Covalence®
Heat Shrinkable Products

INSTALLATION & INSPECTION PROCEDURE FOR ROCS 60E SHRINK SLEEVE ON RISER PIPES

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APPLICATION GUIDELINES FOR ROCS 60E ON RISER PIPES

1. GENERAL:

This installation instruction prescribes the procedure of ROCS 60E installation on riser pipes.
The system described herein comprises a wraparound heat shrink sleeve type ROCS 60E in combination with epoxy primer installed on bare metal riser pipes.
This installation method is for torch installation.
Only Berry Plastics CPG certified, well-equipped installers, should perform the installations of ROCS 60E sleeves.

Contact the Berry Plastics CPG Technical Services Department prior beginning installation.

2. MATERIAL AND EQUIPMENT :

Appropriate size of ROCS 60E kit.
Two BN XX torches and handles or equivalent.

	Pipe size / DN
BN 40	DN 100 to DN 250
BN 60	DN 300 to DN 950
BN 80	DN 1000 to DN 1500

Propane tanks with appropriate regulators (4 bar) and propane hoses.
For the epoxy primer :

* In kit : All required equipment is included, such as primer, mixing stick, gloves and applicator pad.
* In bulk : S-1239 two component epoxy primer, mixing ratio by weight 100 A to 40 B / mixing ratio by volume 100 A to 60 B at 25°C.
  Primer applicator.
  Mixing stick.
  Mixing cup / Measuring cup.
  Protective gloves.
  Epoxy pumps.
  Epoxy heaters - needed below 20°C.

Calibrated surface pyrometer.
Flat silicone roller.
For pipe diameters above 12 inch two equipped installers are required.

3. SAFETY :

The contractor is responsible to ensure that the installers are well equipped for safety in accordance with the local safety regulations, such as heat resistant gloves, goggles, etc...
Epoxy primer should be used in a well-ventilated area, following the safety instructions included in the packaging.

4. SURFACE PREPARATION :

Clean exposed steel area that will be covered by the ROCS 60E sleeve from all dust, dirt, moisture, grease or other contaminations.
If required use a non-contaminating solvent such as Xylene.
Sand or grit blast the bare steel area of the girth weld to SA 2 ½.
Remove carefully all remaining abrasive dust and loose particles.
Note : Make sure that for ROCS 60E application we recomment start working from top to bottom of pier pile!

5. CUTTING OF SLEEVE CORNERS :

The corners of the underlying sleeve end should be cut by 15 to 50 mm, the smallest size across the sleeve width, prior to wrapping the sleeve around the field joint.
This is called the leading edge of the sleeve.

6. PRIMER MIXING :

Prior or during joint preheating, open the two component cans and pour contents of can B (hardener) into can A (Resin) and mix for about 30 seconds using a mixing stick.
Mixed primer has a pot life of approximately 20 minutes at 30°C, 30 minutes at 20°C and it can be used any time when it is still liquid.
For easy mixing the primer should be stored at a temperature of minimum 20°C.
When necessary keep the primer at heated areas.
When bulk primer is used, dispense first part A and than part B in a mixing cup in the quantities required.
The epoxy pumps have been specially modified to dose the correct quantity / mix ratio by simple putting equal strokes of component A and B into a cup, without having to measure anything at all.
Primer coverage : 100 cc of mixed primer covers 6 square feet of bare metal.

7. PREHEATING OF GIRTH WELD AREA :

Make sure that all necessary items are in proximity before you start.
In windy conditions a windshield, or during rain a ventilated tent should be used to assist in the application of the coating.
Check the preheat temperature with a calibrated contact pyrometer.
Preheating reduces installation time and ensures a proper bonding.
Preheat with a slow moving flame in a paintbrush motion, and check from time to time the temperatures of the steel area to be covered by the ROCS 60E sleeve.
Preheat the steel area to a temperature between 70 to 90°C and apply the mixed epoxy primer.
Do not preheat the steel area over 100°C, because the primer will cure in a very short time.

8. PRIMING OF GIRTH WELD AREA :

The SZAR system relies on achieving a chemical bond between the wet epoxy and the hotmelt adhesive of the sleeve, which melts during shrinking the sleeve.
Apply the epoxy over the bare metal approximately 50 mm wider than the area to be covered with the ROCS 60E sleeve.
The shrink sleeve shall be applied immediately after the primer application and while the epoxy primer is still wet.

9. ROCS 60E SLEEVE APPLICATION :

Immediately following the primer application, prepare to wrap the ROCS 60E sleeve centrally around the welded joint.
The sleeve should be wrapped around the steel leaving a small gap between the riser pipe and the sleeve, this in relation of the pipe diameter.
Use two magnetic clamps to hold the ROCS 60E sleeve in the vertical position.
The sleeve overlap onto itself should be approximately 50 mm.

Pipe size	Gap in mm
DN 100 to DN 250	From 10 mm to 30 mm
DN 250 to DN 950	From 30 mm to 60 mm
DN 1000 to DN 1500	From 60 mm to 90 mm

WPCP IV installation
Gently heat the inside of the overlapping sleeve edge and press down onto the opposite sleeve end with gloved hand.
Apply the patch centrally over the sleeve overlap area.
While heating press down and smooth the closure patch with a gloved hand to ensure good bonding and eliminate air entrapments.

ROCS 60E installation
Using a torch and adjust the flame length to approximately 500 mm.
Start heating the ROCS 60E sleeve at the bottom, heating circumferentially all around the pipe until the sleeve is conforming to the pipe, and continue to the other sleeve end until the ROCS 60E sleeve is fully recovered.
Do not forget when the lower sleeve end has fully recovered to remove the magnetic clamps.

Postheating
Posts heat the installed sleeve and while the adhesive is still liquid (finger test), roll the sleeve overlap area with a silicone hand roller.

Rolling
After the ROCS 60E sleeve has been fully shrunk down and while the hotmelt is soft and hot, run with a silicone hand roller over the overlap area to push out any entrapped air.
Special attention should be given to longitudinal and circumferential weld beads.
When the adhesive is too viscous and rolling is difficult, reheat the area again.
This procedure can be repeated till the obtained result is according to inspection.
Rolling does not affect the properties of the sleeve, it only helps to work out possible entrapped air.

10. PERP 60E INSTALLATION ON TOP OF CLOSURE PATCH :

Immediately after rolling of the closure patch area, and while the temperature is still above 60°C a PERP 60E has to be installed.
The PERP 60E should be at least 2 inches wider than the closure patch of the ROCS 60E sleeve.
Flame brushes the PERP 60E on the hotmelt side and position on top of the ROCS 60E sleeve centrally over the closure patch.
While heating, roll the PERP 60E patch down with a silicon hand roller to ensure good bonding and eliminate air entrapments.
Repeat this installation technique till a smooth PERP 60E surface has achieved.

11. VISUAL INSPECTION CRITERIA :

A finished ROCS 60E sleeve installation shall be inspected for the following points;

- Adhesive flow shall be evident at both sleeve edges along the circumference of the pipe.
- There shall be no upstanding sleeve edges, sleeve edges shall be firmly bonded to the line coating.
- The sleeve surface shall be smooth without cold spots,bubbles, signs of air entrapments, punctures, pinholes etc…
- Weldbead profiles shall be clearly visible through the sleeve.
- Sleeve to sleeve overlap should be at least 75 mm, preferably 100 mm.

12. HOLIDAY INSPECTION :

After complete cool down, holiday inspection can be done.
Holiday inspection can be done using a voltage setting of 5 KV + 5 KV per mm of coating thickness (ref. DIN 30672) with a full circumferential contact electrode or brush for every joint.

13. AIR VOIDS :

Sleeves should be inspected for possible air entrapments.
Air entrapments should be minimal but can not be avoided 100%.
Bare steel spots shall be limited to maximum 1 sq.cm and maximum 3 per sleeve.
Entrapments of 10 sq.cm maximum are acceptable.
The total area of entrapment shall not be larger than 3% of the total sleeve area.
Larger entrapments should be corrected in accordance with the Berry Plastics CPG procedure.

14. REPAIR PROCEDURE :

Cut repair patch from a roll of PERP60E, approximately 50 mm (2 inches) larger in each direction than the area to repair.
Lightly abrade the area all around the damage with a steel wool pad or fine sandpaper.
Prepare the area at least one inch larger than the area to be covered with the PERP60E, this to ensure that the PERP60E is installed over an entirely roughened surface.
Preheat the damaged area with a propane torch with a gentle flame to approximately 60°C to 80°C (140°F-176°F).
In case of bare metal, the area should be filled with Berry Plastics CPG adhesive filler with or without primer on the steel.
Preheat the PERP60E on the adhesive side till soft and shiny.
While the adhesive is still soft apply the PERP60 centrally over the damaged area.
Carefully heat and roll the PERP60E until a smooth surface and an adhesive bead is visible all around the PERP60E.

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.