

HEAT SHRINK RAYCHEM PRODUCT TECHNOLOGY

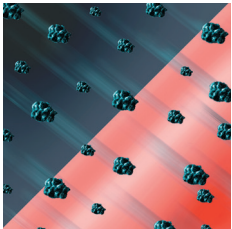
A PROVEN TRACK RECORD OF SOLVING
THE WORLD'S HARSHTEST CHALLENGES



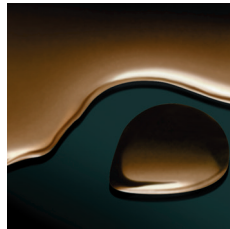
For more than 60 years, Raychem products from TE Connectivity (TE) have supported the delivery of power for a wide variety of industries, applications and environments. With a proven track record of technical innovation, reliable performance, lower installation costs and exceptional technical support, TE provides heat shrink solutions for sealing and protection including tubing, tape, and insulation. TE pioneered the original heat shrink technology for energy applications and the industry continues to count on us to deliver the latest advances.

CONSTANT OPTIMIZATION OF PROVEN TECHNOLOGY

Our Raychem product technology is based on specially-formulated thermoplastic polymer materials. Through our cost-effective manufacturing processes, TE can combine chemical additives with the polymers to create optimized solutions for various industry applications. The compounds for these materials are designed, selected, and mixed in TE's own compounding factories. Sophisticated process controls employed during extrusion, cross-linking and expansion ensure uniform wall-thickness before and after installation. Some of our significant technical advances include:



Resistance to surface electrical activity



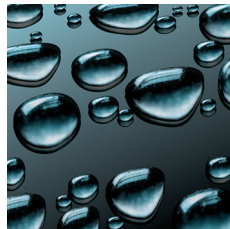
Moisture protection oil barrier



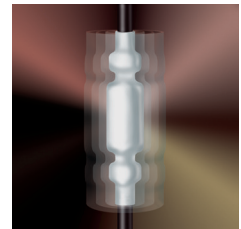
Void-free interfacial bonding



Electrical insulation shape memory



Environmental sealing and protection



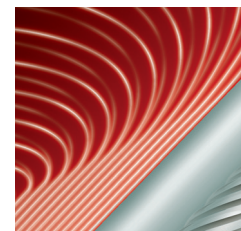
Mechanical protection



Flame retardant and fire resistant



Resistance to thermal aging and UV light



Electrical stress grading and conductivity

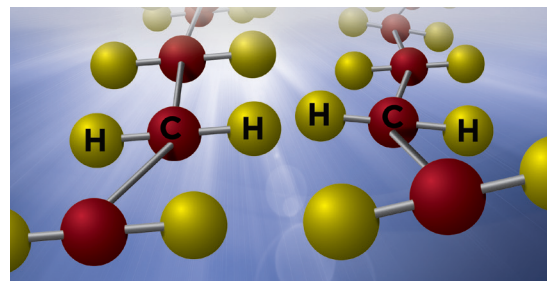
SUPERIOR ENGINEERING THROUGH POLYMER CROSS-LINKING TECHNOLOGY

Heat shrink material is comprised of polymeric materials (1) exposed to a high-energy electron beam that causes permanent cross-linking, or intermolecular joining, of adjacent molecules. Hydrogen atoms are separated from the polyethylene chains (2) and the carbon elements between adjacent chains establish connections joining together (3). Due to cross-linking, the heat shrink material loses its melting properties allowing it to be heated to temperatures beyond the crystalline melting point without melting. Above this temperature, heat shrink can be expanded and formed in shapes that will remain in position while the temperature decreases below the crystalline melting point again.

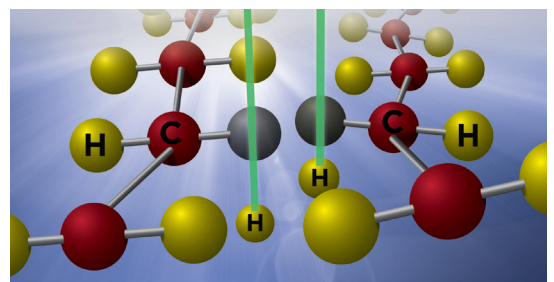
Heat shrink products are supplied in this expanded form in easy installation kits to our customers. When installers heat the products up again beyond the crystalline melting point, with a gas torch or hot air gun, the products shrink back to their original shape. This elastic memory remains in effect for the entire lifetime of the product allowing an unlimited shelf life under specific storage and warehouse conditions. As the polymeric materials shrink during installation, they also build up high pressure creating superb sealing and electrical behavior.

Cross-linking properties of heat shrink technology.

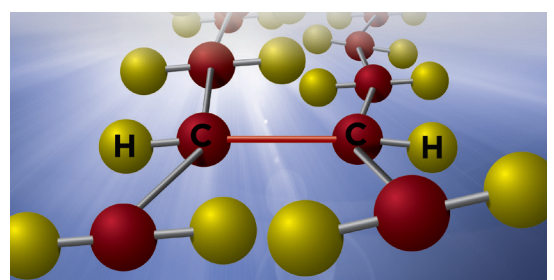
(1) Polyethylene chains



(2) Electron beams separating hydrogen atoms



(3) Carbon elements cross-linking



WEATHERING THE ELEMENTS AND THE TEST OF TIME

Our world-renowned Raychem materials and product technology are well known for their high quality, reliability, and ability to withstand weathering processes like pollution and contamination, UV-light, salt fog and other extreme harsh environments. TE's exceptional heat shrink products are the keystone of our highly reliable cable accessory product offering.

- Terminations
- Insulation
- Stress control
- LV, MV and HV applications
- Joints
- Tubing and molded parts
- Wildlife and asset protection

Proven Longevity: Decades of Data

TE's heat shrink products' advantage, their superior technology, enables their durability and long service life in harsh environments. They continue to perform robustly in the field more than 30 years after installation. Our data indicates:

- Most of the world's major energy utilities use TE products
- **60 years** of Raychem material science technology
- **40 years** of development and enhancements behind TE's Raychem cable accessories
- **30 years** without maintenance is typical for TE's heat shrink products
- Long service life significantly reduces the total cost of ownership

Powering Extraordinary Customer Experiences

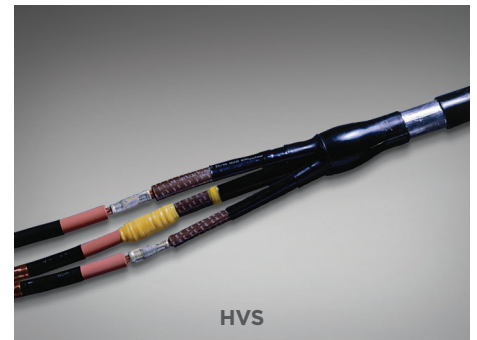
When you partner with TE, you are getting more than reliable products. You are getting local support at 18 worldwide training centers, backed by the combined wisdom and experience of more than 7,000 engineers.

- As the leader in connectivity solutions, TE has more than 50 years of experience in the most diverse industries across the globe, and provides customers with tested and proven technologies for these industries.
- Our engineers and product teams provide some of the best expertise and specialized support. We support your team finding the best and most cost effective standard or tailor-made solutions to your design challenges and offer hands-on field support for stress-free installations.

A COMPREHENSIVE RANGE OF HEAT SHRINK TECHNOLOGY

MV SPLICES

- All components to complete splice available in one kit
- Triple-extruded Rayfit splice sleeve provides high recovery force for superior interfacial pressure
- Fewer components = shorter installation time
- Slimmer space-saving profile
- Available for all cable types and applications: PILC, JCN, Wiresield, CU tape shield, LC Shield, Unishield, 3/C, and 3/C Armored



MV TERMINATIONS

- Co-extruded, one piece termination with built-in stress control
- Slim profile and lightweight
- Install upright or inverted
- Non-tracking, maintenance-free material



WRAPAROUND SLEEVES

- Tough, flexible general purpose sleeves with secure environmental seal
- Permanent channel locking system
- Can be field-cut for shorter requirements
- Heat-activated sealant coated
- Access to cable end not necessary- up to 2 kV insulation and unlimited re-jacketing uses





Rayfit tube used in MV Splices - Combines 3 layered, thick-wall extrusion.

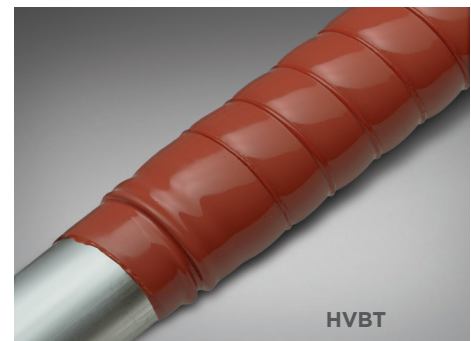
TUBING

- Heat shrinkable tubings for LV insulation and splicing, cable re-jacketing and repair, and busbar insulation
- Chemical resistant
- Sealant or non-sealant coated types available
- Thin, medium or heavy wall also available in flame retardant versions
- Nuclear grade available (Class IE Qualified)
- Halogen-free, non-corrosive, lead-free



TAPE

- Heat-shrinkable, adhesive-coated tape for insulation enhancement and flashover protection
- Anti-tracking material
- Suitable for indoor and outdoor use
- Versatile and flexible at extreme temperatures (-40 C up to 90 C)



TE Connectivity (NYSE: TEL) is a \$12 billion global technology leader. Our connectivity and sensor solutions are essential in today's increasingly connected world. We collaborate with engineers to transform their concepts into creations - redefining what's possible using intelligent, efficient and high-performing TE products and solutions proven in harsh environments. Our 72,000 people, including 7,000 design engineers, partner with customers in close to 150 countries across a wide range of industries. We believe EVERY CONNECTION COUNTS - www.TE.com.

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- Substations
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