



# Fire-Retardant Electric Arc Proofing Tape 77 Series

Data Sheet

March 2009

**Description**

Scotch® Fire-Retardant Electric Arc Proofing Tape 77 Series is a fire-retardant arc proofing tape designed to protect all types of electrical cables. Its unique formulation allows the manufacture of an unsupported elastomer that expands to provide a thick char buildup. This insulating shield is designed to protect the cables and accessories from fault arc generated heat and flames. All adjacent wrapped cables and accessories are protected when exposed to fault arcs until limiting devices can interrupt the faulted circuit.

Because Scotch® Electric Arc Proofing Tapes 77 Series are unsupported, they are extremely conformable. Installers can provide wrinkle-free coverage of cables and irregularly-shaped accessories, easily and rapidly. This exceptional conformability provides better product control while wrapping and more uniform coverage. Also, the tape's thick cross sections greatly reduce the overall weight compared to other methods while providing equal or better arc protection times. The light gray color allows for easy identification of the Scotch® Electric Arc Proofing Tape 77W.

One-half lap wrap provides adequate protection for most installations. However, additional wraps can be applied, if conditions warrant, without requiring a reduction in conductor loads.

**Applications**

- To arc proof high-energy power cables where exposed to failures of other high-energy cables (any cables within 18 inches are considered to be exposed)
- To arc proof control cable when high energy power cables are present
- Provide additional electrical insulation, thus reducing possibilities of transferred arcs.
- Resistant to water, salt water, acids, sewage, and ultraviolet light
- Light color allows for easy identification and location of fire damage.
- Can be removed and reused

**Typical Properties**

Not for specifications. Values are typical, not to be considered minimum or maximum. Properties measured at room temperature 73°F (~23°C ) unless otherwise stated.

**Physical**

| Property (Test Method)<br>(ASTM D1000 unless noted)  | Typical Value<br>US units (metric) |            |
|--|------------------------------------|------------|
| <b>Product Number</b>                                | 77                                 | 77W        |
| <b>Color</b>   | Black                              | Light gray |
| <b>Total Thickness</b>                               | .030 inches (0.76 mm)              |            |
| <b>Breaking Strength</b>                             | 1200 psi (8.3 MPa)                 |            |
| <b>Elongation (% at break)</b>                       |                                    |            |
| 23°C   | 150%                               |            |
| -12°C  | 130%                               |            |
| -18°C  | 90%                                |            |
| <b>Flame Resistant</b><br>UL 94 (Self-extinguishing) | V-0                                |            |
| <b>Oxygen Index *</b><br>ASTM D-2863                 | 29-30%                             |            |

\* Determines relative flammability of plastics by measuring the minimum concentration of oxygen in a slowly rising mixture of oxygen and nitrogen that will support combustion. This test provides a means of comparing relative flammability of physically self-supporting plastics.



# Scotch<sup>®</sup> Fire-Retardant Electric Arc Proofing Tape 77 Series

## Electrical

| Property (Test Method)<br>(ASTM D1000 unless noted)                         | Typical Value<br>US units (metric)             |
|---|--|
| <b>Dielectric Breakdown</b>   | 500 V/mil (19.7 kv/mm)                         |
| <b>Thermal Conductivity (23°C)</b><br>ASTM C-518                            | 0.15 BTU-ft (0.25 W/mk) ft <sup>2</sup> -hr-°F |
| <b>Electric Arc Resistance</b><br>(Consolidated Edison Co.) Test EO-5343-14 | Pass   |

|  |  |
|--|--|
| <b>Product Specifications</b>                      | Scotch <sup>®</sup> Electric Arc Proofing Tape 77 Series shall consist of a flexible conformable unsupported intumescent elastomer. The tape shall be 0.030 inches thick and be capable of over 100% elongation. The tape shall be non-corrosive to metallic cable sheaths and compatible with synthetic cable jackets (i.e. semiconducting URD type, polyethylene, PVC, etc.). It shall be self-extinguishing and shall not support combustion. The tape shall not deteriorate when subjected to water, salt water, gases, and sewage. The wrapped tape shall be secured by hand, consisting of two layers (the second wrapped directly over the first) of glass cloth electrical tape. |
| <b>Engineering and Architectural Specification</b> | All high-energy cable, important communication and control cables in manholes, vaults, on open cable trays or other exposed locations where threat of communication fault can occur, shall be are proofed with one half-lapped layer of Scotch <sup>®</sup> Electric Arc Proofing Tape 77 or Tape 77W. All tape shall be secured with Scotch <sup>®</sup> Glass Cloth Electrical Tape 69.  |
| <b>Installation Technique</b>                      | Wrap Scotch <sup>®</sup> Electric Arc Proofing Tape 77 or Tape 77W in half-lapped layers. This may be stretched to obtain a snug, wrinkle-free wrap which conforms to the cable. Overlap the last 6 inches of protected cable when starting a new roll of tape.<br><br>Since Scotch <sup>®</sup> Electric Arc Proofing Tape 77 Series is not adhesive coated, it must be held in place after wrapping with bands of Scotch <sup>®</sup> Glass Cloth Electrical Tape 69. The most effective and economical way to hold Scotch <sup>®</sup> Electric Arc Proofing Tape 77 or Tape 77W in place is by banding (2 complete wraps) the first and last applied wrap.                           |
| <b>Shelf Life &amp; Storage</b>                    | This product has a 5-year shelf life from date of manufacture when stored in a humidity controlled storage (10°C/50°F to 27°C/80°F and <75% relative humidity).  |
| <b>Availability</b>                                | Please contact your local distributor; available from <a href="http://3M.com/electrical">3M.com/electrical</a> [Where to Buy] or call 1-800-676-8381.  |
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