Scotch®

77 Fire Retardant Electric Arc Proofing Tape

Data Sheet

Product Description

Scotch® 77 Tape 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 protects 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 77 Tape is unsupported, it is extremely conformable. Installers can wrap cables and irregularly-shaped accessories easier and more rapidly. This exceptional conformability enables better product control while wrapping, and more uniform coverage. Also, the tape's thin cross sections greatly reduce overall weight compared to other methods while providing equal or better arc protection times. Cable heat is dissipated more rapidly than with other forms of thick arc protection.

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.

Features

- Flexible unsupported elastomer—clean, easy to apply, eliminates cuts and contusions of hands.
- Conformability provides wrinkle-free wrapping and complete coverage with minimum effort.
- Provides fault arc protection to adjacent wrapped cables and accessories.
- Self-extinguishing, will not propagate flame.
- Thin (30 mils thick) to save space, and allow cable heat to be dissipated more rapidly.
- Will last and maintain its arc proofing properties for the life of the cable. Resistant to water, salt water, acids, sewage and ultraviolet light.
- Can be removed and reused.
- Standard roll sizes for fast convenient installation.

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.

Data

Average Properties

Color	Black
Thickness	.030 inches
ASTM D-1000	(30 mils)
Break Strength	
ASTM D-1000	1500 PSI
Elongation	
ASTM D-1000	
23°C	150%
-12°C	130%
-18°C	90%
Flame Resistance	
UL-94 (Self Extinguishing)	V-O
Oxygen Index*	
ASTM D-2863	29-30%
Smoke	
ASTM D-2843 (Moderate Density)	White
Thermal Conductivity (23°C)	
ASTM C-518	.078 BTU - ft. / ft^2- hr. - °F
Dielectric Breakdown	
ASTM D-1000	700V/mil
Electric Arc Resistance	
Simulated High current fault arc (13000 K)	
• one half-lap layer	75 cycles
• two half-lap layers	145 cycles
Consolidated Edison Company	
• Test EO-5343	pass

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

Note: These are typical values and should not be used for specification purposes.

Specification

Product

The fire retardant arc proofing tape 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, P.V.C., 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 a band, consisting of two layers (the second wrapped directly over the first) of glass cloth electrical tape.

Engineering/Architectural Specification

All high-energy cable, important communication and control cables in manholes, vaults, on open cable trays or other exposed locations where threat of communicated fault can occur, shall be arc proofed with one half-lapped layer of Scotch® 77 Fire Retardant Arc Proofing Tape. All tape shall be secured with Scotch® 69 Glass Cloth Electrical Tape.

Installation Technique

Wrapping Technique

Wrap Scotch® 77 in half-lapped layers. This may be stretched to obtain a snug, wrinkle-free wrap which conforms to the cable. Overlap last 6 inches of protected cable when starting new roll of tape.

Since 77 Tape is not adhesive coated, it must be held in place after wrapping with bands of Scotch® 69 Glass Cloth Electrical Tape. The most effective and economical way to hold 77 Tape in place is by banding (2 complete wraps) the first and last applied wrap.

Shelf Life

Scotch® 77 has a 5-year shelf life (from date of manufacture) when stored under the following recommended storage conditions. Store behind present stock in a clean, dry place at a temperature of 70°F (21°C) and 40-50% relative humidity. Good stock rotation is recommended.

Availability

Scotch® 77 Fire Retardant Electric Arc Proofing Tape is available in 1 1/2 inch by 20 foot and 3 inch by 20 foot roll sizes from your electrical distributor. Wider tape widths and blankets are also available on special order basis.

Coverage Table

Cable O.D. (inches)	Tape Width (inches)	Number of 20 foot rolls needed to cover 100 feet of cable with one-half lap wrap (rolls)
1"	1 1/2"	21
1 1/4"	1 1/2"	27
1 1/2"	1 1/2"	32
1 3/4"	3"	19
2"	3"	20
2 1/4"	3"	24
2 1/2"	3"	27
2 3/4"	3"	29
3"	3"	32
3 1/2"	3"	37
4"	3"	42
4 1/2"	3"	48

Use this formula to determine the quantity of 77 Tape required to cover cables with a half-lap wrap:

C = Circumference (C= πD)
π = 3.14
D = Cable O.D. in Inches

LC = Length of Cable in Inches
W= Width of Tape in Inches (minus 1/2 tape width)
LT = Length of Tape in Inches

$$\frac{(C)\ (LC)}{(LT)\ (W)} = \text{Number of Rolls Required}$$

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IMPORTANT NOTICE

Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use.

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