FLAMESAFE® ARC PROTECTION PRODUCTS

- FlameSafe AFT Series Fire-Retardant Arc Tape
- FlameSafe CFR Series Chlorine-Free, Fire-Retardant Arc Tape
- FlameSafe Arc Proof Sleeve
- FlameSafe Arc-Proofing Y-Splice Boot
- FlameSafe Quick Seal Cable End Caps
- FlameSafe CF Series Chlorine Free, Fire-Retardant Blanket

Description

Electrical cables can potentially be a major source of fuel for fires in the industrial and utility environment. Plastics make excellent jacketing materials for electrical cables because of their flexibility, chemical resistance, insulation resistance and dielectric properties. While plastics can be formulated to be somewhat fire resistant, they can degrade under fire conditions.

Cables in trays or mounted on cable racks are conducive to the propagation of fire. These cables provide a source of fuel for fire. The addition of industrial or utility contaminants, such as paper pulp dust or coal dust, add to the dangers by providing fuel that is readily ignitable by welding sparks or even spontaneous combustion.

FlameSafe Arc Protection Products are designed to limit the propagation of fire on electrical conductors such as cables in trays, loose cable bundles and other cable installations.

Fire-Retardant Arc Tapes

Benefits

- Fire and fault arc protection for power and control cable
- Easy wrap protection where cable spray is impractical
- Utility and government approved
- Two tape types available including chlorine-free CFR Series

Description

FlameSafe Fire-Retardant Arc Tapes are designed to protect cables from the effects of fire and fault arcing. Fault arcs generate a blast that can be fatal to adjacent cables. The intense heat and flames often ignite fires that can quickly spread on unprotected cables to other areas, thus increasing the related damage and prolonging the ensuing shutdown.

FlameSafe CFR Series Tape

Non-halogenated, chlorine-free tape was developed to answer the need for a nontoxic, low smoke product for areas in which there are people or equipment. It extends the protection to single cables or small cable bundles that would be impractical to spray. When burned, it forms a tough ceramic tube to protect cable.

FlameSafe Fire-Retardant Arc Tapes

Arc Tapes — Physical Properties and Technical Data

	CFR Series	AFT Series
Weight	.25 lbs/ft² (1.2 kg/m²)	.35 lbs/ft² (1.7 kg/m²)
Thickness (ASTM D1910)	40 mils (1 mm)	50 mils (1.3 mm)
Color	Gray	White
Tensile strength	> 40 lbs/in. (.71 kg/mm)	> 40 lbs/in. (.71 kg/mm)
Elongation (ASTM D412)	> 100%	> 250%
Dielectric breakdown	> 250 volts/mil (10 kV)	500 volts/mil (25 kV)

Arc Tapes — Tape Estimating Guide

Tape Width	Cable Diameter Inches (mm)						
	.75 (19)	1.0 (25)	1.5 (38)	2.0 (50)	2.5 (64)	3.0 (75)	4.0 (100)
1.5 in. (38 mm)	30	35	40	45	55	70	80
2.0 in. (50 mm)	NR	25	35	43	48	55	70
3.0 in. (75 mm)	NR	NR	25	28	33	40	55

NR – Not Recommended

FlameSafe AFT Series Tape

PVC-based tape was designed for use in well-ventilated areas. Having an excellent blend of performance and economy, this tape is backed by tough conformable non-woven backing that will not melt off or split during a fire like unbacked thermoplastic films.

Installation

FlameSafe Arc Tape is easy to install using the following three steps:

1. Fasten end of tape (coated side faces out) to cable using a fiberglass cord or standard high temperature glass cloth tape.
2. Wrap cable so that tape overlaps itself (approximately half its width) to provide an effective thickness of two layers. This allows cable to bend and flex without cracking, parting, or exposing the cable jacket.
3. Fasten end of tape to cable as noted in Step 1. Fiberglass tie cord or fiberglass electrical tape is required for securing arc tape. Secure by spiraling around in the opposite direction as arc tape. Application rate is approximately 25 feet (8 m) per 100 feet (30 m) of 3 inch (75 mm) wide arc tape.

Estimating

Use the table at right to estimate the number of rolls required of FlameSafe Arc Tapes in typical applications. This table is based on protecting 100 feet (30 m) of cable wrapped as recommended.

In addition to standard widths, FlameSafe Arc Tapes are available in custom widths up to 50 inches (1,300 mm).

Arc Proof Sleeve

Description

The FlameSafe Arc Proof Sleeve is a custom dip-molded product that has been designed for application onto large power and utility cables. These Arc Proof Sleeves are custom designed to provide fire and fault arc protection for large electrical power cables that are not easily protected by the conventional arc proof tapes. The Arc Proof Sleeve is intended for arc faults, flame resistance and salt-water immersion in underground vaults. See below for dimensions and application:

Dimensions:
Length: Approximately 3 feet
Thickness: Approximately ¼ in.
Texture: Rough rubbery

FlameSafe Arc Proof Sleeve

Application

FlameSafe Arc Proof Sleeve is specifically designed to fit tightly around cables. The FlameSafe Arc Proof Sleeve is a round coil with a seam along its length. The FlameSafe Arc Proof Sleeve is to be opened at the seam such that it can be coiled onto a cable. The FlameSafe Arc Proof Sleeve is to be snapped onto a cable ensuring the FlameSafe Arc Proof Sleeve overlaps a minimum two inches onto itself at the seam along its length. Secure both ends of the Arc Proof Sleeve to the cable with fiberglass cord or bands. For multiple Arc Proof Sleeves running together, ensure a minimum one-inch overlap at the interface of the two Arc Proof Sleeves.

Arc Proof Y-Splice Boots

FlameSafe Custom Dip-Molded Arc Proof Y-Splice Boots are available in any size to meet the special needs of utilities and heavy industrial users. These boots are custom designed to provide fire and fault arc protection for cable connectors not easily protected with standard tape products, custom sizes are also available. FlameSafe custom boots have been tested and approved by Consolidated Edison in New York for fault arcing, flame resistance and salt water immersion in underground vaults and structures.

FlameSafe Arc Proof Y-Splice Boots

Cable End Caps

Benefits

- Seals against moisture and corrosion
- Eliminates the use of time consuming tape
- Simple to install, no heat required, installs in seconds
- Reinforced ends protect against abrasion or break-through
- Liquid air-tight, butyl mastic sealant adheres to both cable and insulation
- Works in extreme temperatures -20ºF to +190ºF (-7ºC to +88ºC)

Description

FlameSafe Quick Seal Cable End Caps are a no-fuss answer to all of your cable capping needs. These inexpensive vinyl caps are partially filled with a pliable butyl mastic sealant. They are designed to produce an instant seal against moisture and corrosion. To install, simply push and twist the cap over the cable ends and squeeze. RectorSeal Products' Quick Seal End Cap mastic is a black, elastomeric sealant designed to provide a moisture barrier for non-energized cable. The material has no cold flow or movement up to temperatures of 190ºF (88ºC).

Installation Instructions

WARNING! Not for use on energized cable.

1. Wipe the cable end to remove dirt, grease, oil and moisture.
2. Select the proper size cap to fit cable size (see QC Selector Chart).
3. Firmly push and twist the cap onto the cable end and squeeze.

FlameSafe Cable End Caps

Cable End Caps — Physical Properties

Cap material	Vinyl
Color caps	Red, orange, gray, black, green, blue, yellow
Specific gravity	0.95
Flow @ 190°F (88°C)	No movement
Dead load @ 190°F (88°C)	Pass
Insertion force	15.20 N
Cone penetration 72°F (22ºC) / 20°F (-6.7ºC)	125 / 80
Volatility	0.4% maximum
Working temperature	-20°F to +190°F (-7°C to +88°C)

Cable End Caps — QC Selector Chart

					Telcom Pair Count vs. Wire Gauge			
Desc.	Color Code	Cap Dia. in. (mm)	Nom. Length in. (mm)	Power Cable Range	#19 AWG	#22 AWG	#24 AWG	Units Carton
QC2	Red	0.75 (19)	1.25 (32)	3 AWG to 2/0 AWG	—	—	25	50
QC3	Orange	1.00 (23)	1.50 (38)	3/0 AWG to 250 AWG	—	25	50	50
QC4*	Gray	1.25 (32)	1.75 (44)	300 to 500 MCM	25	50	74–100	25
QC5*	Black	1.50 (38)	2.00 (51)	600 to 800 MCM	50	75–100	150	25
QC6*	Green	2.00 (51)	2.25 (57)	900 to 1750 MCM	75–100	150–100	200–300	15
QC7*	Blue	2.25 (57)	2.50 (64)	2000 MCM	—	—	400	15
QC8*	Yellow	2.75 (70)	3.50 (89)	—	150–200	300–400	600	10

* Special order

CF Series Cable Tray Blanket

Benefits

- Protects cables from weld spatter and other external flames
- Keeps out flammable dust and debris
- Accommodates trays up to 36 in. (914 mm) wide
- Burn tested
- Easy installation and retrofit

Description

The FlameSafe CF Series Cable Tray Blanket is chlorine-free, fire-retardant and provides a quick, clean and easy way to protect cable trays from fire and physical damage. It prevents fire from spreading from a lower tray to an upper tray. When used in conjunction with a FlameSafe Bag, it will limit the spread of fire within the tray itself.

Applicable Standards

The FlameSafe CF Series Cable Tray Blanket was subject to a fire exposure using twin gas burners developing 140,000 BTU/hour as the flame source. Repeated exposures demonstrated the system's ability to resist the propagation of fire, confining it to the area of ignition.
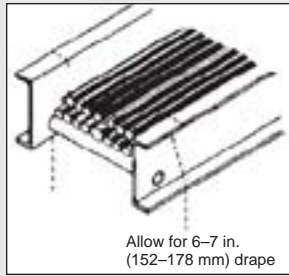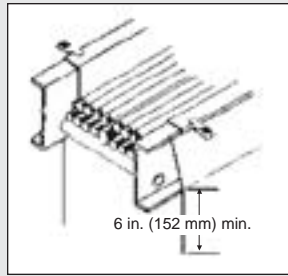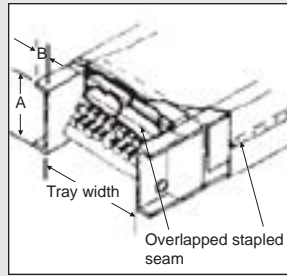
Figure 1 — Allow for 6–7 in. (152–178 mm) drape

Figure 2 — 6 in. (152 mm) min.

Figure 3 — B, A, Tray width, Overlapped stapled seam

Figure 4 — 6 in. (15.2 cm) min. Overlap blanket sections, Blanket section #1, Cable Tray, Blanket section #2, Center fire break
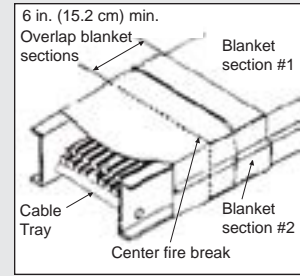
INSTALLATION INFORMATION

NOTE: Blankets must be installed fabric side up.

Horizontal Cable Tray

Blanket is designed to lay on top of cable and drape down over sides of tray (see Fig. 1 & 2 above). If two blankets are required, fold seam into a pleat and staple through all four layers. See chart provided to determine correct Blanket size. Blanket must be contoured to fit snugly to surface of cable and inner rails of tray. Overlap successive blankets at least 6 in. (152 mm). Secure blanket to rails with clips (No. BC1) every 2 ft (610 mm) on both sides.

Vertical Cable Tray or Multiple Stacked Horizontal Cable Tray

Install blanket (envelope fashion) completely around tray. On wide trays, fasten two blankets lengthwise (see Fig. 3 & 4 above) to provide needed width. Wrap the blanket around the tray and pull together forming joint at the midpoint of the rail. When two blankets are used, form seam at the midpoint of the rail on both sides of the tray. Fold each seam into a pleat and staple through all four layers. Overlap successive blankets at least 6 in. (152 mm) and secure with steel bands or clips (No. BC1) every 2 ft (610 mm).

Estimating Blanket Width

Minimum Blanket size based upon the following:

a. Tray side rail 0.75 in. (19 mm) wide.

b. Height of cable fills 50% of tray depth.

Wider tray rails and/or decreased cable fill may require a larger Blanket size. Blanket shown in chart allow 3 inch (76 mm) overplay at seams. Starred Blanket numbers in chart require two Blankets.

Blankets may be installed as Envelope coverage, wrapping around all four sides of the cable tray, typically for vertical trays or for each horizontal tray in a multiple stacked tray orientation. Blankets may be installed over top of tray and Draped over sides, typically for single horizontal trays. Draped ends should extend a minimum 6 in. beyond lower extents of side rails.

CF Series Cable Tray Blanket — Physical Properties

Color	Gray
Weight	Approx. 0.4 lbs/ft² (1.9 kg/m²)
Dielectric breakdown	Approx. 200 volts/mil (10 kV)
Salt water immersion	18 hrs in/6 hrs out, 5% saline solution @ 158°F (70°C), 90 cycles – passed

CF Series Cable Tray Blanket — Blanket Chart

Tray Width in. (mm)	Rail Height in. (mm)	Envelope	Draped
12 (305)	4 (102)	CF42B	CF42B
12 (305)	6 (152)	CF42B	CF48B
18 (457)	4 (102)	CF58B	CF48B
18 (457)	6 (152)	CF58B	CF48B
24 (610)	4 (102)	CF36B*	CF58B
24 (610)	6 (152)	CF36B*	CF58B
36 (914)	4 (102)	CF48B*	CF36B*
36 (914)	6 (152)	CF48B*	CF36B*

All blankets are 20 ft (6.1 m) long.   *Two blankets needed to yield required width.

Warranty

All statements, technical information and recommendations contained herein are based on tests we believe to be reliable. However, since the conditions of use and applications are beyond our control, RectorSeal shall not be liable for any damage, direct or consequential, resulting from the use of this material or design. RectorSeal's only warranty shall be to replace any of its products found to be defective.

Technical Support

RectorSeal provides technical support for all of its products. Call toll free at 800-231-3345 for assistance in product selection and for detailed specifications and approvals. We provide engineering analysis for unique firestopping applications, including system design drawings suitable for submittals. Material Safety Data Sheets are also available. More information is available on our web site at http://flamesafe.rectorseal.com

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For technical assistance call toll free at 800-231-3345.

This product may be covered by patents or patents pending.
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