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Hoffman Construction Company of Oregon

Loaves & Fishes

Job #1950002

Submittal #01-170391-DFS-05-CO
Firestopping

This submittal contains:
Three sets of fire stopping product data grouped by subcontractor

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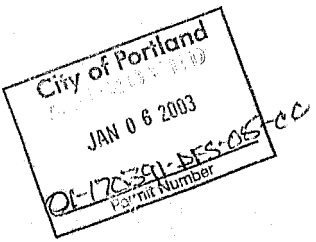


01-170391-DFS-05-CO

AM. HEATING

3M

Fire Barrier CP 25WB+ Caulk

Product Data

CLASSIFIED C UL US

FILL VOID OR CAVITY MATERIALS CLASSIFIED BY UNDERWRITERS LABORATORIES, INC.® FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS. SEE CURRENT UL FIRE RESISTANCE DIRECTORY 50L6, 90G9

1. Product Description

3M™ Fire Barrier CP 25WB+ Caulk is a premium elastomeric latex caulk designed for use as a one-part fire, smoke, noxious gas and water sealant. In addition, the unique intumescent property of this material (expands when heated) means that as cable or pipe insulation is consumed by fire, CP 25WB+ Caulk expands to maintain the penetration seal.

CP 25WB+ Caulk features superior adhesion strength, caulk rate and no-sag application with expanded UL Classified fire protection systems plus a halogen-free formula.

3M Fire Barrier CP 25WB+ Caulk can be installed with a standard caulking gun, pneumatic pumping equipment or it can be easily applied with a putty knife or trowel. CP 25WB+ Caulk will bond to concrete, metals, wood, plastic and cable jacketing. No mixing is required.

CP 25WB+ Caulk Features

- Water Base: Easy clean up, no special handling, routine disposal.
- Intumescent: Expands when heated to seal around items consumed by fire.
- Endothermic: Absorbs heat energy, releases chemically bound water.
- Thixotropic: Will not sag or run in overhead or vertical applications.
- Halogen-free.
- Fast dry: Tack-free in approximately 10-15 minutes.
- Paintable. (Best results obtained after 72 hour cure.)
- Minimal shrinkage.
- Brown color.
- Water seal: Seals against inadvertant water spills in the unexpanded state.
- High caulk rate: 1000 g/min. with in. nozzle.
- Point contact allowed.
- Continuous Operating Temperature not to exceed 120°F (48°C).

2. Applications

Use to seal construction openings, blank openings and penetrating items against the passage of flame noxious gas, smoke and water. Restores fire rated construction to original integrity. Also for use with 3M Brand Fire Barrier Penetrating Sealing Systems 7902 and 7904, FS195+ Wrap/Strip and CS-195+ Composite Sheet.

3. Physical Properties

A. Volume Fill Guide for Core Drilled Holes

Application guide for filling holes with CP 25WB+ Caulk

Metallic Pipe Size	Actual Pipe O.D.	Common Hole or Sleeve I.D.	Volume of Caulk Req'd 1/2 in Depth (in^3)	Cartridges of Caulk	Gallons of Caulk
1 in.(35,4 mm)	1.32 in. (33,5 mm)	2 in.(50,8 mm)	0.89	.05	.004
2 in.(50,8 mm)	2.38in.(60,4 mm)	3 in.(76,2mm)	1.31	.07	.006
3 in. (76,2 mm)	3.50 in.(88 9 mm)	4 in.(101,6 mm)	1.47	.08	.007
4 in.(101,6 mm)	4.50 in.(114,3 mm)	5 in. (127,0 mm)	1.87	.10	.009
5 in.(127,0 mm)	5.56 in.(141,2 mm)	6 in. (152,4 mm)	2.00	.11	.009
6 in.(152 mm)	6.63 in.(168,4 mm)	8 in. (203,2 mm)	7.87	.41	.04
8 in.(20?,2 mm)	8.63 in.(219,2 mm)	10in.(254,0mm)	10.02	.53	.05
10 in.(254,0 mm)	10.75 in.(273,0 mm)	12 in. (304,8 mm)	11.16	.59	.05
12 in.(304,8 mm)	12.75 in.(323,8 mm)	14 in. (355,6 mm)	13.05	.69	.06

Notes:
1. Final caulk requirements may vary if criteria is different than stated in the application guide.
2. When the maximum annular space is 1-1/4 in. (31,8 mm) or less, a 1/2 in. (12,7 mm) minimum depth of CP 25WB+ Caulk is required.
3. When the maximum annular space is larger than 1 in. (25,4 mm) or the pipe O.D is greater than 12 in. (304,8 mm), a 1 in. (25,4 mm) minimum depth of CP 25WB+ Caulk is required.
4. Damming materials, such as fiberglass, mineral wood or backer rod, may be used to support the CP 25WB+ Caulk.

4. Specifications

Product

The firestopping caulk shall be a one-part, intumescent, latex elastomer. The caulk shall be capable of expanding a minimum of 3 times at 1000°F. The material shall be thixotropic and be applicable to overhead, vertical and horizontal firestops. The caulk shall be listed by independent test agencies such as UL or FM and be tested to, and pass the criteria of, ASTM E 814 Fire Test, tested under positive pressure. It shall comply with the requirements of the NEC (NFPA-70), BOCA, ICBO, SBCCI and NFPA Code #101 .

Typically Specified Divisions

Division 7	Thermal and Moisture Protection Firestopping
07270	
Division 13	Special Construction Fire Suppression and Supervisory Systems
13900	
Division 15	Mechanical
15250	Mechanical Insulation Fire Protection
15300	
Division 16	Electrical
16050	Basic Electrical Materials and Methods

5. Performance

A. Typical Physical Properties

	Unit	Value
Tack Free Time (ASTM C679-87)	Minutes at 72° F (22°C)	10-15
Expansion at 662°F (350°C)	X	2.0-3.0
Color	—	Reddish Brown
Density	Lb./gal. (Kg/l)	11.25 (1,35)
Adhesion	All construction substrates	Very Good
Application	Methods	Caulk guns, trowel, spatula pressurized pumps
Durometer (hardness)	Shore A	74
ASTM E 84		
Flame Spread	—	5
Smoke Development	—	0
Solids	Percent (%) by weight	79
VOC	Percent (%) by weight	0
Odor	—	Pleasant, non-irritating
Flow Rate 1/4 in. (6,35 mm) nozzle at 50 psi	Grams/min.	1000
Boeing Flow (Sag Characteristics)	Inches	0

B. Firestopping Properties

Meets the criteria of ASTM E 814 Fire Test, tested under positive pressure. Consult current UL Fire Resistance Directory for systems listed under 3M Product CP 25WB+ Caulk.

C. Firestopping Code Requirements

ICBO Uniform Building Code (1997 Edition)	SBCCI Standard Building Code (1997 Edition)	BOCA Basic/National Building Code (1996 Edition)		NFPA Life Safety Code 101 (1997 Edition)
702 DEFINITIONS	104.2.4 PLANS MUST SHOW HOW INTEGRITY IS MAINTAINED FOR ASSEMBLIES PENETRATED	702.0 REVISED AND EXPANDED DEFINITIONS FOR PENETRATIONS AND JOINTS	709.6 PENETRATIONS - REFER TO 714	6-2.3.2.4 PENETRATIONS AND MISC. OPENINGS &FIRE BARRIERS
706 CONSTRUCTION JOINTS	202 DEFINITIONS	703.1 CONSTRUCTION DOCUMENTS SHALL INDICATE DETAILS AND MATERIALS FOR PROVIDING RATINGS AT JOINTS AND PENETRATIONS	709.7 JOINTS	6.2.4.2, EXCEPTION 5 OPENINGS (EXPANSION OR SEISMIC JOINTS) IN FLOORS
708 WOOD FRAME CONSTRUCTION FIREBLOCKING	705.3 WOOD FRAME CONSTRUCTION FIREBLOCKING		711.0 FIRE PARTITIONS	APPENDIX A-6-2.4.2
709 WALL & PARTITION PENETRATION PROTECTION	705.3.1.5 CURTAIN WALL GAP	703.1.1 PENETRATIONS AND JOINTS SHALL NOT BE CONCEALED FROM VIEW BEFORE INSPECTION	711.6 PENETRATIONS - REFERS TO 714	6-3.6.1 PENETRATIONS AND MISC. OPENINGS IN FLOORS AND SMOKE BARRIERS
709.3.2.2 CURTAIN WALL GAP	705.4 (GENERAL) PENETRATIONS OF FIRE RATED ASSEMBLIES		711.7 JOINTS - REFER TO 709.7	NFPA #221
710 FLOOR/CEILING OR ROOF/CEILING PENETRATION PROTECTION	705.5 (WALLS)	703.2 BUILDINGS FOR MORE THAN TWO STORIES SHALL INDICATE ALL PENETRATIONS	713.0 FLOOR/CEILING AND ROOF/CEILING ASSEMBLIES	FIRE WALLS AND BARRIERS
711.3 SHAFT ALTERNATIVE	705.6 (FLOORS)		713.2 CURTAIN WALL GAP	**NFPA Code 70 NEC National Electric Code**
714 THROUGH-PENETRATION FIRESTOPS F&T REQUIREMENTS	705.7 FIRE RESISTANT JOINT SYSTEMS	704.1.1 SUFFICIENT DATA SHALL BE AVAILABLE TO JUSTIFY UNTESTED MATERIALS USED FOR RESTORATION OF FIRE RATINGS	713.4 PENETRATIONS - REFERS TO 714	300-21 FIRESTOPPING
UBC STANDARD 7-1 EQUIVALENT TO ASTM E 119		707.0 FIRE WALLS AND PARTY WALLS	713.5 JOINTS - REFERS TO 709.7	**CABO One and Two Family Dwelling Code (1995 Edition)**
UBC STANDARD 7-5 EQUIVALENT TO ASTM E 814		707.10 PENETRATIONS - REFERS TO 714	714.0 PENETRATIONS - ALL REQUIREMENTS (GENERAL)	602.7 FIRESTOPPING (FIREBLOCKING IN OTHER MODEL CODES)
		707.8 JOINTS - REFERS TO 709.7	714.1 THROUGH 714.1.6.2 WALL ASSEMBLIES	
		709.0 FIRE SEPARATION ASSEMBLIES	714.2 THROUGH 714.2.6.5 FLOOR/CEILING AND ROOF/CEILING ASSEMBLIES	
			714.3 THROUGH 714.3.2 NONRATED ASSEMBLIES	
			721.0 FIREBLOCKING AND DRAFTSTOPPING	

6. Installation Techniques

Shown are examples of approved applications of CP 25WB+ Caulk. Additional drawings and details are available through your Authorized 3M Fire Protection Products Distributor.

Installation Notes:

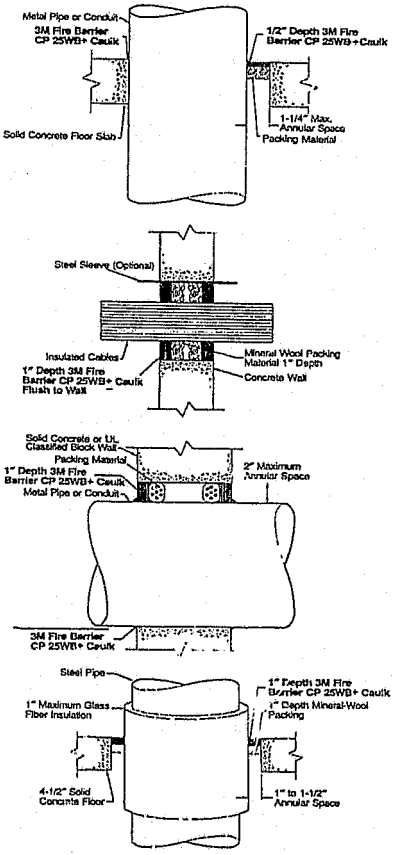
1. Metal Pipe/Conduit applications through nominal 12 in. (304,8 mm) outside diameter.
   - Installed depth of CP 25WB+ Caulk depends on annular space.
   - When the annular space is less and 1-1/4 in. (31,8 mm), a 1/2 in. (12,7 mm) minimum depth of CP 25WB+ Caulk is required.
   - When the annular space is greater than 1-1/4 in. (31,8 mm), a 1 in. (25,4 mm) minimum depth of CP 25WB+ Caulk is required.
   - Common building materials, such as backer rod may be used for metal pipe applications.

2. Metal Pipe applications larger than nominal 12 in. (304,8 mm) outside diameter.
   - All cases require a 1 in. (25,4mm) minimum depth of CP 25WB+ Caulk.

3. Insulated Cable Applications.
   - All cases require a 1 in. (25,4mm) minimum depth of CP 25WB+ Caulk.
   - All cases require mineral wool (safing) for packing.

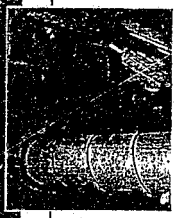
4. Fiberglass Insulated Pipe Applications.
   - 1 in. (25,4 mm) of fiberglass insulation on up to a nominal 12 in. (304,8 mm) of metal pipe may be firestopped with a 1 in. (25,4 mm) depth of CP 25WB+ Caulk.
   - 1 in. (25,4 mm) depth of mineral wool packing required.

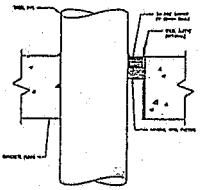
Typical Penetration Firestops For Metal Pipe/Conduit and Insulated Cable Through Fire Rated Construction



BERGELECTRIC

3M™ Fire Barrier CP 25WB+ Caulk

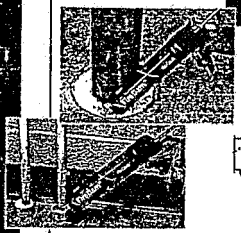


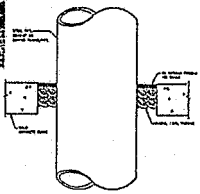


Our premium, intumescent latex/water-based caulk.

- Water based—easy cleanup and routine disposal with no special handling
- One-part system—no mixing or measuring required
- Intumescent and endothermic
- No-sag, non-halogen formula
- Fast-drying—tack-free in approximately 10–15 minutes
- Water-resistant seal
- Paintable
- Documented aging properties

Interam™ FireDam™ 150 Caulk

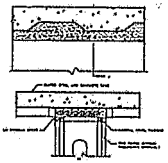


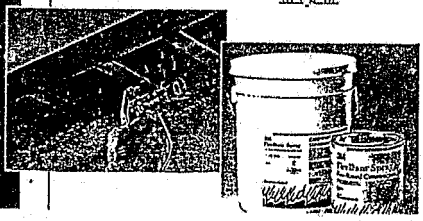


An economical alternative for metal pipe applications in an endothermic, water-based form.

- High flow rate in a no-sag formula
- Easily spread to a smooth finished surface
- One-part system—no mixing or measuring required, no damming materials needed
- Low shrinkage
- Paintable
- Documented aging properties

3M™ FireDam™ Spray





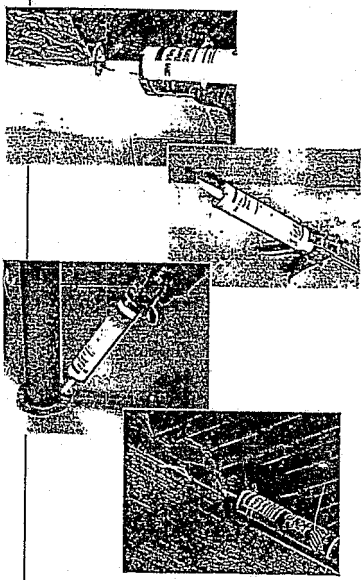
This sprayable coating is a quicker, easier, more cost-effective alternative to caulking. It's designed for firestopping head-of-wall and other construction joints.

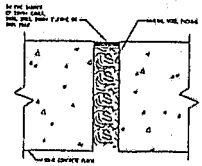
- Water based—dries in ambient conditions
- Bonds quickly to substrate to form a flexible seal
- High coverage rate—reduces installation time
- Paintable
- Applied with conventional airless spray equipment

3M™ Fire Barrier Silicone Sealants and Foam

3M silicone sealants (one-part, ready-to-use elastomers) and RTV foam (two-part, liquid-silicone elastomer) share these properties:

- Good for both joint and through-penetration applications
- Re-enterable/repairable
- Excellent weatherability and sound-barrier properties
- Cure upon exposure to atmospheric humidity





3M™ Fire Barrier 1000 and 1003 Silicone Sealants

Available in a nonslump formula (1000) for floor and wall openings, and a self-leveling formula (1003) for floor openings.

3M™ Fire Barrier 2000 and 2003 Silicone Sealants

Available in nonslump (2000) and self-leveling (2003) formulas.

- 2000 is great for top-of-wall/head-of-wall joints
- Accommodates vibration from normal building movement
- Maximum pipe size of 24 inches (609 mm)
- Compression/extension recovery of ±31% of original joint width

3M™ Fire Barrier 2000+ Silicone Sealant

Bonds to most common construction materials to form a flexible seal.

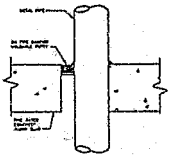
- Superior adhesion
- Remains elastomeric and is weather resistant
- Provides up to a four-hour fire-rating
- Compression/extension recovery of ±15% of original joint width

3M™ Fire Barrier 2001 Silicone RTV Foam

A two-part, liquid-silicone elastomer that foams in place when mixed. Firestops and seals large and complex penetrations.

- Cures in 1–5 minutes to form an elastomeric compression seal
- No ampacity derating of cables when used properly
- Easily mixed by hand (small amounts) or by automated mixing and dispensing equipment (large amounts)

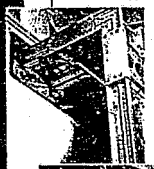
3M™ Fire Barrier Moldable Putty+

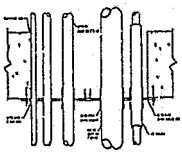


This one-part, 100%-solids intumescent firestop restores the integrity of fire-rated building construction.

- Ideal for construction gaps, cable, insulated pipe, electrical conduit and metal pipe
- Intumescent
- UL-classified for telecommunications applications (interducts, fiber optics, cables and cable trays)
- Provides draft and cold smoke seal even before temperature rises
- Remains pliable and flexible—easily re-enterable
- Non-halogen, non-toxic formula
- Available in stix or pads for various sizes of electrical boxes
- Pads are classified for use on plastic electrical boxes
- Documented aging properties

3M™ Fire Barrier CS-195+ Composite Sheet

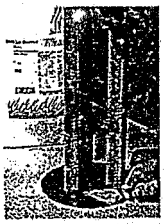




This organic/inorganic elastomeric sheet is bonded on one side to a layer of 28-gauge galvanized steel. The other side is reinforced with steel-wire mesh and covered with aluminum foil.

- Ideal for fire-stopping blank openings and through-penetrations of multiple cable, pipe ducts, buss ducts and cable trays
- Intumescent
- Lightweight and easy to handle—just cut and form to fit
- Easy to install using common trade tools
- Easy to fasten—bolt punch or drill through and use self-tapping screws or anchor bolts
- Bottom-of-floor applications available
- No mixing or damming required
- Re-enterable
- Documented aging properties

3M™ Fire Barrier Mortar

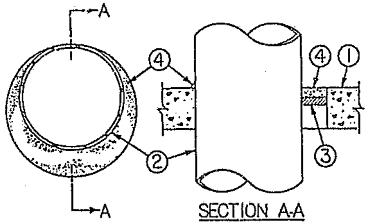


This lightweight cementitious firestop with excellent adhesion bonds to concrete, metals, wood, plastic and cable jacketing.

- Variable mix ratio—permits self-leveling and no-sag application consistencies
- Re-enterable—no power tools needed
- Bonds to itself—proven prior to and during fire testing
- Pumpability—allows faster installation
- Greater resistance to common concrete poisons than PC-bound products
- Contains no asbestos

System No. C-AJ-1001

(Formerly System No. 49)
F Rating — 3 Hr
T Rating — 0 Hr



1. Floor or Wall Assembly — Min 4-1/2 in. thick lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of circular through opening is 22-1/2 in.
   See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

1A. Steel Sleeve — (Optional, not shown) — Nom 12 in. diam (or smaller) Schedule 40 (or heavier) steel pipe sleeve cast into concrete floor or wall. Sleeve to be flush with or project max 2 in. from top surface of floor or from both surfaces of wall.

2. Through — Penetrant — One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening shall be min of 0 in. (point contact) to max 1-3/8 in. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 30 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
   A1. Iron Pipe — Nom 30 in. diam (or smaller) cast or ductile iron pipe.
   B. Conduit — Nom 6 in. diam (or smaller) rigid steel conduit.
   C. Conduit — Nom 4 in. diam (or smaller) steel electrical metallic tubing.

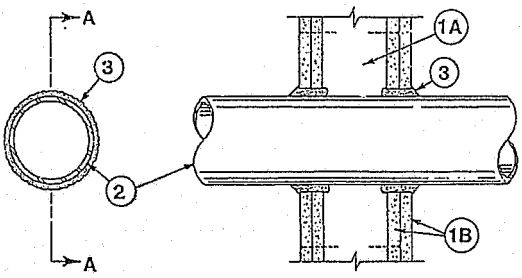
3. Packing Material — Polyethylene backer rod or nom 1 in. thickness of tightly-packed ceramic (alumina silica) fiber blanket, mineral wool batt or glass fiber insulation material used as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of solid concrete or concrete block wall as required to accommodate the required thickness of caulk fill material (Item 4). As an alternate when max pipe size is 10 in. diam and when max annular space is 1 in., a min 1 in. thickness of tightly-packed ceramic fiber blanket or mineral wool batt packing material may be recessed min 1/2 in. from bottom surface of floor or from either side of solid concrete wall.

4. Fill, Void or Cavity Materials* — Caulk — Applied to fill the annular space to the min thickness shown in the following table:

Max Pipe Diam In.	Max Annular Space In.	Packing Mtl Type (a)	Min Caulk Thkns In.
10	1	BR, CF, GF or MW	1/2 (b)
10	1	CF or MW	1/2 (c)
20	2-1/2	BR, CF, GF or MW	1 (b)

2000 Update

System No. W-L-1001
(Formerly System No. 147)
F Ratings—1, 2, 3 and 4 Hr (See Items 2 and 3)
T Ratings—0, 1, 2, 3, and 4 Hr (See Item 3)
L Rating At Ambient—less than 1 CFM/sq ft
L Rating At 400 F—less than 1 CFM/sq ft



SECTION A-A

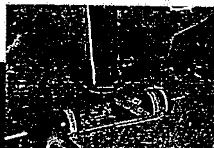
1. Wall Assembly—The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs—Wall framing may consist of either wood studs (max 2 h fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-5/8 in. wide by 1-3/8 in. deep channels spaced max 24 in. OC.
   B. Wallboard, Gypsum*—Nom 1/2 or 5/8 in. thick, 4 ft. wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 13-1/2 in.
2. Pipe or Conduit—Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe, nom 12 in. diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. diam (or smaller) Class 50 (or heavier) ductile iron pressure pipe, nom 6 in. diam (or smaller) steel conduit, nom 4 in. diam (or smaller) steel electrical metallic tubing, nom 6 in. diam (or smaller) Type L or (or heavier) copper tubing or nom 1 in. diam (or smaller) flexible steel conduit. When copper pipe is used, max F Rating of firestop system (Item 3) is 2 h. Steel pipes or conduits larger than nom 4 in. diam may only be used in walls constructed using steel channel studs. A max of one pipe or conduit is permitted in the firestop system. Pipe or conduit to be installed near center of stud cavity width and to be rigidly supported on both sides of wall assembly.
3. Fill, Void or Cavity Material*—Caulk—Caulk fill material installed to completely fill annular space between pipe or conduit and gypsum wallboard and with a min 1/4 in. diam bead of caulk applied to perimeter of pipe or conduit at its egress from the wall. Caulk installed symmetrically on both sides of wall assembly. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

A Powerful Package of Firestopping Products at an Affordable Price!

Most firestopping products have been designed to run the gauntlet in terms of being able to firestop the smallest, most common applications to the largest and most infrequently used. While high performance products are necessary in many situations, SpecSeal LC intumescent products represent a combination of materials, engineering, and testing designed to economically address the most common applications typically found in a very significant part of the construction market.

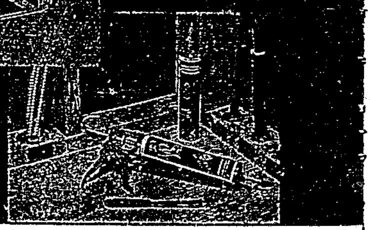
High in Quality... Low in Cost! SpecSeal LC Intumescent Firestopping Product line consists of a high quality latex based sealant and a compact, labor saving firestop collar for plastic pipes used in DWV applications. LC products apply powerful intumescent technology where it is often needed the most. These products alone or in concert are designed and tested to effectively seal virtually every opening typically found in grouped residential or commercial construction (or any other structures with similar applications) and do it at a price you can afford!

The Right Products ... The Right Systems! SpecSeal LC intumescent products are designed to provide the maximum protection to combustible penetrants such as non-metallic pipes or electrical, data, or telephone cabling. Additionally LC intumescents provide a level of protection to timber construction that non-intumescents can't hope to achieve. Not over-testing doesn't mean cutting any corners... It simply means doing it *right*. LC intumescent products are extensively UL tested using the most popular installation methods. Over 100 UL Classified systems provide full firestopping protection for the most common penetrants in virtually all common constructions.



SpecSeal FIRESTOP PRODUCTS

LCI FIRESTOPPING SEALANT



THE HIGH PERFORMANCE LOW COST SOLUTION!

Combustible penetrants in all constructions, and penetrants of any kind in combustible construction need the protection that only a high quality intumescent firestop sealant can provide. SpecSeal Series LCI has been designed to expand up to 10 times its installed volume when exposed to fire to help compensate for burning penetrants or the small gaps and openings that may develop due to shrinkage of wood structural members.

NO SKIMPING ON PERFORMANCE:

LCI stands for high performance without the high price and has been engineered and tested as a cost effective solution for sealing through-penetrations in light commercial and grouped residential construction or other structures with similar applications. A wide variety of tested, user-friendly systems have been UL Classified for all common constructions typically found in these construction segments.

SpecSeal Series LCI is a premium latex based firestopping sealant. Its binder system is totally resistant to water and will not re-emulsify after drying. With little or no odor, it is well suited for applications in occupied buildings. Cleanup is simple using soap and water. Colored pale red, for easy identification, LCI remains flexible when fully cured allowing for normal pipe movement.

A BROAD RANGE OF POWERFUL SYSTEMS:

SpecSeal Series LCI is an intumescent firestop sealant tested and approved for use on common insulated and non-insulated metallic pipes including steel, iron, cast iron, and copper pipes and tubes as well as nonmetallic pipes and tubes including PVC, CPVC, ABS, and PEX. Additionally LCI has been tested on sleeved systems as well as common electrical, telephone, data, and TV cabling systems. SpecSeal Series LCI has been engineered to adhere well to all common construction materials. See the LC Intumescent Product & Application Guide as well as Vol. 2 of the *UL Fire Resistance Directory* for complete systems information.

The Best Choice

Looking for economy and high-performance in a firestop sealant? Look no further... SpecSeal LCI has you covered.

APPLICATIONS

- Metallic Pipes - including steel, iron or copper pipe and tubing
- Nonmetallic Pipes, Conduits & Tubing - including PVC, CPVC, ABS and PEX
- Electrical & Electronic Cabling - including service entrance, power distribution, computer, telephone and television
- Metal Ductwork - including HVAC, bath and dryer vents
- Insulated Pipes - including heating, cooling, and condensation applications
- Complete Wood Floor Firestopping Package for electrical, plumbing, HVAC, TV and telephone

TESTED & PROVEN:

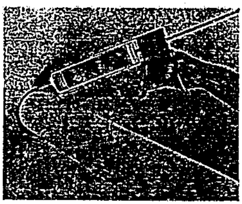
SpecSeal Series LCI is the basis for systems that meet the exacting criteria of ASTM E814 (UL1479). Tested systems provide up to a 2 hour fire rating using as little as 1/4" of sealant depth. LCI also meets Class A finish requirements as well as the firestopping requirements of all major regional codes.

EASY, SAFE & ECONOMICAL:

Initially available in 10.1 ounce caulk tubes and 5 gallon pails, SpecSeal Series LCI is packaged to suit your installation needs. LCI is easy to install using a standard caulk gun or putty knife. With excellent adhesion properties the installer can work in wall, floor or ceiling applications without the problem of slumping or sagging. LCI also demonstrates excellent autobonding capabilities over previously installed sealant.

FEATURES

- Economical: High performance without the high price
- Highly Intumescent: Expands up to 10X
- Excellent Smoke Seal
- Safe for contact with plastics
- Water Resistant: Will not re-emulsify when dry
- Water Based for easy installation, cleanup and disposal
- Acoustically Tested: Reduces noise transmission
- Low VOCs: Safe, no solvents, non-halogenated
- Pale Red for easy identification



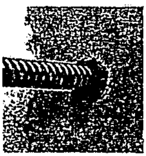
SpecSeal® LCI Intumescent Sealant

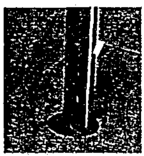
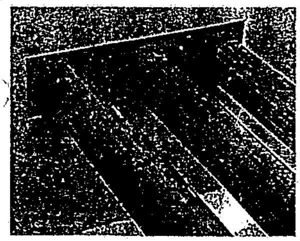
FILL, VOID OR CAVITY MATERIALS CLASSIFIED BY UNDERWRITERS LABORATORIES, INC.® FOR USE IN THROUGH-PENETRATION FIRE STOP SYSTEMS. SEE UL DIRECTORY OF PRODUCTS CERTIFIED FOR CANADA AND UL FIRE RESISTANCE DIRECTORY.

PHYSICAL PROPERTIES

Product Name	Series LCI Sealant
Color	Pale Red
Odor	Mild Latex
Density	9.0 Lbs/Gal
pH	9.0
VOC	0.29 Lb/Gal (35.0 g/L) ASTM D3960 OR EPA Method 24
Expansion Begins	320°F (160°C)
Volume Expansion	10X Free Expansion
In-Service Temp.	130°F (54°C)
Flame Spread	0
Smoke Development	5

Tested to ASTM E84 (UL723) at 14% surface coverage (modified test for sealants and caulks)



ORDERING INFORMATION

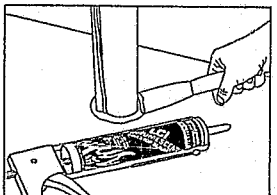
Product Name	Catalog No.	UPC No.	Description	Units Per Qty.	Std. Qty.
Series LCI Intumescent Sealant	LCI300	01170	10.1 oz. Tube	[illegible]	[illegible]
	LCI305	01175	5 Gal. Pail	[illegible]	[illegible]

SpecSeal FIRESTOP PRODUCTS

SERIES LCI INTUMESCENT SEALANT

Product Data Sheet

STI



CLASSIFIED UL — FILL, VOID OR CAVITY MATERIALS CLASSIFIED BY UNDERWRITERS LABORATORIES INC. ® FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS.

3L73 — SEE UL FIRE RESISTANCE DIRECTORY

CLASSIFIED C UL — CLASSIFIED FILL, VOID, OR CAVITY MATERIALS FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS. SEE UL DIRECTORY OF PRODUCTS CERTIFIED FOR CANADA AND UL FIRE RESISTANCE DIRECTORY

FEATURES

- **Economical** High performance without the high price!
- **Highly Intumescent** Expands up to 10X.
- **Excellent Smoke Seal**
- **Safe** for contact with plastics.
- **Water Resistant** Will not re-emulsify when dry.
- **Water-Based** for easy installation, cleanup, and disposal.
- **Acoustically Tested** Reduces noise transmission
- **Safe...** Low VOC's, No Solvents, Non-Halogenated
- **Pale Red Color** for easy identification

1. PRODUCT DESCRIPTION

SpecSeal® LCI Sealant is a versatile and economical intumescent product intended for firestopping a wide array of applications in small commercial or grouped residential construction and other structures with similar applications. SpecSeal® LCI Sealant is available in a single grade that has excellent caulking properties as well as high build properties on vertical or overhead surfaces. This single grade may be caulked (standard cartridge or bulk loaded), knifed or troweled. In addition, SpecSeal® LCI does not contain PCB's or asbestos.

SpecSeal® LCI Sealant is storage stable (when stored according to the manufacturer's recommendations), is asbestos free and will not separate or shrink when dried. SpecSeal® LCI Sealant will adhere to all common construction and penetrant materials and contains no solvents that might adversely effect plastic pipes or cable jackets.

2. APPLICATIONS

See Table A for a summary application list.

SpecSeal® LCI Sealant has a broad application base designed to seal a wide variety common penetrations in light commercial and grouped residential construction. Penetrant types include insulated and non-insulated metallic pipes and tubes, non-metallic pipes and tubes, and common electrical service and power distribution, telephone, data, and TV cabling. This product is also used in conjunction with other SpecSeal® Products such as SpecSeal® Firestop Collars and Wrap Strips to protect larger plastic pipes.

3. PHYSICAL PROPERTIES

See Table B.

4. PERFORMANCE

SpecSeal® LCI Sealant is the basis for systems that meet the exacting criteria of ASTM E814 (UL1479) as well as to the time-temperature requirements of ASTM E119 (UL263). LCI provides up to a 2-hour fire rating for typical service penetrations through concrete or wood floors, concrete or masonry walls, as well as gypsum board walls. LCI meets Class A finish requirements for Flame Spread and Smoke Development when tested in accordance with ASTM E84 (UL723). LCI Sealant is also acoustically tested, demonstrating excellent sound attenuation properties.

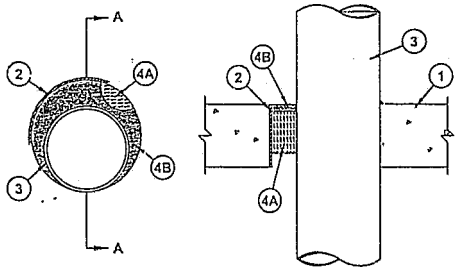
5. SPECIFICATIONS

The firestopping sealant shall be a water-resistant, intumescent latex sealant. The sealant when exposed to high heat or flame shall exhibit a free expansion of 2 to 8 times its original volume. The firestopping sealant shall contain no water soluble nor hygroscopic ingredients and shall be acoustically tested. The sealant shall be UL Classified and tested to the requirements of ASTM E814 (UL1479) and shall meet Class A finish requirements when tested in accordance with ASTM E84 (UL723).

SPECIFIED DIVISIONS

DIV.	7	07840	Through-Penetration Firestopping
DIV.	13	13900	Special Construction Fire Suppression & Supervisory Systems
DIV.	15	15250	Mechanical Insulation – Fire Protection
DIV.	16	16050	Basic Electrical Materials & Methods

For the latest Product and System Information, Call STI'S FACTS-ON-DEMAND automated information attendant system by dialing toll-free (888)526-6800!



Section A-A

System No. C-AJ-1353
F Rating — 2 Hr
T Rating — 0 Hr

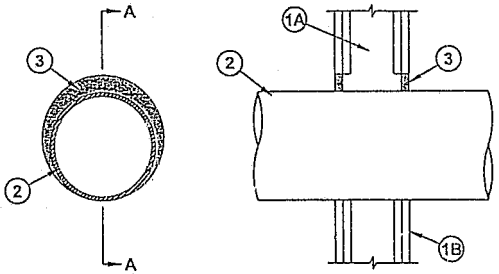
1. Floor or Wall Assembly — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor. Floor may also be constructed of any min 6 in. thick hollow-core Precast Concrete Units*. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 10 in. Max diam of opening in floors constructed of hollow-core concrete is 7 in.
   See Concrete Blocks (CAZT) or Precast Concrete Units (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
2. Steel Sleeve — (Optional) — Nom 10 in. diam (or smaller) Schedule 10 (or heavier) steel pipe cast or grouted into floor or wall assembly. Steel sleeve may be installed flush or may project a max 2 in. beyond the floor or wall surfaces.
3. Through Penetrant — One metallic pipe, conduit or tube to be installed eccentrically or concentrically within the firestop system. The annular space between the pipe, conduit or tube and the periphery of the opening shall be min 0 in. (point contact) to max 2 in. Pipe, conduit or tube to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of metallic pipes, conduits and tubes may be used:
   A. Steel Pipe — Nom 8 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. Iron Pipe — Nom 8 in. diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 6 in. diam (or smaller) rigid steel conduit, nom 4 in. diam (or smaller) steel electrical metallic tubing (EMT) or nom 4 in. diam (or smaller) flexible steel conduit.
   D. Copper Pipe — Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
   E. Copper Tube — Nom 4 in. diam (or smaller) Type L (or heavier) copper tube.

3A. Through Penetrating Product* — Flexible Metal Piping — As an alternate to Item 3, one nom 2 in. diam (or smaller) flexible steel pipe to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipe, conduit or tube and the periphery of the opening shall be min 0 in. (point contact) to max 2 in. Pipe to be rigidly supported on both sides of the floor or wall assembly.
   OMEGA FLEX INC.
   TITEFLEX CORP., A BUNDY CO.
   WARD MFG. INC.

4. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 4 pcf mineral wool batt insulation compressed and tightly packed to min 3 in. thickness. Packing material recessed from top surface of floor or both surfaces of wall as required to accommodate fill material (Item 4B). In floors constructed of hollow-core precast concrete units, packing material to be recessed from both top and bottom surfaces of floor as required to accommodate fill material (Item 4B). When steel sleeve projects from top of floor or from both sides of wall, the thickness of mineral wool batt packing material should be increased by an amount equal to the distance that the sleeve extends past the floor or wall surface.
   B. Fill, Void or Cavity Material* — Sealant — Min 1/2 in. thickness of fill material applied within annulus, flush with top surface of floor assembly or top edge of steel sleeve. In walls, min 1/2 in. thickness of fill material applied flush with both surfaces of wall assembly or both ends of steel sleeve. In floors constructed of hollow-core precast concrete units, fill material installed symmetrically on both sides of floor. At point contact location, apply min 1/4 in. diam bead of fill material at pipe/concrete interface or pipe/steel sleeve interface on top surface of floor or both surfaces of wall or precast concrete units.
      SPECIFIED TECHNOLOGIES INC. — SpecSeal LCI Sealant

* Bearing the UL Classification Marking

FOC



Section A-A

System No. W-L-1222
F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1/4, 3/4 and 1 Hr (See Item 2)

1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs** — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 3-5/8 in. wide and spaced max 24 in. OC.
   B. **Gypsum Board*** — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 10-5/8 in.

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. **Through Penetrant** — One metallic pipe, conduit or tube to be installed eccentrically or concentrically within the firestop system. The annular space between the pipe, conduit or tube and the periphery of the opening shall be min 0 in. (point contact) to max 2 in. Pipe, conduit or tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of metallic pipes, conduits and tubes may be used:
   A. **Steel Pipe** — Nom 8 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. **Iron Pipe** — Nom 8 in. diam (or smaller) cast or ductile iron pipe.
   C. **Conduit** — Nom 6 in. diam (or smaller) rigid steel conduit, nom 4 in. diam (or smaller) steel electrical metallic tubing (EMT) or nom 4 in. diam (or smaller) flexible steel conduit.
   D. **Copper Pipe** — Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
   E. **Copper Tube** — Nom 4 in. diam (or smaller) Type L (or heavier) copper tube.

Type of Penetrant	Max Diam	T Rating
Steel or iron pipe, steel conduit or EMT	2 in	1 hr
Steel or iron pipe, steel conduit or EMT	8 in.	3/4 hr
Copper pipe or tube	4 in.	1/4 hr

2A. **Through Penetrating Product* — Flexible Metal Piping** — As an alternate to Item 2, one nom 1-1/4 in. diam (or smaller) steel flexible metal pipe to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipe and the periphery of the opening shall be min 0 in. (point contact) to max 2 in. Pipe to be rigidly supported on both sides of the wall assembly.

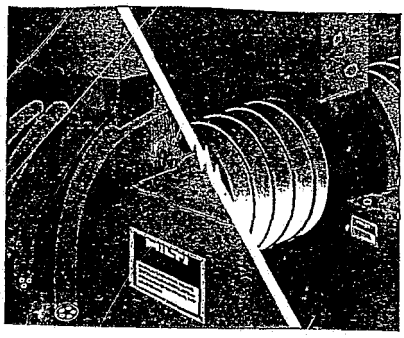
OMEGA FLEX INC.
TITEFLEX CORP., A BUNDY CO.
WARD MFG. INC.

3. **Fill, Void or Cavity Material* — Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. diam bead of fill material applied at metallic pipe/gypsum board interface on both surfaces of wall.

SPECIFIED TECHNOLOGIES INC. — SpecSeal LCI Sealant

* Bearing the UL Classification Marking

FS-ONE
High Performance Intumescent Firestop Sealant



Product description
- Intumescent (expands when exposed to fire) firestop sealant that helps protect combustible and non-combustible penetrations for up to 4 hours fire rating

Areas of application
- Steel, copper and EMT pipes
- Insulated steel and copper pipes
- Cable bundles
- Closed or vented plastic pipes
- HVAC penetrations

For use with
- Concrete, masonry, drywall and wood floor assemblies
- Wall and floor assemblies rated up to 4 hours

Examples
- Sealing around plastic pipe penetrations in fire rated construction
- Sealing around combustible and non-combustible penetrations in fire rated construction

System advantage/Customer benefits
- Protects most typical firestop penetration applications
- Easy to work with and fast cleanup
- Can be repenetrated when laying new cable
- Can be painted

Internationally tested and approved

CLASSIFIED UL — FILL, VOID OR CAVITY MATERIALS CLASSIFIED BY UNDERWRITERS LABORATORIES, INC. FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS SEE UL FIRE RESISTANCE DIRECTORY 6617

FM APPROVED For Permeation Fire Stops. Consult the Factory Mutual Research Corporation Approval Guide.

FS-ONE
Intumescent Firestop Sealant

Ordering Description	Color	Package contents	Volume	Item No.
FS-ONE, tube	red	10.1 oz. (300 ml)	18 in³	00259579
FS-ONE, foil	red	(Qty 20) 20.2 oz. (600 ml)	36 in³	00311387
FS-ONE, pail	red	5 Gallons (19 liter)	5115 in³	00259578

CB 200 PJ-300/310 ml Dispenser 00059205
600 ml Foil Dispenser 00024669

FS-ONE
High Performance Intumescent Firestop Sealant

Product description

- Intumescent (expands when exposed to fire) firestop sealant that helps protect combustible and non-combustible penetrations for up to 4 hours fire rating

Product features

- Smoke, gas and water resistant
- Contains no halogen, solvents or asbestos
- High fire rating properties
- Water based, easy to clean

Tested in accordance with

- UL 1479
- ASTM E 814
- ASTM E 84

Technical Data

FS-ONE Intumescent Firestop

(at 73°F (23°C) and 50% relative humidity)

Chemical basis:	Water-based intumescent acrylic dispersion
Density:	Approx. 1.5 g/cm³
Color:	Red
Working time:	Approx. 20-30 min
Curing time:	Approx. 14-21 days
Shore A Hardness:	Approx. 35
Movement capability:	Approx. 5%
Intumescent Activation:	Approx 250°F (121°C)
Expansion rate (unrestricted):	Up to 3-5 times original volume
Temperature resistance (cured):	-40°F (-40°C) to 212°F (100°C)
Application temperature:	35°F (2°C) to 100°F (38°C)
Surface burning characteristics: (ASTM E 84-96)	Flame Spread: 0 Smoke Development: 5
Sound transmission classification: ASTM E 90-97	50

Approvals

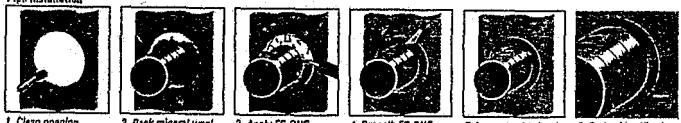
ICBO Evaluation Service, Inc.	Report No. 5071
California State Fire Marshal	Listing No. 1200:108
City of New York	MEA 326-96-M Vol. II

Installation instructions for FS-ONE

Cable Installation

1. Clean opening. 2. Pack mineral wool. (if required) 3. Apply FS-ONE. 4. Smooth FS-ONE. 5. Leave completed seal undisturbed for 48 hours. 6. Fasten identification plate (if required).

Pipe Installation



1. Clean opening. 2. Pack mineral wool. (if required) 3. Apply FS-ONE. 4. Smooth FS-ONE. 5. Leave completed seal undisturbed for 48 hours. 6. Fasten identification plate (if required).

Opening

1. Clean the opening. Surfaces to which FS-ONE will be applied should be cleaned of loose debris, dirt, oil, moisture, frost and wax. Structures supporting penetrating items must be installed in compliance with local building and electrical standards.

Application of firestop sealant

2. Install the prescribed backfilling material type and depth to obtain the desired rating (if required). Leave sufficient depth for applying FS-ONE.
3. Application of firestop sealant: Apply FS-ONE to the required depth in order to obtain the desired fire rating. Make sure FS-ONE contacts all surfaces to provide maximum adhesion. For application of FS-ONE use a standard caulking gun, foil pack gun, bulk loader and bulk gun. With FS-ONE buckets, Graco type sealant pumps may be used. (Contact pump manufacturer for proper selection).
4. Smoothing of firestop sealant: To complete the seal, tool immediately to give a smooth appearance. Excess sealant, prior to curing, can be cleaned away from adjacent surfaces and tools with water.
5. Leave completed seal undisturbed for 48 hours.
6. For maintenance persons, a penetration seal could be permanently marked with an identification plate. In such a case, mark the identification plate and fasten it in a visible position next to the seal

Notice about approvals

- Check that the penetration has been sealed according to the specified drawing in the UL Fire Resistance Directory or Hilti Firestop Manual. For further advice, please contact Hilti customer service. Refer to literature and UL fire resistance directory for specific applica

Not for use...

- High movement expansion joints
- Underwater
- On materials where oil, plasticizers or solvents may bleed i.e. impregnated wood, oil based seals, green or partially vulcanized rubber
- In any penetration other than those specifically described in this manual or the test reports

Safety precautions

- Before handling, read the product and Material Safety Data Sheet for detailed use and health information
- Keep out of reach of children
- Wear suitable gloves and eye protection

Storage

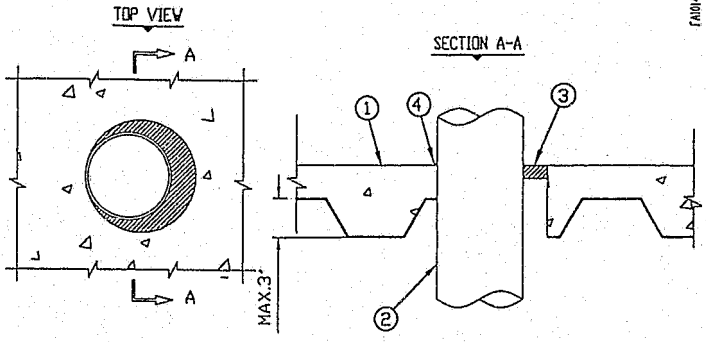
- Store only in the original packaging in a location protected from moisture at temperatures between 40°F (5°C) and 75°F (30°C)
- Observe expiration date on the packaging

UL/cUL SYSTEM NO. FA1014

METAL PIPE THROUGH CONCRETE FLOOR OVER METAL DECKING

F RATING = 2-HR.
T RATING = 0-HR.

FA1014a090599



1. NORMAL WEIGHT CONCRETE FLOOR (MIN. 2-1/2" THICK) OVER METAL DECKING (2-HR FIRE-RATING).
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
   A. MAXIMUM 12" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   B. MAXIMUM 6" NOMINAL DIAMETER COPPER PIPE.
   C. MAXIMUM 6" NOMINAL DIAMETER STEEL CONDUIT.
   D. MAXIMUM 4" NOMINAL DIAMETER EMT.
3. MINIMUM 1" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.
4. MINIMUM 1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT APPLIED AT POINT OF CONTACT.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 14-5/8"
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 1-7/8".

Installation Instructions

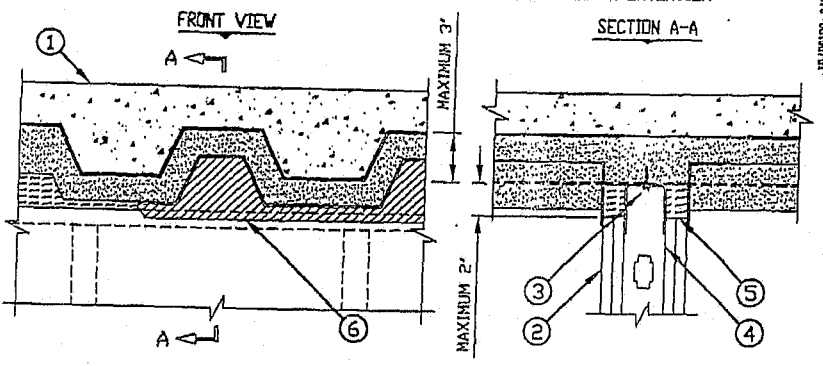
STEP 1 - PREPARATION: All surfaces must be clean, sound, dry and frost free prior to application of firestopping materials.
STEP 2 - FIRESTOP SEALANT: Apply the required depth of Firestop Sealant flush with the top of floor. Tool the sealant with a putty knife to push it in place and smooth the surface. Leave completed seal undisturbed for 48 hours.

HARLEN'S

UL/cUL SYSTEM NO. HW-D-0190

TOP OF WALL JOINT : 1-HR. OR 2-HR. GYPSUM WALL ASSEMBLY

ASSEMBLY RATING = 1-HR. OR 2-HR. (DEPENDING ON RATING OF WALL AND FLOOR ASSEMBLY)
CLASS II MOVEMENT CAPABILITIES - 12.5% COMPRESSION OR EXTENSION



1. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR (MIN. 2-1/2" THICK) OVER METAL DECKING (1-HR. OR 2-HR. FIRE-RATING) (SEE NOTE NO. 1).
2. GYPSUM WALL ASSEMBLY (UL/ULC CLASSIFIED U400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
3. CEILING RUNNER (MIN. 25 GA., WITH 3" FLANGES) FASTENED TO UNDERSIDE OF DECK PRIOR TO APPLYING FIREPROOFING (SEE NOTE NO. 2 BELOW).
4. STEEL STUDS (MIN. 2-1/2" WIDE), CUT 1/2" TO 3/4" LESS IN LENGTH THAN ASSEMBLY HEIGHT, NESTING IN CEILING RUNNER WITHOUT ATTACHMENT.
5. MINERAL WOOL (MIN. 4 PCF DENSITY) COMPRESSED 50% AND INSERTED INTO JOINT, FLUSH WITH WALL SURFACES.
6. MINIMUM 1/8" (WET) THICKNESS HILTI CP 672 SPEED SPRAY TO COMPLETELY COVER MINERAL WOOL AND TO OVERLAP MINIMUM 1/2" ONTO GYPSUM WALL, AND MINIMUM 2" ONTO FIREPROOFING, ON BOTH SIDES OF WALL ASSEMBLY.

NOTES : 1. STEEL FLOOR UNITS TO BE SPRAYED WITH 1-1/2" THICKNESS OF UL CLASSIFIED MONOKOTE TYPE MK-6/HY FIREPROOFING MANUFACTURED BY W.R. GRACE. FIREPROOFING TO COMPLETELY FILL FLUTES, EXTENDING 5/8" OR 1-1/4" ON BOTH SIDES OF CEILING CHANNEL. FIREPROOFING IS TO BE EXCLUDED FROM THE METAL DECK DIRECTLY ABOVE THE GYPSUM BOARD.

2. AS AN ALTERNATE TO CEILING RUNNER IN ITEM NO. 3, SLOTTED CEILING RUNNER, MANUFACTURED BY SLIPTRACK SYSTEMS, INC., OR VERTITRACK, MANUFACTURED BY THE STEEL NETWORK, INC., MAY BE USED. WHEN ALTERNATE CEILING TRACKS ARE USED, CONSULT THE UL FIRE RESISTANCE DIRECTORY FOR INSTALLATION INSTRUCTIONS.

HILTI®
FIRESTOP SYSTEMS

HILTI, Inc.
Tulsa, Oklahoma USA (918 ;2-6000

Sheet	1 of 1
Scale	5/32" = 1"
Date	April 26, 2002
Drawing No.	HWD 0190a

:HW060190a042602

SIMPLEXGRINNELL

High Performance Intumescent Firestop Sealant

Description

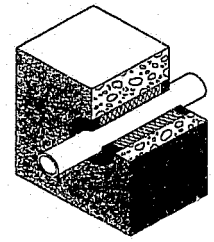
A "state of the art" product which protects over 95% of all typical firestop applications for up to 4 hours. FS-ONE reduces the need for multiple products and simplifies specifying, selection, installation and inspection.

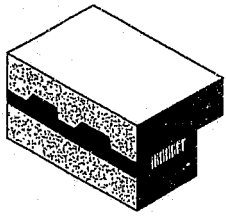
Features

- Systems have standardized sealant depths based on base material (i.e. concrete - minimum 1/2" depth)
- Superior adhesion to concrete, concrete block, gypsum and wood
- For many applications, just 1/4" depth provides up to 3-hour fi rating when backed with mineral ..ol

Typical Applications

- Insulated and non-insulated metallic pipes (sleeved/unsleeved)
- Single and bundled cables
- Plastic pipe
- Top-of-wall joints





Ordering Information

Item #	Description
00259579	10.1 fl oz (300ml) Cartridge
00259580	Case of 12-10.1 fl oz (300ml) Cartridges
00259578	5 gal (19 liter) Pail
00029410	Retaining Collar
00029783	Collar Clamps (10)
00024825	Small Cartridge Dispenser
00055205	CB 200 PI Dispenser

Technical Data

Consistency	non-sag, gun grade
Working Time	20-30 min
Skin Over Time	3-8 min
Application Temperature	min 40°F, max. 100°F
Full Cure	approx. 14-21 days
Density	1.5 g/cm³
Intumescent Activation	approx. 300°-500° F
Volatile Solvents	None
Combustibility	Noncombustible
Surface Burning Characteristics (ASTM E84-91a)	Flame Spread Index = 0 Smoke Developed Index = 5
Maximum Service Temperature	120°F

APPROVALS:	
ICBO Evaluation Service, Inc.	Report No. 5071
California State Fire Marshal	Listing No. 1200:108
City of New York	MEA 326-95-M
City of Los Angeles	Research Report: 25188

FILL, VOID OR CAVITY MATERIALS
CLASSIFIED BY
UNDERWRITERS LABORATORIES, INC.
FOR USE IN THROUGH-PENETRATION
FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
6SY7

FM APPROVED

For Penetration Fire Stops.
Consult the Factory Mutual Research Corporation Approval Guide.

Simplicity **Confidence** **Value**

MATERIAL SAFETY DATA SHEET

HILTI, INC.: P.O. Box 21148, Tulsa, OK 74121; Ph: 1 800 879 6000; Emergency No.: 1 800 879 4444

PRODUCT NAME: FS-ONE High Performance Intumescent Firestop Sealant

MSDS No.: 259
Revision No.: 002
Date: 06/25/96
Page: PAGE 1 of 2

DESCRIPTION: One-part acrylic-based sealant

INGREDIENTS AND EXPOSURE LIMITS

INGREDIENTS:	CAS NUMBER:	PEL:	TLV:	STEL:
Calcium carbonate	000471-34-1	NA	NA	NA
Ammonium polyphosphate	007722-76-1	NE	NE	NE
Zinc borate	138265-88-0	NE	NE	NE
Talc	014807-96-6	NA	NA	NA
Expandable graphite	012689-13-3	NA	NA	NA
Alkyd resin	899990-13-5	NE	NE	NE
Polyisobutylene	009003-27-4	NE	NE	NE
1,2-Benzenedicarboxylic acid, diisononyl ester	028553-12-0	NE	NE	NE
Iron oxide	001309-37-1	NA	NA	NE
Ethylene glycol	000107-21-1	C:50 ppm	C:50 ppm	NE
Glass fiber	065997-17-3	NE	NE	NE
Ammonium hydroxide	001336-21-6	NE	NE	NE
Water	007732-18-5	NE	NE	NE

PEL = OSHA Permissible Exposure Limit. **TLV** = ACGIH Threshold Limit Value. These are 8 hour time-weighted averages unless otherwise indicated by "C" (Ceiling) or **"STEL"** (Short Term Exposure Limit). **NA** = Not Applicable. **NE** = None Established. **ND** = Not Determined.

PHYSICAL DATA

APPEARANCE AND ODOR: Red paste. Odorless.

pH: Not Determined

BOILING POINT: Approx. 212°F

MELTING POINT: Not Determined

VOC CONTENT: None

VAPOR PRESSURE: Not Determined

EVAPORATION RATE: Not Determined

VAPOR DENSITY: Not Determined

SOLUBILITY IN WATER: Slightly soluble (prior to curing)

SPECIFIC GRAVITY: 1.5

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: Non-Flammable

FLAMMABLE LIMITS: Not Applicable

EXTINGUISHING MEDIA: This product is non-combustible. Use extinguishing agent suitable for type of surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES: A self-contained breathing apparatus should be worn when fighting fires involving chemicals.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None Known

REACTIVITY DATA

STABILITY: Stable.

CONDITIONS TO AVOID: None Known

INCOMPATIBILITY: Strong acids, peroxides and other oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition can yield carbon dioxide and/or carbon monoxide.

HAZARDOUS POLYMERIZATION: Will not occur.

HEALTH HAZARD DATA

KNOWN HAZARDS: None known. Possibly irritating upon contact with the eyes or repeated contact with and skin.