

## Composite Mechanical Protection for Directionally Drilled Pipelines

THE PATENTED CANUSA-CPS SCAR-GUARD® LINE OF PRODUCTS IS DESIGNED TO PROTECT FIELD JOINT AND MAINLINE COATINGS FROM THE MECHANICAL STRESSES AND SCARRING ASSOCIATED WITH HORIZONTAL DIRECTIONAL DRILLING (HDD), BORING AND MICRO-TUNNELING OF PIPELINES.

Canusa-CPS Scar-Guard® is a composite abrasion resistant overcoat comprised of fiberglass cloth and pre-impregnated flexible resin that is activated by water and cured within minutes. This sacrificial outer laminate system protects pre-approved anticorrosion field joint coatings and mainline coatings such as FBE, liquid epoxies, shrink sleeves, and tapes. The Canusa-CPS Scar-Guard® line of products minimizes the need for costly repairs after pull back, and provides long-term protection of the underlying pipeline coating. U.S. Patent #8522827

### APPLICATIONS

- Onshore and offshore pipelines
- Abrasion resistant overcoat (ARO)
- HDD, drilling and boring
- Girth-weld and mainline coating protection

### BENEFITS

#### Bury, bore or drill with confidence

Provides unparalleled protection against impact, abrasion, gouge, punctures and tears that may result from directional drilling, rough handling, native backfills or severe in-service conditions.

#### Cure options for any environment

Fast cure, slow cure, UV-Curable, UV-Resistant – all available options to suit a wide range of project cycle time requirements and construction conditions.

#### Non-shielding

Suggested voltages for high-spark voltage testing as per NACE SP0188 pass through Canusa-CPS Scar-Guard® to ensure the anticorrosion coating can be tested for integrity after pull-through and protected for the lifetime of the asset.

#### Fast, easy installation

Scar-Guard products are simply wrapped onto the existing coatings surface and activated by water. Pre-impregnated moisture cured polyurethane resin means – no field mixing or saturation required!

### MAXIMUM ABRASION RESISTANCE

CAPABILITY/PROPERTIES	Scar-Guard	Scar-Guard XL	Scar-Guard E
<b>Laminate Properties</b>			
Thickness (per layer)	0.034"	0.013"	0.034"
Resin Type	Moisture Cured PU	Moisture Cured PU	Epoxy
Application Temperature	32° to 150°F (0° to 65°C)	32° to 150°F (0° to 65°C)	50° to 250°F (10° to 121°C)
<b>Cure Schedule 75°F (24°C)</b>			
Working Time	8 min	40 min	65 min
Set Time	28 min	75 min	2.5 hr
<b>Impact Resistance</b>			
ASTM-G14 (100 mils)	476 J (421 in-lb)	48.7 J (431 in-lb)	21.7 J (192 in-lb)
<b>Abrasion Resistance</b>			
ASTM D-4060 (cycles/mil)	1,667	1,467	3,333
<b>Gouge Resistance</b>			
Partech (50 kg load)	Pass	Pass	Pass



Failed



Scar-Guard® Passed

### PROJECT OVERVIEW

After installing 1,800' of 30" pipe, the HDD terrain was so rough that it had demolished the coatings used to protect the welds. Therefore the large utility company had to pull-back the pipe and evaluate other field-applied coatings and mechanical protection. Under evaluation was:

- Cold applied tape with 2 layers of Syntho-Glass (SG)
- Two-part epoxy ARO at 40 mils thick, specifically designed for HDDs

- The same two-part epoxy at 20 mils thick, wrapped with 8 layers of Scar-Guard XL

After installing all 3 systems, the crew welded an additional stick of pipe behind the bore head to allow for visual inspection of the trial. When the systems had set, it was time for the crew to begin the pull-back, through the compacted, rocky soil.

- The visual inspection revealed that the rough terrain completely removed the cold applied tape.
- Although the two-part epoxy was specifically designed for the abrasion and impact associated with directional drilling, the height of the weld took the brunt of the force chipping the epoxy down to bare steel and created holidays.
- The final system that included 8 layers of Scar-Guard XL, protected the corrosion coating flawlessly! The company determined that Scar-Guard's composite-reinforced resin technology was the answer.

