coating using a rotating sand disc or similar tool upto 25mm (1 inch) beyond the end of the finally positioned PPS120/WPC120 sleeve. This will roughen the surface of the polypropylene without melting the surface or leaving loosely adhered polypropylene deposits on the surface, which could interfere with the bond of the sealant mastic. After installation sleeve should overlap the mainline coating by at least 50mm.
- 4.7 Using a clean cloth, remove all remaining abrasive dust and loose particles. Care should be taken not to contaminate the joint area.

(\*) Please note that the CD values mentioned in the datasheet are on gritblasted steel surface and not on powervired steel surface.

## 5.0 Heat Shrink Sleeve Preparation

Cut the corners of the PPS120/WPC120 sleeve's end 15 x 50 mm as shown below, prior to wrapping sleeve around the joint.



## 6.0 Preheating of Test joint Area

- 6.1 Make sure that all necessary items are in close proximity before start.
- 6.2 Prior to preheating, apply the PP protection tape and heat shields around the pipe to avoid direct flame contact with the PP line coating.  
Optional: The use of the PP protection sheet is recommended but not mandatory.
- 6.3 Wrap the PP protection tape shield tightly around the PP edges. Tape down using paper or PE tape (under tension), followed by a triple wrap (under tension) of heat shield overlapping the steel for approximately 25 mm (1 inch).
- 6.4 Preheat the steel area with the torch up to 190°C-210°C (374°F-410°F), whilst the PP line coating should be between 80°C to 100°C (176°F-212°F). Ensure that the PP surface does not get degraded by over exposure of the torch heating. It could look like a waxed surface.
- 6.5 Check the preheat temperature using a calibrated contact pyrometer. Do not use temperature sticks or crayons, as these can result in overheating. In windy or wet conditions, a windshield or ventilated tent shall be used.
- 6.6 Remove the heat shields and PP protection tapes from PP coating.

## 7.0 PPS120/WPC120 Sleeve Application

- 7.1 Immediately following the joint preheat and prior to sleeve application, apply the S1113 adhesive strips in a "cigarette wrap" method over 50mm of the PP coating as follows: Starting at the 12 o'clock position and parallel to the PP line coating edge, place the adhesive strip at the edge of PP coating. Remove outer layer of release paper before material is tensioned around the polypropylene coating at both sides on the joint area. Once done, press the strip firmly, along the entire length, in place.

- 7.2 Start wrapping the PPS120/WPC120 sleeve centrally around the field joint, the leading edge will be approximately in the 1 to 2 o'clock position. The sleeve should be wrapped around the joint leaving only a small gap between the bottom of the pipe and the sleeve, in order to shrink it as fast as possible and maintain heat in the pipe.

Refer to table below for recommended gap.

Pipe size	Gap in mm
DN 100 to DN 250 / 4" – 10"	10 mm - 30 mm
DN 250 to DN 950 / 12" – 38"	30 mm - 60 mm
DN 1000 to DN 1500 / 40" – 60"	60 mm - 90 mm

- 7.3 Gently heat the inside of the overlapping edge and press down onto the opposite sleeve end with a gloved hand. Sleeve overlap onto itself should be approximately 50 mm (2 inch). While heating press down and smooth the closure patch with a gloved hand to ensure good bonding and eliminate air entrapment.
- 7.4 Wrap the heat shields either side of the PPS120/WPC120 sleeve over the line coating to avoid the flame damaging the line coating during sleeve installation.
- 7.5 Using Berry Plastics CPG or equivalent propane torches adjust flame length to approximately 500 mm (20 inch). Begin at one side of the sleeve, moving the torch in a paintbrush motion towards the other sleeve end and is fully recovered.

## 8.0 Post Heating

- 8.1 Immediately after sleeve installation, and with the heat shields still wrapped over the adjacent line coating next to the sleeve, heat the entire sleeve to ensure that the adhesive is molten.
- 8.2 After post heating and while the adhesive is still liquid, using a silicon roller or gloved hand or both, roll or massage the sleeve near the weld bead and over the steel/PP transition starting from the 6 o'clock up to the 12 o'clock position. In addition roll the entire sleeve, especially the closure area using a silicone hand roller to ensure no air is trapped underneath. Start the rolling from the circumferential weld bead and work towards the sleeve ends, forcing any entrapped air out. Special attention should be paid to the longitudinal and circumferential weld bead areas.

## 9.0 Visual Inspection

The inspection of the joint shall only be done after the cool down of the sleeve. The sleeve shall be visually inspected for the following points;

- 9.1 The weld bead profile contour shall be visible through the sleeve.
- 9.2 The sleeve shall be smooth, free of any dimples, cold spots, bubbles, punctures, burn holes or any signs of holidays.

- 9.3 There shall be no signs of entrapment of foreign materials in the underlying adhesive.
- 9.4 The sleeve shall overlap the adjacent mill coating for at least 50 mm each side.

**10.0 Inspection**

Holiday Inspection

- 10.1 Holiday inspection shall be carried out once sleeve has cooled.
- 10.2 Test voltage shall be 15,000 +/- 1000 VDC.
- 10.3 Holiday tester shall be equipped with a full circumferential contact electrode.
- 10.4 Each joint shall be tested

Adhesion Test – ASTM D1000

- 10.5 Adhesion of the PPS120/WPC120 sleeve to the steel shall be checked only during the PQT where applicable. The values measured shall be as described in the datasheet.

	<b>At 23°C</b>	<b>At 50°C</b>
<b>PPS120/WPC120 on steel</b>	62N/25mm or 35pli	37N/25mm or 21pli
<b>S1113 on PP</b>	42N/25mm or 23pli	25N/mm or 14pli

*Note: This installation instruction and inspection procedure is a guideline. Local circumstances at site may require specific conditional changes. Authorized Berry Plastics CPG Technical Service personnel must approve these changes.*