

GRACE

Construction Products

1. Product Name

- FlameSafe® Firestop Sealants
- FlameSafe® Firestop Mortar
- FlameSafe® Firestop Coatings
- FlameSafe® Firestop Bags
- FlameSafe® Firestop Putties
- FlameSafe® Firestop Devices/Sleeves/Wrap Strips

2. Manufacturer

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3. Product Description

BASIC USE, COMPOSITION & MATERIALS

FlameSafe FS 1900

This high performance, elastomeric and intumescent sealant is a high-solids, water based compound engineered to provide exceptional adhesive and elastomeric properties for the demanding firestop requirements of pipe, cable, sprinkler penetrations and construction joints in environments subjected to frequent expansion and contraction. FS 1900 is highly intumescent, expanding to fill the void created by the melting and burning of polyvinyl chloride (PVC), chlorinated polyvinyl chloride (CPVC), cc-PVC, insulated pipe and plastic coated cables. FS 1900 does not contain solvents. As a result, it is not toxic and cannot damage plastic pipes or cable jackets. FlameSafe FS 1900 is used to seal openings in fire-rated structures where burning plastic pipe, insulated pipe or coated cables may compromise the rated system. It also can be used in bus and heating, ventilation and air conditioning (HVAC) ducts and through-penetrations with metallic pipes and mixed penetrants.

FlameSafe FS 900+

This elastomeric, endothermic sealant is designed for use in applications that do not require an aggressive intumescent sealant. A cost-effective, water based sealant, the FS 900+ hardens and cures to form a flexible shield against the spread of fire and smoke. It

can be used for various construction/architectural joint configurations - floor to floor, floor to wall, head of wall and wall to wall concrete applications, as well as for several penetration types. FS 900+ Sealant has been tested and approved by Underwriters Laboratories for rated systems up to 4 hours, in accordance with UL 2079 and UL 1479. It is available in both caulkable and self-leveling consistencies. FS 900+ replaces the FS 900 series sealants.

FlameSafe FS 3000

This water based, elastomeric coating is designed for spray applications onto construction joints and curtain wall assemblies. FS 3000 cures to a flexible membrane seal that is suitable for interior environments. The coating has been tested to dynamic conditions in accordance with ASTM E1399 relating to seismic, wind sway and thermal expansion and contraction environments. The ease of application provides an efficient way to firestop. FlameSafe FS 3000 has been tested and approved for use in curtain wall construction and fire resistive joint applications. For curtain wall applications, a minimum 4" (102 mm) depth of mineral wool (4 pcf (64 kg/m³) density) is compressed a minimum 25% into the joint cavity. The coating is spray applied at a minimum 1/8" (3.2 mm) thickness (wet) over the surface of the mineral wool and overlapping a minimum of 1/2" (12.7 mm) onto the floor and wall surface.

FlameSafe Bags

This unique firestop product allows easy access to cables and cable trays for through-penetrations in fire-rated floors and walls. FlameSafe Bags are patented bags consisting of tightly woven, durable, coated cloth, filled with a combination of mineral fibers, incombustible components, intumescent agents and special fire retardant additives. Unlike plastic covered pillows, FlameSafe Bags are coated and sealed, effectively encasing the fill material to provide a low-dust environment. This feature makes them particularly suitable for cleanrooms, hospitals, schools and applications with sensitive data and communications equipment. FlameSafe Bags allow for unlimited reentry. Easy to install, these durable firestop bags function through a unique 3-phase reaction to intumesce and seal out fire, smoke and toxic gasses.

FlameSafe Pillow (FSPIL)

FSPIL features a 4 pcf (64 kg/m³) density mineral wool compressed between 2 intumescent sheets which are encased in a durable

polyethylene liner. This pillow has been tested by Underwriters Laboratories and approved for several concrete floor, gypsum wallboard and concrete block wall assemblies. It can also be used for a maximum 4" (102 mm) EMT conduit sleeve with data communications cables or up to 24" x 5" (610 x 127 mm) center spine aluminum cable tray containing coaxial power cables, fiber optic cables and telecommunication cables. Available in 1", 2" and 4" (25.4, 51 and 102 mm) thickness, and installed into the opening, the FSPIL is a cost-effective, clean solution for firestopping small power cables and data/telecommunications cables which require retrofit.

FlameSafe FSP 1000 Putty

This easy-to-install, nonhardening cost-effective firestop is approved for power and data communication cables. It is intumescent, expanding to arrest the spread of smoke, fire and toxic gasses in fire-rated walls, ceilings and floors. FSP 1000 Putty allows for easy re-entry, making it especially well-suited for applications in which penetrants change frequently. Best known for its ease of application and retrofit, FSP 1000 does not require tools. Simply hand pack the putty into the opening. In retrofit applications, remove the putty, make the necessary cable changes and repack the opening with the same putty.

FlameSafe Mortar Seal

FlameSafe Mortar Seal is the most cost-effective endothermic firestop material available for projects with many large openings. It is a lightweight, low density product that is mixed with water to produce the proper consistency for pouring, pumping or troweling into the cavity. Common plaster machines may be used to mix and pump into large openings. Mortar Seal is a paintable, portland cement based product that does not shrink and, when cured, ensures a smoke-tight seal. It has a zero flamespread rating and does not contain solvents, asbestos or silicones.

FlameSafe Intumescent Sleeve (FSIS)

FSIS is a firestop seal for PVC, cc-PVC, CPVC, fiber reinforced plastic (FRPP), polypropylene (PP) and acrylonitrile-butadiene-styrene (ABS) pipe and rigid nonmetallic conduit installations. Easily installed without modification, steel bolts or fasteners, the FSIS is an ideal approach for firestopping combustible pipes penetrating the uneven contours of concrete fluted deck assemblies and also eliminates the need for collars or wrap strips. The FlameSafe Intumescent Sleeve easily wraps around pipes and is manu-

factured from a durable 28 gauge galvanized steel outer shell that is lined with a highly intumescent, malleable material. It is secured with either fiberglass tape, pop rivets or hose clamps around the pipe. When used in conjunction with the FS 900+ or FS 1900 caulk, it produces an immediate smoke seal. The FlameSafe Intumescent Sleeve will firestop both sides when installed from either side in concrete walls or floors. Easily installed and cost-effective, the sleeve also can be used in applications that require retrofit. The FlameSafe Intumescent Sleeve intumesces in 2 stages, starting at 250 degrees F (121 degrees C) and continuing through the duration of the burning process.

FSIS is available in sizes that can cover 2" - 8" (51 - 203 mm), the FlameSafe Intumescent Sleeve can be easily modified to accommodate unique or nonstandard pipe sizes. The sleeve is sold in single units for easy ordering, storage and handling.

FlameSafe Intumescent Wrap Strip (FSWS)
FSWS is a highly flexible, resilient strip designed to firestop combustible penetrants in fire-rated walls and floors. Highly intumescent, the FSWS rapidly forms a dense char to prevent the spread of fire, smoke and toxic gasses when exposed to temperatures in excess of 250 degrees F (121 degrees C). The FSWS continues to expand up to 1000 degrees F (538 degrees C). Available in 12' (3.7 m) rolls, the FlameSafe Wrap Strip is easy to cut and fabricate. The FlameSafe Intumescent Wrap Strip (FSWS) is used to firestop combustible penetrants such as PVC, cc-PVC, CPVC, FRPP and ABS pipe as well as insulated pipe. It has been tested and approved for use in concrete floors or walls as well as wood joist and wood chase wall floor/ceiling assemblies. Some applications, where annular space is restricted, may require the use of the FlameSafe Restraining Collar with the wrap strip.

FlameSafe Cable Protection
Electrical cables can be a major source of fuel for potential 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 fire resistant, they cannot be totally fireproof. Cables in trays or mounted on cable racks are configured perfectly for the propagation of fire. These cables provide a source of fuel and the perfect spacing for the necessary flow of oxygen. Tests show that even cables qualified or rated for fire resis-

tance will propagate fire with sufficient airflow. The addition of industrial or utility contaminants such as paper pulp dust or coal dust adds to the dangers by providing fuel that is readily ignitable by welding sparks or even spontaneous combustion. FlameSafe Cable Protection Products and Systems are designed to limit the propagation of fire on electrical conductors such as cables in trays, loose cable bundles and other cable installations. For over 25 years, major utilities and corporations have made FlameSafe Cable Protection Products the industry standard. FlameSafe Cable Protection Products have evolved and changed to meet the needs of the industry that they serve. Today, FlameSafe stands alone as having the most complete systems for protecting cable installations. FlameSafe Firestop Products and Systems protect cable installations where they pass through fire-rated walls and floors.

SIZES

Product package size varies with type of product. See manufacturer's catalog or product data sheets.

LIMITATIONS

Installations are design dependent and must comply with fire tested assembly details published by the agency which conducted the fire test. Failure to comply with tested system details can result in failure under extreme conditions of fire exposure.

4. Technical Data

APPLICABLE STANDARDS

ASTM International

- ASTM E84 (UL 723) Standard Test Method for Surface Burning Characteristics of Building Materials
- ASTM E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- ASTM E119 (UL 263) Standard Test Methods for Fire Tests of Building Construction and Materials
- ASTM E814 (UL 1479/CAN4-S115M) Standard Test Method for Fire Tests of Through-Penetration Fire Stops
- ASTM E1399 (UL 2079) Standard Test Method for Cyclic Movement and Measuring the Minimum and Maximum Joint Widths of Architectural Joint Systems
- ASTM E1966 (UL 2079) Standard Test Method for Fire-Resistive Joint Systems
- ASTM E2307 Standard Test Method for Determining Fire Resistance of Perimeter

Fire Barrier Systems Using Intermediate-Scale, Multi-Story Test Apparatus

Institute of Electrical and Electronics Engineers (IEEE) - IEEE 383 Vertical Cable Tray Flame Test Method for Electrical Applications

Factory Mutual (FM) - Approval Guide

Underwriters Laboratories, Inc. (UL)

- Refer to Listing Card Numbers R11636 and R14260
- Refer to the UL Fire Resistance Directory for specific numbered systems

Underwriters' Laboratories of Canada, Ltd. (ULC) - Refer to Certification Listing

Warnock Hersey (Intertek) - Refer to Certification Listing

OMEGA Point Laboratories

APPROVALS

City of New York, New York, Department of Buildings

- MEA 83-89-M, Vol. VI
- MEA 83-89-M, Vol. V
- MEA 179-96-M, Vol. II
- MEA 41-00-M, Vol. II
- MEA 47-98-M, Vol. II
- MEA 189-99-M, Vol. II
- MEA 447-04-M
- MEA 448-04-M
- MEA 398-04-M

ICC Evaluation Services

- ESR-1043

PACKAGING

See Table 1.

FIRE PERFORMANCE AND RATINGS

Hundreds of assembly fire ratings are available and vary depending on the specific product and tested assembly. Consult manufacturer's product manual, website or the fire resistance design manual published by the testing agency.

5. Installation

PREPARATORY WORK

Handle and store product according to Grace recommendations. All contact surfaces must be free of loose dirt, scale, oil or other foreign materials.

METHODS

Installation procedures and materials used vary according to the product, the size of the opening being protected and the type of penetrant. Sealant material may be installed



TABLE 1 PRODUCT DATA			
Catalog No.	Description	Standard package	
FS 900+ Elastomeric Sealant		Units	Weight, lb (kg)
	(Red) Caulk 10 oz (0.32 L) tube	12	11 (5.0)
	(Red/Gray) Foil Pack 20.2 oz (0.53 L)	12	21 (9.5)
	(Red/Gray) Caulk 31 oz (0.95 L) tube	6	18 (8.2)
	(Red/Gray) Caulkable/trowelable 5 gal (19 L) pail	1	57 (25.9)
	(Red) Self-leveling 5 gal (19 L) pail	1	57 (25.9)
FS 1900 Intumescent/Elastomeric Sealant			
	Caulk 10.3 oz (0.32 L) tube	12	11 (5.0)
	Foil Pack 20.2 oz (0.53 L)	12	21 (9.5)
	Caulk 31 oz (0.95 L) tube	6	18 (8.2)
	Trowelable 1 gal (3.8 L) pail	4	48 (21.8)
	Trowelable 5 gal (19 L) pail	1	53 (24.1)
FS Silicone Sealant			
	Caulkable 5 gal (19 L) pail	1	55 (25)
	Self-leveling 5 gal (19 L) pail	1	55 (25)
FS 3000 Elastomeric Coating			
	Spray Coating 5 gal (19 L) pail	1	55 (25)
FSP 1000 Intumescent Putty			
	Non-Hardening (red) 36 in ² (590 cm ²)	6	14 (6.4)
	Non-Hardening (red) 25 lb (11.4 kg) pail	1	27 (12.3)
FSP 1077 Intumescent Putty Pads			
	Non-Hardening Box Pads 7 1/4" x 7 1/4" (178 x 178 mm)	20	11 (5)
	Non-Hardening Box Pads 8 1/4" x 8 1/4" (206 x 206 mm)	20	15 (6.8)
FlameSafe Bags			
	FSB 50 1/2" x 7" x 13 1/2" (13 x 178 x 343 mm)	20	12 (5.5)
	FSB 75 3/4" x 7" x 13 1/2" (19 x 178 x 343 mm)	35	35 (15.9)
	FSB 150 1 1/2" x 7" x 13 1/2" (38 x 178 x 343 mm)	20	36 (16.3)
FlameSafe Pillows			
	FSPIL1 6" x 9" x 1" (152 x 228 x 25 mm)	20	5 (2.3)
	FSPIL2 6" x 9" x 2" (152 x 228 x 51 mm)	20	7 (3.2)
	FSPIL4 6" x 9" x 4" (152 x 228 x 102 mm)	20	12 (5.4)
Fire-Rated Mortar			
	FS Mortar Seal 22 lb (10 kg) dry mix bag	1	23 (10.4)
	FS Mortar Seal 22 lb (10 kg) dry mix bag 6 gal (23 L) pail	1	26 (11.8)
Sleeves			
	FSIS 200 2" (51 mm) 1 1/2" (38 mm) OD	6	10 (4.5)
	FSIS 300 3" (76 mm) 1 1/2" (38 mm) OD	6	12.8 (5.8)
	FSIS 400 4" (102 mm) 1 1/2" (38 mm) OD	6	15.6 (7.1)
	FSIS 600 6" (102 mm) 1 1/2" (38 mm) OD	1	5 (2.3)
	FSIS 800 8" (102 mm) 1 5/8" (41 mm) OD	1	6 (2.7)

using a standard or powered caulk gun or troweled into place using a mason's trowel or putty knife. Some materials are installed with spray equipment. In many cases, there are temperature range recommendations.

Complete installation recommendations are available from the manufacturer. See product data sheets or consult with technical support staff.

BUILDING CODES

Current data on building code requirements and product compliance may be obtained from the manufacturer's technical support specialists. Installation must comply with the requirements of applicable local, state and national code jurisdictions.

6. Availability & Cost

AVAILABILITY

FlameSafe products are available through authorized distributors. Contact manufacturer for more information.

COST

Budget installed cost information may be obtained from a local distributor or through the manufacturer.

7. Warranty

All statements, technical information and recommendations contained in the product documentation are based on tests believed to be reliable. However, since the conditions of use and applications are beyond the manufacturer's control, the manufacturer shall not be liable for any damage direct or consequential, resulting from the use of these materials or designs. The manufacturer's only warranty shall be to replace any of its products found to be defective.

8. Maintenance

FlameSafe applications are maintenance-free; however, installations should be periodically inspected for accidental damage and repaired using the material required by the original approved design.

9. Technical Services

The manufacturer provides toll-free technical support for all its products. Call Technical Service at (866) 333-3SBM (3726) for assistance in product selection and for detailed specifications and approvals. The manufacturer provides engineering analyses for unique firestopping applications, including system design drawings suitable for submittals. Material Safety Data Sheets (MSDS) are also available.

10. Filing Systems

- Reed First Source®
- MANU-SPEC®
- Sweet's Catalog Files
- Additional product information is available from the manufacturer upon request.

TABLE 1 PRODUCT DATA, CONT.			
Catalog No.	Description	Standard package	
		Units	Weight, lb (kg)
FS Intumescent Wrap Strip			
FS Wrap Strip	12" x 1" x 1/4" (3658 x 25.4 x 6.4 mm)	1	2 (0.9)
FS Wrap Strip	12" x 1 1/2" x 1/4" (3658 x 38.1 x 6.4 mm)	1	2.4 (1.1)
FS Restraining Collar	25" x 1" (7620 x 25.4 mm)	1	3.5 (1.6)
FS Restraining Collar	25" x 1 1/2" (7620 x 38 mm)	1	4 (1.8)
FlameSafe PVC Pipe Seal Devices			
FSD 400	PVC pipe seal 4" max. OD (115 mm max. OD of pipe)	4	20 (9.1)
FSD 600	PVC pipe seal 6" max. OD (180 mm max. OD of pipe)	2	14 (6.3)
FSD 800	PVC pipe seal 8" max. OD (240 mm max. OD of pipe)	1	9 (4.1)
FlameSafe Wrap Strip Devices (Preassembled)			
FSWSD 1" - 150"	Pipe seal 1 1/2" max. (48 mm max. OD of pipe)	1	0.35 (0.16)
FSWSD 1" - 200"	Pipe seal 2" max. (63 mm max. OD of pipe)	1	0.40 (0.18)
FSWSD 1" - 300"	Pipe seal 3" max. (90 mm max. OD of pipe)	1	0.75 (0.34)
FSWSD 1" - 400"	Pipe seal 4" max. (115 mm max. OD of pipe)	1	1.2 (0.54)
FSWSD 1 1/2" - 150"	Pipe seal 1 1/2" max. (48 mm max. OD of pipe)	1	0.40 (0.18)
FSWSD 1 1/2" - 200"	Pipe seal 2" max. (63 mm max. OD of pipe)	1	0.50 (0.23)
FSWSD 1 1/2" - 300"	Pipe seal 3" max. (90 mm max. OD of pipe)	1	0.90 (0.41)
FSWSD 1 1/2" - 400"	Pipe seal 4" max. (115 mm max. OD of pipe)	1	1.40 (0.63)

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FS-050F 08/06 Printed in the U.S.A. MGH/
LJ/ZM