

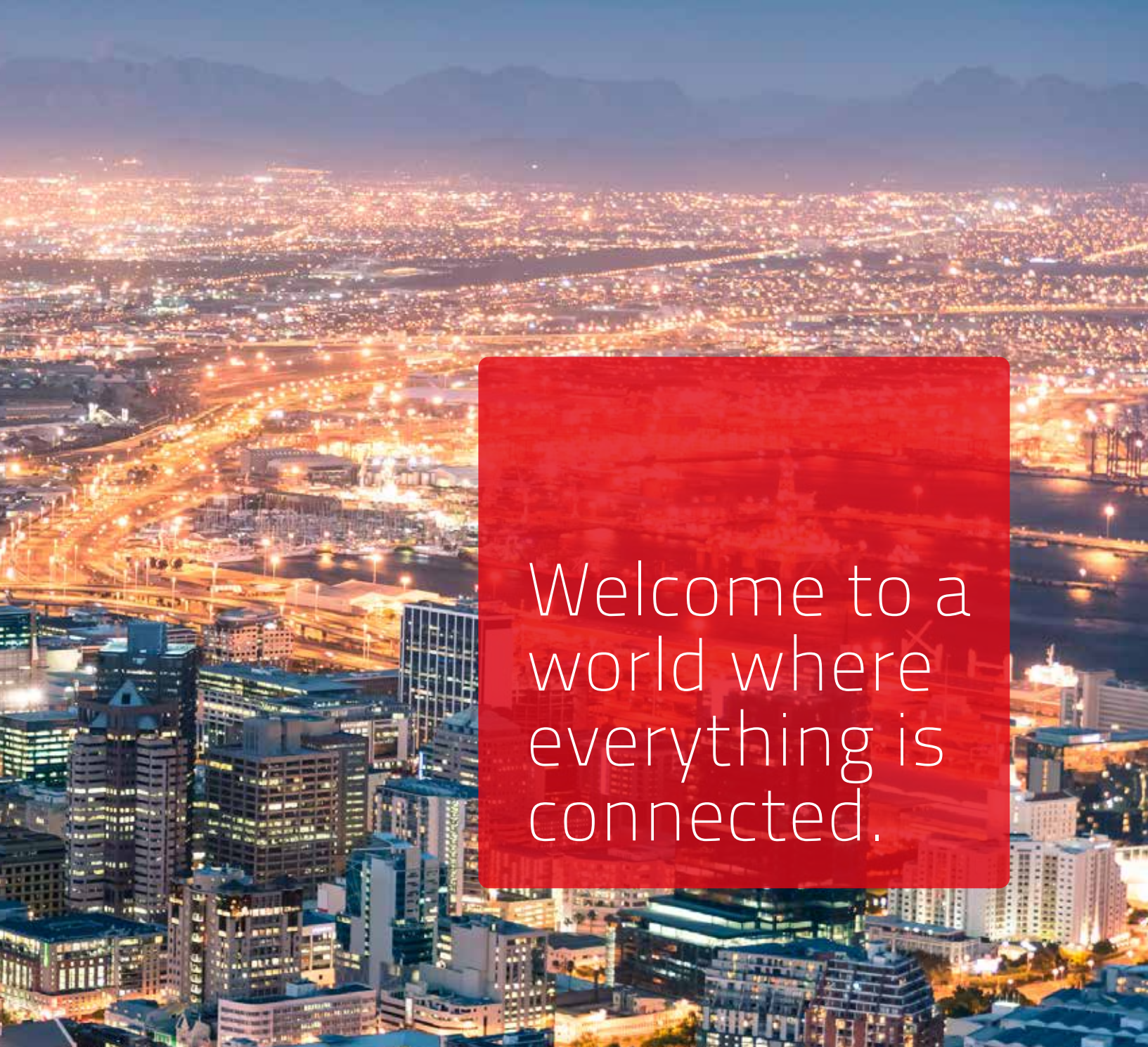


We connect your power





We are Lovink Enertech. We want to work with you to help create an efficient and safe society. Our part involves supplying reliable and innovative solutions for constructing, improving and maintaining your electricity systems.



Welcome to a world where everything is connected.

We develop, produce and supply innovative and reliable cable accessories to grid operators, industrial companies, contractors and engineering firms. Besides that, our desire is to offer you additional support with specialized advice and guidance. So we are both contributing to a world which is continuously on the move.

Our accessories score particularly well when it comes to 'failure-free operation.' Thanks to an extremely low failure rate, our LoviSil® product group heads the international

ranking for best category performance. We are also able to present similar scores for our other product groups.

Due to their smart, intuitive design and universal technology for all voltage levels, our cable accessories are easy to install. This helps to save time and keep the risk of errors to a minimum. Together with a minimum service life of 40 years, high mechanical strength and exceptional resistance to environmental factors, this adds up to a very attractive Total Cost of Ownership (TCO).



The best  
connections  
are made  
together.

The best results are obtained together. Your situation, preferences and objectives form a foundation for the solutions and support we offer. We supply high quality standard accessories wherever possible; we provide tailor-made solutions wherever necessary or preferred.



As a supplier of cable accessories, we can offer a comprehensive range of products from 1 to 36 kV. And there's more. We can help to optimize your ordering and administration processes and we offer storage, management and distribution solutions to give you trouble free logistics. Customer specific solutions, JIT and last minute deliveries: we will quickly respond to your needs.

Specially trained people at Lovink Enertech make sure your staff is able to effectively install our products. Familiarization courses are designed to enable spliceers, qualified at the relevant

voltages, to understand the practical and theoretical aspects of Lovink technology. Besides, our special support engineers can offer spliceers assistance in the field.

The Lovink Enertech brand is synonymous with intelligent, innovative and cost-effective solutions for the worldwide energy sector, the industrial sector and the sustainable energy market. We are continuously developing, supporting and implementing new ideas. These solutions continue to connect us to your dynamic assets. **We connect your power!**



The electricity market is developing extremely quickly. The ecological impact of our infrastructure has been placed in the spotlight and terms like smart grids, energy transition and green nets have become part of everyday vernacular. Technological innovation is the answer to these developments, and this is an area where Lovink Enertech fulfils an important role.



# Tomorrow's energy supply.

Changes in the grid, such as the introduction of sustainable energy production, are placing a greater burden on cable networks. As a result, cable splices must be able to resist these changing influences.

Cable splices are important links within cable networks. LoviSil®, the liquid silicone-based technology we have developed, is able to offer a reliable solution to these challenges.

Our development strategy focuses on reliability, sustainability and ease of assembly. We are using the latest technologies, and a team of smart engineers, to create products of the future.

This is Lovink Enertech's way of helping to realize reliable electricity grids, which help to ensure a stable economy and protect our environment.





# Content

## 1. LoviSil®

Cable splices for  
paper-insulated and  
polymeric cables

15 kV

## 2. Accessories

Protolin® resin  
Tools  
Constant Force Springs  
Cleaning tissues  
Wrapping tapes

11-18

19-22



Trifurcate splices Airport



Straight through splices high water table



Branch splices



# LoviSil<sup>®</sup> medium voltage splices 15 kV



Oil refill splices in switch gear station



Feed-in splices Solar park



Cross-bonding splices



LoviSil® medium voltage cable splices have been developed featuring fluid silicones that can boast 30 years proven field experience with an extremely low failure rate. Thanks to the construction and characteristics of the silicone based insulation material, LoviSil® splices offer a reliable connection with polymeric and especially paper-insulated cables.

**Applications**

LoviSil® cable splices are available as trifurcate, straight through and branch splices. In addition Lovink Enertech has also applied LoviSil® technology for cross-bonding splices, oil refill splices and feed-in splices.

**Electrical insulation**

The principle dielectric is contained within an ABS inner shell, utilizing a combination of polymeric spacers and a high-grade silicone-based compound. This compound remains fluid, thus minimizing the risk of discharge from dried out papers.

**Mechanical protection**

Mechanical protection is provided by a strong ABS outer shell, filled with two-component polyurethane resin. This resin provides long-term moisture resistance. A copper wire mesh serves as the electrical screen.

**Earth and screen protection**

The polyurethane resin also provides a tough environmental protection for the main earth bond and screen components. With its searching characteristics, it encapsulates every item thus providing excellent corrosion resistance.

**Sealing**

Exceptional bonding of polyurethane resin to ABS provides a guaranteed seal to the outer shell. Should any moisture penetrate into the inner splice, the moisture will initiate a local reaction with LoviSil® and transform into a cured solid rubber. This effect prevents direct failure and lengthens the service life of the splice significantly.

**Equivalent  $\epsilon_r$  value**

The dielectric constant ( $\epsilon_r$  value) of liquid silicone is practically identical to the insulation of polymeric cables (XLPE/ EPR) and remains so even when cured. This provides a consistently homogeneous electric field.

**Universal:**  
from one basic concept all cables can be connected

**Reliability & Quality:**  
fluid silicone technology

**Cost savings:**  
extremely low failure rate



Example base module  
15 kV



### Modular system

LoviSil® splices are ordered using a modular system providing solutions for all cable combinations.

**Base module** : This module contains all the “hardware” for the splice. Selection of the base module is dependent on cable sizes.

**Resin module** : This module contains all filling compounds for the splice, including the LoviSil® liquid.

**Cable module** : This module contains items for application on the cables to be connected.

Example resin module



Bespoke cable modules for unique applications are available.

*The modular system offers logistic benefits, because it is not necessary to keep separate splices in stock for each cable combination. From one basic concept, all cable types can be connected.*

# Product overview LoviSil® M trifurcate and straight through splices

The trifurcate and straight through splices of Lovink Enertech are universal and can be used on paper-insulated (PILC) and polymeric (XLPE or EPR) cables regardless of cable type: 1 and 3-core, large and small cross-sections and different armors. Bespoke cable modules are available to cater for uncommon cable types.

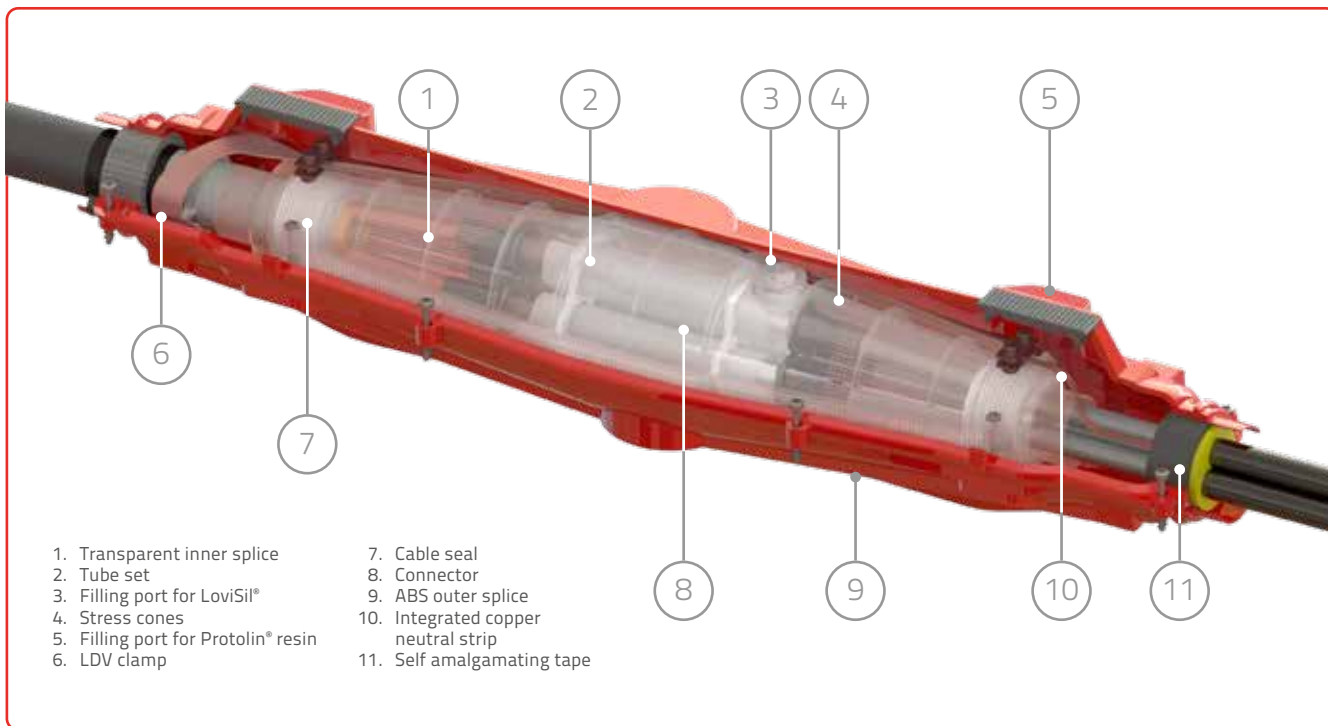
Voltage	Type	Cable	Conductor size (AWG / MCM) (*)	Conductor size (Crossed)	Max. diameter outer sheath (inch)
15 kV	M75	Polymeric/paper (1-core)	4/0 – 1,000	NA	2.8
		Polymeric/paper (3-core)	1/0 – 250	1/0 – 4/0	2.8
		Polymeric (3 x 1-core)	1/0 – 250	NA	1.3
	M85	Polymeric/paper (1-core)	1,250 – 1,750	NA	3.2
		Polymeric/paper (3-core)	1/0 – 400	1/0 – 350	3.2
		Polymeric (3 x 1-core)	1/0 – 400	NA	1.5
	M105	Polymeric/paper (1-core)	1,250 – 2,000	NA	4.1
		Polymeric/paper (3-core)	1/0 – 600	1/0 – 500	4.1
		Polymeric (3 x 1-core)	1/0 – 600	NA	1.9

\* Attention: Dependent on the outer sheath diameter and selected cable module. The above sizes concern cables that fit into the splice. Different cables on request.

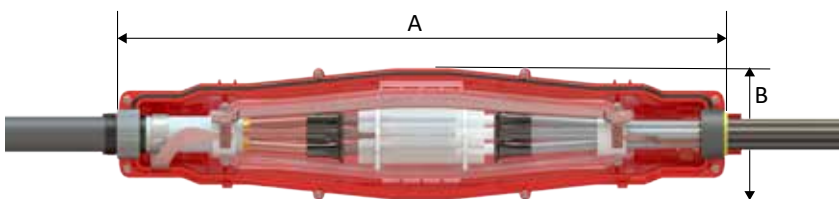


# Build up LoviSil® trifurcate and straight through splices

## LoviSil® M75-M105 (15 kV)



Dimensions	Type	A (inch)	B (inch)
------------	------	----------	----------



M75	38.386	7.874
M85	41.535	8.898
M105	52.953	11.417



## Optional versions

**Cross-bonding splice** > Used where cross-bonding is required to reduce losses



### Application

Underground solution to prevent compensating currents.

### Benefits

- Reduce cable losses
- Cost savings due to less cable losses

Voltage	Type	Cable	Conductor size (AWG / MCM) (*)	Conductor size (Crossed)	Max. diameter outer sheath (inch)
15 kV	M75	Polymeric (1-core)	1/0 – 500	NA	2.8
	M85	Polymeric (1-core)	600 – 1,250	NA	3.2
	M105	Polymeric (1-core)	1,250 – 2,000	NA	4.1

\* Attention: Dependent on the outer sheath diameter and selected cable module.  
The above sizes concern cables that fit into the splice. Different cables on request.

## Sustainable solutions

An important objective in the electricity sector is to utilize the cable network in a sustainable manner. This can be achieved by extending the life of aging paper cables where possible. The oil refill splice offers a perfect solution.

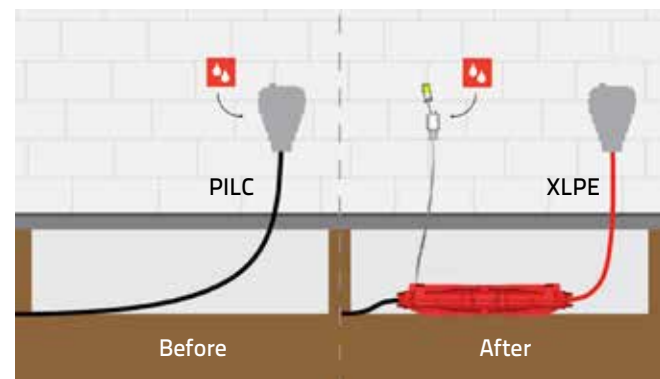
### Extending cable network life span

New network sub stations are designed around switchgear for connection to polymeric cables. This requires the installation of trifurcate splices to allow connection to existing PILC networks. In turn, this often results in disconnection from oil supplies essential to existing paper-insulated cables, thus making them susceptible to drying out and inevitable failure. Lovink Enertech has devised a special trifurcate splice that continuously supplies oil to these cables thus preventing them from drying out.

### Effective solution

A simple technique has been devised to remove a section of lead sheath without compromising the cores beneath.

A special manifold, which includes a non-return valve, is then positioned over the opening and secured in place. This enables connection to an oil supply suitable for the cable concerned. Utilizing a silicone tube along with traditional couplers and pipe-work, oil can be supplied from a conveniently located reservoir allowing easy maintenance.



LoviSil® oil refill splice

**Oil refill splice** > By means of a special manifold, a connection is made between the metallic sheath and an oil reservoir



Application	Benefits
Where transitions from paper to polymeric cables are required on new construction, oil refill splices feed the paper cable to extend their life.	<ul style="list-style-type: none"> <li>▪ Continuous supply of oil</li> <li>▪ Prevents drying out</li> <li>▪ Extending cable network life</li> </ul>

Voltage	Type	Cable	Conductor size (AWG / MCM) (*)	Type	Construction
15 kV	<b>M75</b>	Paper (3-core)	1/0 – 250	1 x lead	Without inner splice
	<b>M85</b>	Paper (3-core)	1/0 – 400	1 x lead	Without inner splice
	<b>M105</b>	Paper (3-core)	1/0 – 600	3 x lead	Without inner splice
	<b>M105</b>	Trifurcate splice (3-core)	1/0 – 250	Connection 1 x lead	M75 inner splice
	<b>M105</b>	Trifurcate splice (3-core)	1/0 – 400	Connection 1 x lead	M85 inner splice

\* Attention: Dependent on the outer sheath diameter and selected cable module.  
The above sizes concern cables that fit into the splice. Different cables on request.



# Accessories



# Protolin® polyurethane resin

**Protolin® 4000** > Cast resin which can be used as a mechanical insulation in medium voltage accessories



## Product information

- Two-part resin based on polyurethane.
- For applications with polymeric and paper-insulated cables.
- Supplied in a foil pouch, the twin compartment sachet allows easy mixing and pouring.
- The bag is provided with spouts which makes the filling much easier.
- The fully mixed resin flows easily, searching out the smallest spaces. Whilst curing, the resin is unaffected by water or moisture in the cable.
- Available in 57.5, 86.2 and 106.5 oz.

## Tools

**Slide caliper** > Installation tool to establish the correct diameters when applying build-up tapes



## Product information

- Slide mechanism, single-handed operation.
- Universally applicable, diameter from 1.6 to 6.1 inch.

**Push on applicator 15 kV** > Installation tool to position the stress cone on the cable



## Product information

- Available for 1.4 and 1.9 inch.

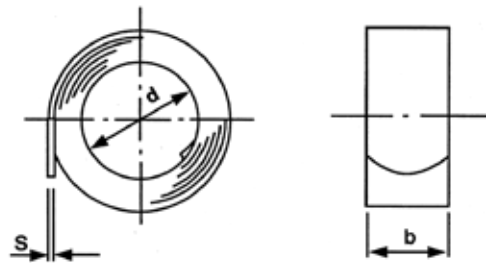
# Constant Force Spring

**Constant Force Spring** > For making an electrical connection to lead sheath or Cu tape screen with the copper earth braid



### Product information

- Made of non-corroding special steel.



Description	Application range (inch)		Dimensions (inch)			Coils
	Min.	Max.	d	b	s	n
RF 1	0.512	0.866	0.433	0.630	0.004	6
RF 2	0.669	1.142	0.512	0.630	0.006	6
RF 3	0.866	1.457	0.669	0.630	0.008	6
RF 4/5	1.181	2.756	0.945	0.748	0.012	6
RF 6	2.205	3.701	1.654	0.787	0.020	6

\* The above sizes concern cables that fit into the splice. Different cables on request.

# Cleaning materials

**Cable cleaning tissues** > Saturated cleaning tissues single packed



### Product information

- Mixture of solvents, consisting of iso-paraffin hydrocarbons.
- It does not contain benzene, hexane and chlorinated hydrocarbons.
- The aromatic content is very low, maximum 0.05 (volume)percent.
- Also available as set: 4 saturated and 2 dry cleaning tissues.

## Wrapping tapes

**Self-amalgamating build-up tape** > To enlarge cable diameters to meet the size of cable splices



### Product information

- Cold application.
- Complete seal, even on the overlap.
- Long aging.
- Good electrical resistance.
- Resistant to acids, alkalis, salt solutions and all corrosive substances in the ground.
- Dimensions: 13.1 ft x 1.6 in x 0.04 in.

**Self-amalgamating insulation tape 128** > Provide protection against accidental contact with uninsulated parts



### Product information

- Resistivity: 33.301  $\Omega$  ft.
- Dielectric constant: 2.3.
- DIN 53 482 and DIN 53 483.
- Dimensions: 16.4 ft x 0.8 in x 0.04 in.

**Self-amalgamating conductive tape K** > To provide stress control and shielding in splices and terminations



### Product information

- Resistivity 3.379  $\Omega$  ft.
- Tear strength: 435 lbf/in<sup>2</sup>.
- Ultimate elongation: 200%.
- DIN 53 482 and DIN 53 455.
- Dimensions: 7.5 ft x 0.7 in x 0.03 in / 15.1 ft x 0.7 in x 0.03 in.

**Self-amalgamating insulation tape SVIM** > To provide insulation in cable terminations and straight splices



### Product information

- Resistivity 33.301  $\Omega$  ft.
- Tear strength: 435 lbf/in<sup>2</sup>.
- Ultimate elongation: 800%.
- Dielectric constant: 2.8.
- Service temperature: -40 °F to 212 °F.
- DIN 53 482, DIN 53 455, DIN 53 481 and DIN 53 483.
- Dimensions: 14.8 ft x 0.7 in x 0.03 in / 32.8 x 0.7 in x 0.03 in.

*Lovink Enertech has made every effort to ensure the reliability and accuracy of the information contained in this catalogue at the time of going to press. The company shall not be held liable for the accuracy and completeness of this document. Lovink Enertech B.V. reserves the right to make changes in product and documentation specifications at any time and without notice.*

**Lovink Enertech B.V.**

Lovinkweg 3

P.O. Box 111

7060 AC Terborg

The Netherlands

T +31 (0)315 33 56 00

I [www.lovink-enertech.com](http://www.lovink-enertech.com)

E [info.le@lovink.com](mailto:info.le@lovink.com)