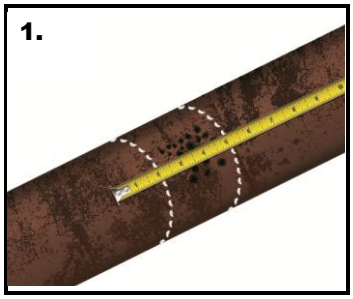
VIPER-SKIN™
INSTALLATION GUIDE

For ideal shelf life, store products in a cool, shaded area at ambient temperature 72°F (23°C). Do not expose materials to temps above 110°F (44°C) or below 40°F (5°C). **Do not open bags containing Syntho-Glass® XT or Viper-Skin™ until you are ready to use them**, as their resin cures when exposed to water or humidity. Care must be taken when handling the sealed bags to prevent puncturing or scuffing. If the protective foil pouch is punctured, the composite wrap will cure within the sealed foil pouch.

Procedures to be taken in handling and storage.

1.

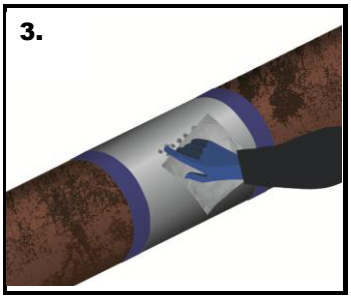


Measure the total repair length using NRI's engineered calculations. Extend length by 2" (5.08cm) each end, and center repair on defect.

2.

Mark edges of repair area using masking tape. Remove pipe coating, rust, paint and other foreign matter.

3.

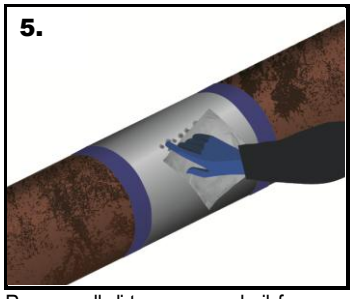


Remove all dirt, grease and oil from pipe surface in accordance with SSPC-SP1 "Solvent Cleaning."

4.

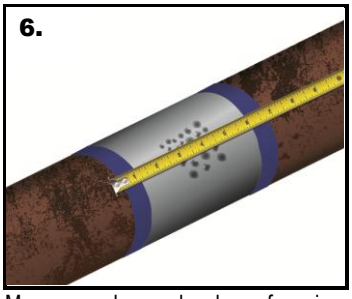
Prepare surface in accordance with SSPC-SP10 / NACE 2 "Near White Blast Cleaning." Smooth any remaining sharp edges by grinding or filing to reduce stress concentrations.

5.



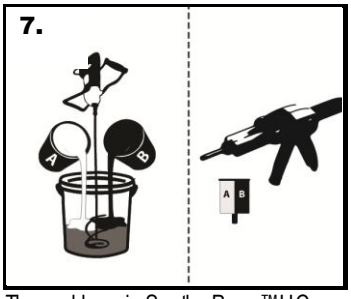
Remove all dirt, grease and oil from pipe surface in accordance with SSPC-SP1 "Solvent Cleaning."

6.



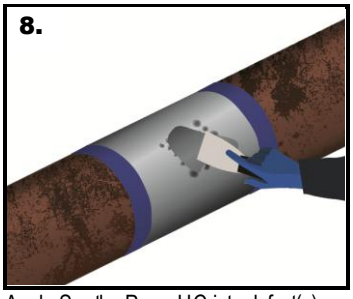
Measure and re-mark edges of repair area using masking tape. Be reminded to extend repair length by 2" (5.08cm) each end for Syntho-Subsea™ LV epoxy overlap onto existing mainline coating.

7.



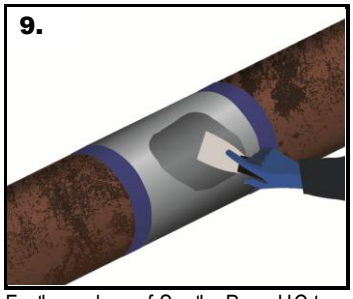
Thoroughly mix Syntho-Poxy™ HC, load transfer material, prior to application. A jiffy mixer can be used to mix SPHC cans. Cartridges are mixed using an applicator gun and mixing nozzle(s).

8.



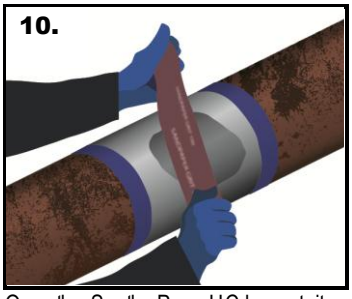
Apply Syntho-Poxy HC into defect(s) using spatula, trowel or putty knife. Work the material into all indentations to assure that no air bubbles remain.

9.



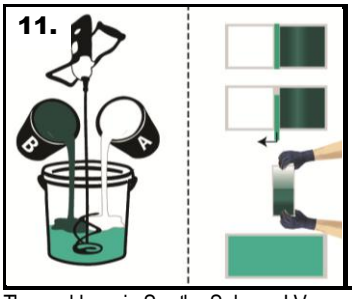
Feather edges of Syntho-Poxy HC to ensure a water-tight seal.

10.



Once the Syntho-Poxy HC has set, it can be sanded it to match the contour of the pipe.

11.



Thoroughly mix Syntho-Subsea LV prior to application. A jiffy mixer can be used to mix LV cans. Manually mix bi-packs within the pouch after removing the divider clip.

SDS and Technical Datasheets available at http://neptuneresearch.com/downloads/

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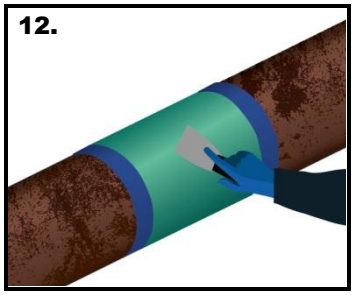
12.



Apply the mixed Syntho-Subsea LV 360° around the circumference of pipe within the borders of the marked repair area at 30-60mils.

13.

Inspect Syntho-Subsea LV to assure 30-60mil coverage. Confirm that 100% of the pipe surface is coated and that no bare steel remains. Remove masking tape.

14.

Begin Syntho-Glass XT application 1" (2.54cm) inside the borders of Subsea LV, spraying the XT with water as it is applied. Spirally wrap XT using a 20% overlap to achieve a 1 layer application.

15.

Begin Viper-Skin application 1" (2.54cm) inside the borders of XT, spraying the VS with water as it is applied. Spirally wrap VS using a 50% overlap, in the same direction the layers of XT were applied, until you've achieved the # of layers specified by NRI's calculations.

16.

Apply 4 layers of compression film in the same direction the layers of Syntho-Glass XT and Viper-Skin were applied.

17.

Perforate the compression film. After initial cure, remove compression film.

18.

Using a Durometer, measure the Shore D of each component to confirm they've reached full cure before returning the line to service.
Syntho-Subsea LV: 70
Syntho-Glass XT: 70
Viper-Skin: 70

19a.

Protect the composite repair with a UV coating, such as Syntho-Glass®UV (19a) or Syntho-Coat™ (19b).

19b.

Protect the composite repair with a UV coating, such as Syntho-Coat™ (19b) or Syntho-Glass®UV (19a).

Vertical installations such as offshore risers or jacket legs, Viper-Skin shall be applied so the last pass is applied upwards, with the wrap terminating at the top of the repair.
Sub-sea and splash zone installations, the last (outer) wrap shall be tied down to ensure the currents will not affect the adhesion of the last layer of fiberglass tape before the resin has reached its initial cure.
Sub-sea installations open bags of Syntho-Glass XT & Viper-Skin underwater, at the repair site, after all cleaning is completed and all epoxies have been applied.

Cold weather installations, follow procedures above however, as an additional step, after applying the compression film, use a heating pad over the entire repair area since XT& VS will not cure by itself at temps below 40°F (5°C). DO NOT HEAT TO TEMPS ABOVE 150°F (66°C)
Hot weather installations, follow procedures above however, use ice water in the sprayer to slow down the curing, thus allowing the installer sufficient working time. Furthermore, store unopened bags of XT & VS in an ice chest if possible.

Buried pipeline applications, smart pig detectable marker bands, washers or pipe coupons should be installed at each end of the Viper-Skin repair as per the operators' procedures to identify the repair during future ILI inspections.

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