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

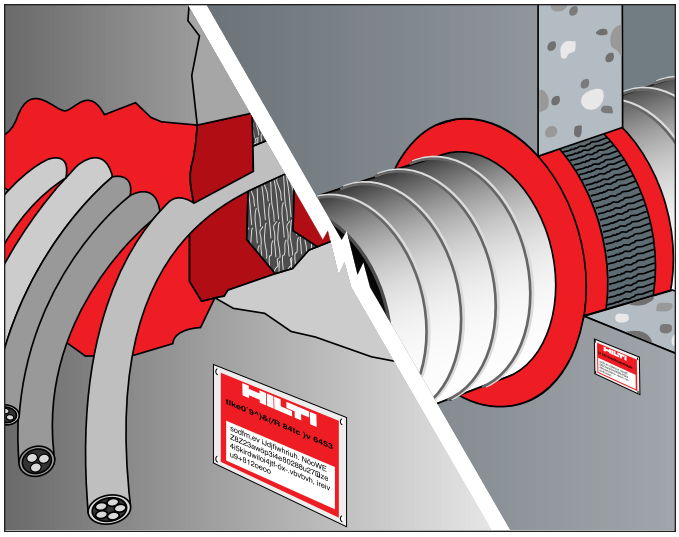
- Concrete, masonry, drywall and wood floor assemblies
- Wall and floor assemblies rated up to 4 hours

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 cables
- Can be painted



Internationally tested and approved

CLASSIFIED UL

FILL, VOID OR CAVITY MATERIALS
CLASSIFIED BY
UNDERWRITERS LABORATORIES, INC.
FOR USE IN TROUGH-PENETRATION
FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
66Y7

FM
APPROVED
For Penetration 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)**	**1155 in³**	**00259578**
CB 200 PI-300/310 ml Dispenser				**00055205**
600 ml Foil Dispenser				**00024669**

FS-ONE
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- 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)

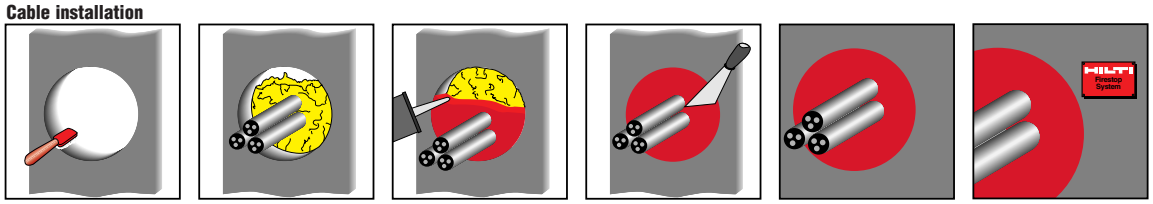
Chemical basis:	Water-based intumescent acrylic dispersion
Density:	Approx. 1.5 g/cm^3
Color:	Red
Working time:	Approx. 20-30 min
Curing time:	Approx. 14-21 days
Shore A Hardness:	Approx. 35
Movement capability:	Approx. 5%
Intumescent Activation:	Approx 250°F (121°C)
Expansion rate (unrestricted):	Up 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

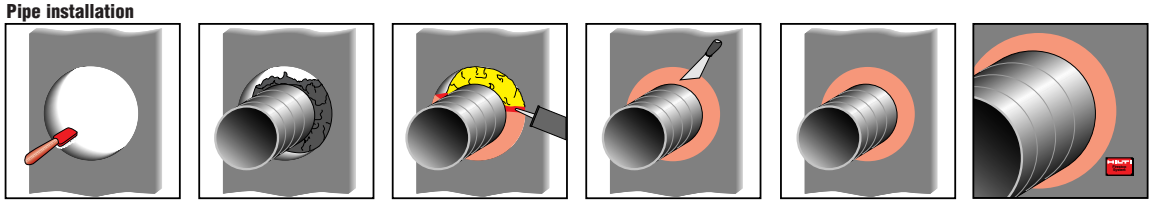
Installation instructions for FS-ONE

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 reasons, 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 Hilti product literature and UL fire resistance directory for specific application details.

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 86°F (30°C)
- Observe expiration date on the packaging

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**

DESCRIPTION: **One-part acrylic-based sealant**

MSDS No.: 259
Revision No.: 008
Date: 05/19/99

INGREDIENTS AND EXPOSURE LIMITS

Ingredients:	*CAS Number:*	*PEL:*	*TLV:*	*TEL:*
Calcium carbonate	01317-65-3	5 mg/m³ (T)	10 mg/m³ (T)	NE
Ammonium polyphosphate	68333-79-9	NE	NE	NE
Boron trioxide	01303-86-2	15 mg/m³ (R)	10 mg/m³	NE
Alkylphenolethersulfate, sodium salt	69011-84-3	NE	NE	NE
Talc	14807-96-6	20 mppcf	2 mg/m³	NE
Zinc oxide	01314-13-2	5 mg/m³ (T)	10 mg/m³	NE
Expandable graphite	12777-87-6	5 mg/m³ (T)	2 mg/m³ (T)	NE
Ethylene glycol	00107-21-1	NE	C:100 mg/m³ (A)	NE
Polybutene	09003-29-6	NE	NE	NE
Iron oxide	01309-37-1	10 mg/m³	5 mg/m³	NE
Glass filament	65997-17-3	NE	5 mg/m³ (T)	NE
Silicon dioxide	14808-60-7	0.05 mg/m³ (T)	0.1 mg/m³ (T)	NE

Abbreviations: PEL = OSHA Permissible Exposure Limit. TLV = ACGIH Threshold Limit Value. C = Ceiling. STEL = Short Term Exposure Limit. NE = None Established. NA = Not Applicable. (T) indicates “as total dust”. (R) indicates “as respirable fraction”. (A) indicates “as an aerosol”. mppcf = million particles per cubic foot.

PHYSICAL DATA

Appearance:	Red paste.	Odor:	Odorless.
Vapor Density: (air = 1)	Not determined.	Vapor Pressure:	23mbar @ 20C / 68F
Boiling Point:	Not applicable.	VOC Content:	None.
Evaporation Rate:	Not applicable.	Solubility in Water:	Soluble.
Specific Gravity:	1.5	pH:	Notdetermined.

FIRE AND EXPLOSION HAZARD DATA

Flash Point:	Non-flammable.
Flammable Limits:	Not applicable.
Extinguishing Media:	Not applicable. Use extinguishing media as appropriate for surrounding fire.
Special Fire Fighting Procedures:	None known. Use a self-contained breathing apparatus when fighting fires involving chemicals.
Unusual Fire and Explosion Hazards:	None known. Thermal decomposition products can be formed.

REACTIVITY DATA

Stability:	Stable.
Hazardous Polymerization:	Will not occur.
Incompatibility:	Strong acids, peroxides, and oxidizing agents.
Decomposition Products:	Thermal decomposition can yield CO and CO2.
Conditions to Avoid:	None known.

HEALTH HAZARD DATA

Known Hazards:	None known.
Carcinogenicity:	IARC classifies crystalline silica (quartz sand) as Gp I based upon evidence among workers in industries where there has been long-term and chronic exposure (via inhalation) to silica dust; e.g. mining, quarry, stone crushing, refractory brick and pottery workers. This product does not pose a dust hazard; therefore, this classification is not relevant. Based upon the nature and intended use of this product, it does not pose an increased cancer risk to workers.

Signs and Symptoms of Exposure:	Possibly irritating upon contact with the eyes or upon repeated contact with the skin.
Routes of Exposure:	Dermal.
Medical Conditions Aggravated by Exposure:	Eye and skin conditions.

EMERGENCY AND FIRST AID PROCEDURES

Eyes:	Immediately flush with plenty of water. Call a physician if symptoms occur.
Skin:	Immediately wipe off material and wash with soap and water. Material can adhere to the skin. If material has adhered to the skin, use an abrasive containing hand cleaner. If material does not come off, buff with a pumice stone.
Inhalation:	Move victim to fresh air if discomfort develops. Call a physician if symptoms persist.
Ingestion:	Seek medical attention. Do not induce vomiting unless directed by a physician. Never give anything by mouth to an unconscious person.
Other:	Referral to a physician is recommended if there is any question about the seriousness of the injury/exposure.

CONTROL MEASURES AND PERSONAL PROTECTIVE EQUIPMENT

Ventilation:	General (natural or mechanically induced fresh air movements).
Eye Protection:	Not required, however, safety glasses should be worn in most industrial settings.
Skin Protection:	Avoid skin contact. Cloth gloves are suitable for hand protection.
Respiratory Protection:	None normally required. Where ventilation is inadequate to control vapors, use a NIOSH-approved respirator with organic vapor cartridges. Never enter a confined space without an appropriate air-supplied respirator.

PRECAUTIONS FOR SAFE HANDLING AND USE

Handling and Storing Precautions:	Store in a cool, dry area preferably between 50° and 100° F. Keep from freezing. Do not store in direct sunlight. Avoid contact with the eyes or skin. Practice good hygiene; i.e. always wash thoroughly after handling and before eating or smoking. For industrial use only. Keep out of reach of children. Follow label/use instructions.
Spill Procedures:	Immediately wipe away spilled material before it hardens. Place in a container for proper disposal in accordance with all applicable local, state, or federal requirements.

REGULATORY INFORMATION

Hazard Communication:	This MSDS has been prepared in accordance with the federal OSHA Hazard Communication Standard 29 CFR 1910.1200.
HMIS Codes:	Health 1, Flammability 0, Reactivity 0, PPE B
DOT Shipping Name:	Not regulated.
TSCA Inventory Status:	Chemical components listed on TSCA inventory.
SARA Title III, Section 313:	This product contains 1-5% ethylene glycol (CAS 107-21-1) and 1-5% zinc oxide (re: zinc compounds) which are subject to reporting under Section 313 of SARA Title III (40 CFR Part 372).
EPA Waste Code(s):	Not regulated by EPA as a hazardous waste.
Waste Disposal Methods:	Consult with regulatory agencies or your corporate personnel for disposal methods that comply with local, state, and federal safety, health and environmental regulations.

CONTACTS

Customer Service:	1 800 879 8000
Technical Service:	1 800 879 8000
Emergency:	1 800 879 4444
Health / Safety:	1 800 879 6000 Steve Gerrard (x6309) Jerry Metcalf (x6704)

The information and recommendations contained herein are based upon data believed to be correct; however, no guarantee or warranty of any kind expressed or implied is made with respect to the information provided.

Underwriters Laboratories Inc.®

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North Carolina • (919) 549-1400

CERTIFICATE OF COMPLIANCE

CERTIFICATE NUMBER: 211097 - R13240A
ISSUE DATE: October 21, 1997

Issued to: Hilti Construction Chemicals Inc.
5400 S. 122nd East Avenue
Tulsa, OK 74146 USA

Report Reference: R13240, February 14, 1997

This is to Certify that representative samples of: Fill, Void or Cavity Materials, one part Sealant designated as FS One (also identified as CP 612)

Have been investigated by Underwriters Laboratories Inc. in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 1479, Fire Tests of Through-Penetration Firestops;

UL 2079, Tests for Fire Resistance of Building Joint Systems.

Additional Information:

This material is a one part intumescent firestop sealant for use in through-penetration firestop systems. These sealants are Classified as "Fill, Void or Cavity Materials" for use in various Through-Penetration Firestop Systems as specified in Volume 2 of UL's Fire Resistance Directory.

Only those products bearing the UL Classification Marking should be considered as being covered by UL's Classification and Follow-Up Service.

The UL Classification Marking includes: the name "Underwriters Laboratories Inc."; the word "Classified"; a control number (may be alphanumeric) assigned by UL; a statement to indicate the extent of UL's evaluation of the product; and, the product category name (product identity) as indicated in the appropriate UL Directory.

LOOK FOR THE UL CLASSIFICATION MARKING ON THE PRODUCT

Engineer: Underwriters Laboratories Inc.
Nikola Momcilovic

Review Engineer: Underwriters Laboratories Inc.
A. M. Ramirez

2000-44C (6/92)