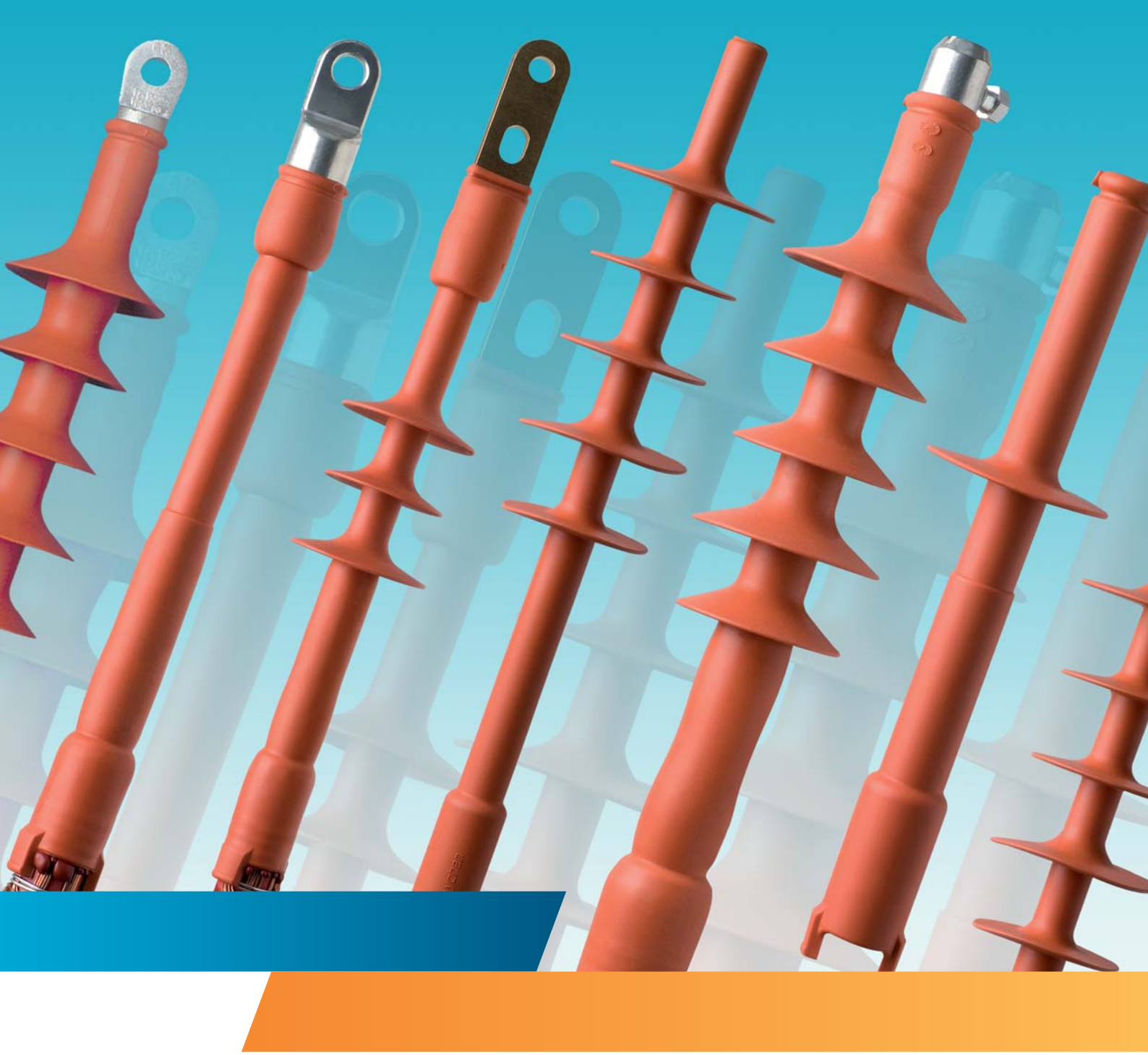


Energy Division

Raychem push-on elastomeric medium voltage terminations TFTI/TFTO for indoor and outdoor applications for single core polymeric cables up to 42 kV

Tyco Electronics

Our commitment. Your advantage.

Raychem push-on elastomeric medium voltage terminations TFTI/TFTO for indoor and outdoor applications for single core polymeric cables up to 42 kV

The materials are the difference
Key to the performance of Raychem products is the materials science and technology going into their development. Our products have displayed excellent performance in heat-shrinkable cable accessories up to 72 kV. The advantages of Raychem heat-shrinkable terminations have a proven record of long-term stability, durability, and reliability over many years.

Raychem cable accessories have been used by utilities and industrial companies around the world for more than 30 years. This field experience has enabled us to be a leader in materials technology for high-voltage applications.

Our materials technology is at the core of the development of our new range of **TFT Elastomeric Terminations**.

Benefits
- No shelf life (push on version)
- Less waste for disposal
- Simple installation
- Re-positioning after installation possible
- Superior application ranges

Designed for both indoor and outdoor in all climate conditions, the TFT range covers applications on single core plastic cables up to 42 kV.

The TFT has been developed to complement Raychem's termination product line. The TFT includes an elastomeric body material in contrast to the semi-crystalline polymeric body of the heat-shrink terminations. Both types of bodies consist of crosslinked polymer networks and both types of terminations are easy to install over a range of cable sizes. Because the TFT bodies are rubbery at ambient temperatures, they are not "frozen" in an expanded state such as heat-shrinkable polymer bodies and can be installed without heat.

The TFT includes:
- a non-tracking, silicone-based elastomeric body
- a stress control patch
- self amalgamating sealant tape

These components combine to provide the same important functions as heat-shrink products: electrical performance, stress control, and moisture sealing. Because of the inherent physical property differences between semi-crystalline and rubbery polymers, the TFT stress control and sealant materials are tailored to achieve optimum performance with an elastomeric system.

The proprietary materials used in Raychem cable accessories are subjected to a long period of optimisation with respect to product design and function, manufacturing and expected service environments.

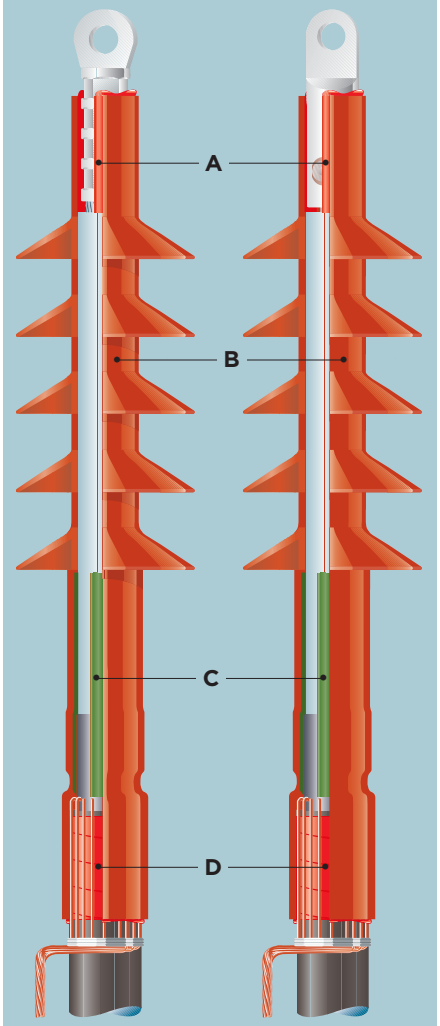
We recognise that polymeric and elastomeric insulation materials are not generic and that extreme variations and differences can exist among base polymer grades and additives.
Formulations consist not only of polymer but of additives and fillers which greatly influence the material's properties. It is the entire formulation package in combination with compounding procedures, material processing, product design and assembly that all contribute to the overall product performance.

Insulation materials
The materials employed in TFT have similarly undergone many years of development yielding an elastomeric product with exceptional electrical and weathering performance properties.

The insulation material has been developed to maximize the inherent material hydrophobicity and thermal-stability characteristics of silicone and, through formulation expertise, to deliver excellent erosion resistance, weatherability and dielectric properties.

Stress control materials
A new patch for electrical stress control has been developed with physical and electrical properties providing superior performance when combined with the TFT termination.

Raychem TFTO out termination



A Sealant tape

B Termination body

C Stress control patch

D Sealant tape

Raychem push-on elastomeric medium voltage terminations TFTI/TFTO for indoor and outdoor applications for single core polymeric cables up to 42 kV

We have formulated a superior new material which is included in the patch resulting in an outstanding impulse withstand performance of the TFT termination.

Sealant tapes to prevent moisture ingress
Sealant is applied at the top and the bottom of the prepared cable. The tape is self amalgamating, track and erosion resistant. When the TFT body is installed, its compressive force provides a water tight seal preventing moisture ingress.

Product range
The product line is designed for single core plastic cables up to 42 kV cables. This coverage is completed with a minimum number of designs. Pre-expanded versions are available.

The products are fully tested to CENELEC specification HD 629 and to IEEE Std.48-1996 which encompasses international standards such as IEC, British Standard (BS) and VDE.

For cable box applications TFT can be combined with either Raychem bushing boot (RCAB) or Raychem insulated connection system (RICS) to fit most types of switchgear currently available in today's market place.

For pole top applications we can supply TFT along with polymeric insulators (EPBI), Polygarde surge arresters and most fittings required for installation.

Under regular circumstances, all of the TFT components have full traceability back to the origin of manufacture and raw materials.

Raychem TFTI terminations installed with Raychem bushing boot (RCAB)

Raychem TFT 42 kV outdoor terminations

Raychem TFTI terminations installed with Raychem insulated connection system (RICS)

Kit content
Each TFT product will generally consist of the termination body unexpanded or expanded, a stress control patch, sealant tapes, silicone grease, a small PE bag as assembly tool and installation instructions.
For special applications contact your local sales representative.

The right kit for your cable range can be selected with the help of the selection table.

Installation
Each kit contains an easy to follow installation instruction with excellent visual displays of the installation steps. Installation is both fast and simple.

Raychem push-on elastomeric medium voltage terminations TFTI/TFTO for indoor and outdoor applications for single core polymeric cables up to 42 kV

TFTI/TFTO Selection Table

Application	
I	Indoor
O	Outdoor
Cores	
1	Single core polymeric cable

Voltage in kV	**[U_m]**
3	12
4	17.5
5	24
6	36 + 42

TFT Terminations – Pre-Expanded version
Cross sections in mm²

	12 kV Indoor/Outdoor	17.5 kV Indoor/Outdoor	24 kV Indoor/Outdoor	36 kV Indoor/Outdoor	42 kV Indoor/Outdoor	Diameter over insulation in mm
1	25 – 70	–	–	–	–	12.5 – 20.0
2	50 – 185	25 – 95	25 – 95	–	–	16.0 – 27.0
3	150 – 400*	95 – 300	70 – 240	35 – 120	35 – 95	21.5 – 36.0
4	–	240 – 400	240 – 400	95 – 300*	95 – 185	27.0 – 45.0
5	–	500 – 630	500 – 630**	240 – 400*	240 – 400*	37.0 – 56.0

*Larger on request
**Three shed housing

TFT x - x x x x

TFT	Elastomeric termination
Application	I = Indoor O = Outdoor
Voltage	3 = 12 kV 4 = 17.5 kV 5 = 24 kV 6 = 36 kV + 42 kV
Cores	1 = single core cable
Cross-sections	see above table
Delivery	Push-on version = 1 Pre-expanded version = 2

For example:

TFTI-5131
Indoor termination for single core polymeric cable 24 kV, 70 – 240 mm² (Push-on version)

TFTI-5132
Indoor termination for single core polymeric cable 24 kV, 95 – 240 mm² (Pre-expanded version)

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TFTI-E/TFTO-E
Pre-expanded termination single core plastic cable
Voltage 12 kV

Cross Section	Kit Number Indoor	Kit Number Outdoor
25 – 95	TFTI-E3122	TFTO-E3122
95 – 185	TFTI-E3132	TFTO-E3132
300 – 400	TFTI-E3142	TFTO-E3142
500 – 630	TFTI-E3152	TFTO-E3152

TFTI-E/TFTO-E
Pre-expanded termination single core plastic cable
Voltage 24 kV

Cross Section	Kit Number Indoor	Kit Number Outdoor
25 – 95	TFTI-E5122	TFTO-E5122
95 – 300	TFTI-E5132	TFTO-E5132
300 – 400	TFTI-E5142	TFTO-E5142
500 – 630	TFTI-E5152	TFTO-E5152

TFTI-E/TFTO-E
Pre-expanded termination single core plastic cable
Voltage 36 kV

Cross Section	Kit Number Indoor	Kit Number Outdoor
95 – 240	TFTI-E6132	TFTO-E6132
300 – 400	TFTI-E6142	TFTO-E6142
500 – 630	TFTI-E6152	TFTO-E6152

TFTI/TFTO termination family

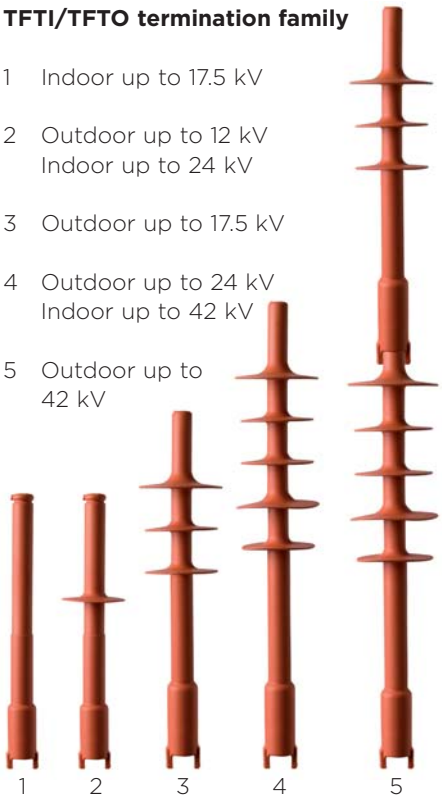
1 Indoor up to 17.5 kV

2 Outdoor up to 12 kV
Indoor up to 24 kV

3 Outdoor up to 17.5 kV

4 Outdoor up to 24 kV
Indoor up to 42 kV

5 Outdoor up to
42 kV



Raychem push-on elastomeric medium voltage terminations TFTI/TFTO for indoor and outdoor applications for single core polymeric cables up to 42 kV

Features	Benefits
High-performance termination material	Outstanding UV properties Exceptional track and erosion resistance Highly hydrophobic surface Excellent high voltage insulation material
New stress control system	Excellent high-impulse withstand performance
Separate stress control patch	Ensures stress control system is correctly positioned
Separate mastic tapes for moisture sealing, specially designed for cold-applied applications	Ensures mastic tapes are correctly positioned Excellent resistance to moisture ingress
Compact design with integrated sheds	Space saving
Application range	Three products cover the total cable range
Easy application	Time saving and simple to install
Leakage current collector only for 36 kV and 42 kV	Defines a clear earth electrode to drain the leakage current

Energy Division – innovative and economical solutions for the electrical power industry: cable accessories, connectors & fittings, insulators & insulation, surge arresters, switching equipment, lighting controls, power measurement and control.

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