



Rugged

Self-Repairing

Easy Installation

### Which Would You Rather Have?

For secondary underground distribution cables, the main cause of failure is mechanical abuse of the insulation system resulting in a breach of the insulation wall. In most cases even seemingly minor damage can be significant enough to expose the aluminum conductor. When the insulation system is damaged, moisture in the soil penetrates into the conductor. Aluminum, in the presence of moisture and absence of oxygen, will oxidize and form aluminum hydroxide. This oxidation process will continue to occur, ultimately resulting in an open-circuit condition and cable failure. (See Figure A)

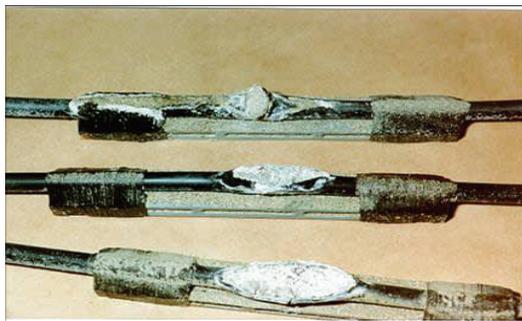


FIGURE A

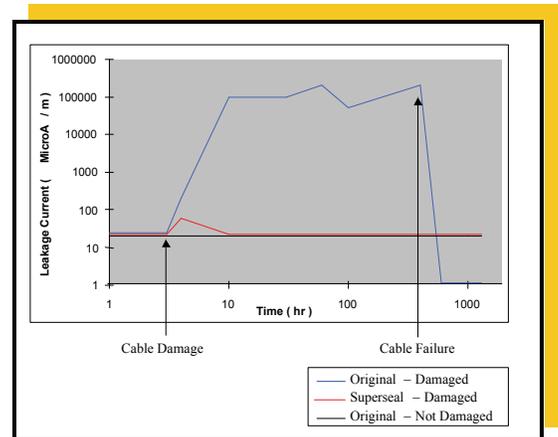
Superseal™ is Prysmian's solution for reducing the large number of secondary underground cable failures that result from mechanical damage to the insulation wall. Testing has shown that Superseal will fully repair the insulation system caused by most common types of mechanical abuse 100% of the time (See Figure B).



FIGURE B

### A Complete Repair

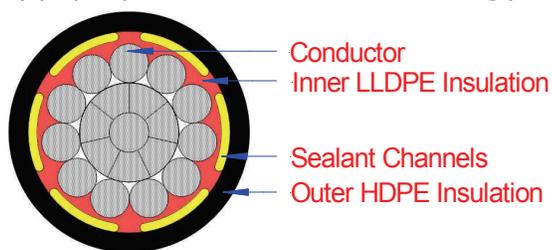
Prysmian has rigorously tested the ability of Superseal cable to repair even the most severely damaged insulation. Both Superseal and standard ruggedized cables were damaged in controlled environments with slot and hole damages and buried in controlled environments containing saturated soil with 20-20-20 fertilizer. Superseal and standard ruggedized cables were also damaged in the field with knives and shovels and buried in actual utility installations. In all cases the results were outstanding in favor of the Superseal design. The leakage current of each sample was monitored to provide an ongoing analysis of the cable's operation. These measurements showed that the standard ruggedized samples were failing while the Superseal cables continued to operate normally. After testing was completed, the dissection of the samples showed significant conductor corrosion on the standard ruggedized samples, while the Superseal samples were completely intact with no sign of conductor corrosion.



The chart above shows the leakage current of the undamaged control sample as a flat line. The damaged ruggedized sample shows a very sharp increase in leakage current which is sustained for a relatively short period of time until the cable ultimately fails. The damaged Superseal cable clearly shows a small increase in leakage current, which is then followed by a very short repair time, bringing the cable back to its original state which is equal to that of the undamaged cable.

## Cable Design Features

Prysmian's Superseal product employs a self-repairing compound between the inner layer of crosslinked polyethylene and the outer layer of crosslinked high density polyethylene to facilitate the re-insulating process.



The inner layer of LLDPE insulation not only protects and aids in the insulation of the cable, but it intimately bonds with the outer layer of HDPE insulation while gripping the conductor to prevent insulation shrinkback.

## Where is Superseal installed?

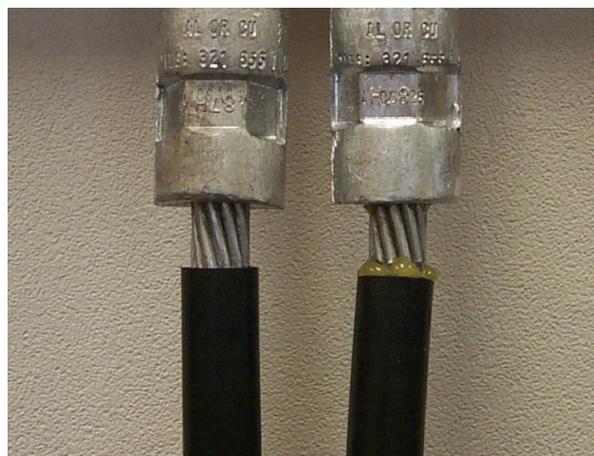
Most low voltage distribution cables are directly buried in earth or placed in conduit. Cables that are directly buried are more susceptible to damage than cables in conduit; however, conduit increases the cost of cable installation significantly and reduces the ampacity of the cable. Superseal is a cost-effective solution to replace low voltage distribution cables that are install in costly conduit installations or prone to be damaged in a direct buried environment.

## Testing

- Passes the Blunt Impact, Sharp Impact and Abrasion ruggedized tests as listed in ICEA S-81-570.
- Cold flow testing shows sealant material will flow at a wide range of temperatures (-5°C and >90°C).
- Tested for minimal sealant leakage at terminations, with no special tools or cable preparation required.
- Passed independent, laboratory controlled self-repairing test at NEETRAC (Project #01-195).
- Independent testing under utility-like conditions provided outstanding performance results.
- Designed and tested for minimal insulation shrinkback
- RUS approved.

## Easy Installation

Superseal has been designed for easy installation. In fact, there is no difference in installation practices between Superseal cable and standard ruggedized cable. Prysmian's sealant is highly viscous, and adheres to surrounding materials. This means that only a small amount of sealant will exude from the ends of the cable. The sealant is not caustic, flammable, or corrosive, and unlike sealants in other commercially available self-repairing cables, this sealant can be easily removed from hands, clothing and tools. With the sealant contained in channels within the two layers of insulation, the cable can be stripped of the insulation and prepared for termination or splicing with standard tools and no additional procedures. In fact, installers will likely not notice any difference between handling Superseal and handling traditional ruggedized low voltage URD cables; except that Superseal is slightly more flexible than the typical ruggedized cable.



Installation is very simple, with only two standards steps: 1) Cut the insulation to the normal cutback and 2) Insert the conductor into a standard connector and attach as normal. Superseal cable works with standard splices and terminations and requires absolutely no changes to standard procedures or equipment.

Average failure rate	= 1.93/mile*
Average replacement cost	= \$700/issue*
(1.93 issues/mile) x (\$700/issue)	= \$1,351/mile
(5280 ft/mile) x (\$0.15/ft**)	= \$792/mile
<b>Total Savings with Superseal = \$559/mile</b>	
* Failure rates and costs are based on a 3 <sup>rd</sup> party market study of 25 major US Utilities.	
** Represents a projected average price premium	

700 Industrial Drive  
Lexington, South Carolina  
29072  
1.800.845.8507  
[www.prysmianusa.com](http://www.prysmianusa.com)



137 Commerce Drive  
R.R. #3  
Prescott, Ontario K0E1T0  
1-800-263-4405 (West-CAN)  
1-800-361-1418 (East-CAN)  
[www.prysmiancanada.com](http://www.prysmiancanada.com)