FS-ONE
High Performance Intumescent Firestop Sealant

System Advantage / Customer Benefits
• Protects most typical firestop penetration applications
• Easy to work with and fast cleanup
• Can be painted
• Single component systems available

Installation instructions for FS-ONE

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 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/cUL 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 to 104°F (5°C to 40°C)
• Keep out of reach of children
• Before handling, read the product and Material Safety Data Sheet
• Do not store and ship in freezing conditions
• Underwater

Technical Data

FS-ONE

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

Chemical basis
Water-based intumescent acrylic dispersion

Density
Approx. 1.5 g/cm²

Color
Red

Working time
Approx. 20-30 min.

Curing time
Approx. 2 mm / 3 days

Shore A Hardness
Approx. 50

Movement capability
Approx. 5%

Intumescent Activation
Approx 482°F (250°C)

Expansion rate (unrestricted):
Up to 3-5 times original volume

Temperature resistance (cured)
–40°F to 212°F (–40°C to 100°C)

Application temperature
41°F to 104°F (5°C to 40°C)

Surface burning characteristics
( ASTM E 84-96)
Flame Spread: 0
Smoke Development: 5

Sound transmission classification
( ASTM E 90-99) 56

Tested in accordance with
• UL 1479
• ASTM E 814
• ASTM E 84
• CAN4-N115-95M

Internationally tested and approved

FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY

FM
APPROVED

Consult the Factory Mutual Research Corporation Approval Guide.

R
CLASSIFIED

For Penetration Fire Stops.

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Product identifier: FS-ONE High Performance Intumescent Firestop Sealant

Product use: Impedes the passage of fire, smoke and water through fire-rated walls and floors for up to 4 hours.

Supplier: Hilti (Canada) Corporation, 6790 Century Avenue, Suite #300, Mississauga, Ontario L5N 2V8

Emergency number: Chem-Trec: 1 800 424 9300

INGREDIENTS INFORMATION

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>% (wt.)</th>
<th>LC50 (rat)</th>
<th>LD50 (rat)</th>
<th>TLV</th>
<th>STEL</th>
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<tr>
<td>Polyacrylate dispersion</td>
<td>Mixture</td>
<td>30 - 40</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/E</td>
<td>N/E</td>
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<td>Calcium carbonate</td>
<td>01317-65-3</td>
<td>15 - 20</td>
<td>N/Av</td>
<td>N/Av</td>
<td>10 mg/m³</td>
<td>N/E</td>
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<tr>
<td>Zinc borate</td>
<td>138265-88-0</td>
<td>10 - 15</td>
<td>N/Av</td>
<td>N/Av</td>
<td>NE</td>
<td>N/E</td>
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<tr>
<td>Ammonium polyphosphate</td>
<td>68333-79-9</td>
<td>05 - 10</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/E</td>
<td>N/E</td>
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<tr>
<td>Talc</td>
<td>14807-96-6</td>
<td>05 - 10</td>
<td>N/Av</td>
<td>N/Av</td>
<td>2 mg/m³</td>
<td>N/E</td>
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<tr>
<td>Expandable graphite</td>
<td>12777-87-6</td>
<td>01 - 05</td>
<td>N/Av</td>
<td>N/Av</td>
<td>2 mg/m³</td>
<td>N/E</td>
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<td>Ethylene glycol</td>
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<td>01 - 05</td>
<td>10,876 mg/kg</td>
<td>4,700 mg/kg</td>
<td>100 mg/m³</td>
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<td>Polybutene</td>
<td>09003-29-6</td>
<td>01 - 05</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/E</td>
<td>N/E</td>
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<td>Ferric oxide</td>
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<td>N/Av</td>
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<td>5 mg/m³</td>
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<td>07732-18-5</td>
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<td>N/Av</td>
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<td>Silicon dioxide</td>
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<td>N/Av</td>
<td>0.1 mg/m³</td>
<td>N/E</td>
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PHYSICAL PROPERTIES

| Specific gravity (at 20°C):        | 1.5          | VOC Content: | 75.0 g/L |
| Vapour pressure (at 20°C):         | 23 mbar      | Vapour density: | Not applicable. |
| Freezing point:                    | Not determined. | pH: | Not determined. |

FIRE AND EXPLOSION DATA

| Flash point / Method:              | Nonflammable. | Flammable limits: | Not applicable. |
| Conditions of flammability:       | Not applicable. | Auto-ignition temperature: | Not applicable. |
| Means of extinction:              | As appropriate for surrounding fire (e.g. Water, CO2, Dry Chemical, Foam). |
| Special fire fighting procedures: | None known. A NIOSH-approved self-contained breathing apparatus (SCBA) should be worn when fighting fires involving chemicals. |
| Hazardous combustion products:    | Thermal decomposition products such as oxides of carbon and nitrogen can be produced under fire conditions. See below. |
| Sensitivity to mechanical impact / static discharge: | Not susceptible to mechanical impact or to a static discharge. |

REACTIVITY DATA

| Incompatible materials:            | Strong acids, peroxides and oxidizing agents. |
| Hazardous decomposition products:  | None known. Thermal decomposition can yield oxides of carbon and nitrogen. |
TOXICOLOGICAL PROPERTIES

Routes of exposure: ☒ Skin contact ☐ Skin absorption ☒ Eye contact ☐ Inhalation ☐ Ingestion

Acute effects of exposure:
- **Eyes**: Can cause irritation or watering but injury is unlikely. **Inhalation**: No effects expected. **Ingestion**: Not a likely route of exposure. Considered to have a low acute oral toxicity.

Chronic effects of exposure:
- IARC classifies silica dust as a Group 1 carcinogen based upon studies of workers in industries where there has been long-term and chronic exposure to silica dust. This product is a paste and does not pose a dust hazard; therefore, this classification is not relevant.

Synergistic materials: None known.

FIRST AID MEASURES

**Eyes**: Flush with plenty of water. Call a physician if symptoms occur.

**Skin**: Wash with soap and water. Seek medical attention if any effects persist.

**Inhalation**: No ill effects expected. Should discomfort occur, move to fresh air.

**Ingestion**: Do not induce vomiting unless large amounts are ingested. If conscious, give plenty of water to drink. Never give anything by mouth to an unconscious person. Contact a physician immediately.

**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

**Engineering controls**: General (natural or mechanically induced fresh air movements).

**Eye protection**: As appropriate for the work area or work being done.

**Skin protection**: Cloth gloves are suitable.

**Respiratory protection**: None normally required.

**Other**: No additional measures are normally required.

PRECAUTIONS FOR SAFE HANDLING AND USE

**Handling procedures and equipment**: For industrial use only. Keep out of reach of children. Keep container closed when not in use. Do not get into the eyes. Avoid prolonged or repeated contact with the skin. Practice good hygiene; i.e., wash after using and before eating or smoking.

**Storage requirements**: Store in a cool dry area. Keep from freezing. Store between 5º and 25º C.

**Spill, leak or release**: 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.

**Waste disposal**: Consult with regulatory agencies or your corporate personnel for disposal methods that comply with local, provincial, and federal safety, health and environmental regulations.

**Special shipping instructions**: Avoid temperature extremes. Keep from freezing.

REGULATORY INFORMATION

**WHMIS classification**: D2A, D2B

**HMIS codes**: Health 1, Flammability 0, Reactivity 0, PPE A

**TDG shipping name**: Not regulated.

PREPARATION INFORMATION / CONTACTS

**Prepared by**: Hilti, Inc., Tulsa, OK USA

**Emergency phone number**: 1 800 424 9300

**Customer Service**: Hilti (Canada) Corporation, Mississauga, Ontario; 1 800 363 4458

**Health / Safety contacts**: Hilti, Inc., Tulsa, OK USA; 1 800 879 6000, Jerry Metcalf (x6704)

**Abbreviations used**: N/E = None Established. N/A = Not Applicable. N/Av = Not Available. R = as “respirable fraction”. IARC: International Agency for Research on Cancer. HMIS: Hazardous Materials Identification System

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.
Certificate of Compliance

Certificate Number: 20060214-R12340E
Report Reference: 2006 February 14
Issue Date: 2006 February 14

Issued to: Hilti, Inc.
5400 S 122ND East Ave
Tulsa, OK 74146 USA

This is to certify that representative samples of Fill, Void or Cavity Materials FS-ONE have been investigated by Underwriters Laboratories Inc.® in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: ANSI/UL 1479, ANSI/UL 2079, CAN/ULC-S115-05


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

The UL Classification Mark includes: UL in a circle symbol: ™ with the word "CLASSIFIED" (as shown); 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 Mark on the product

Issued by: [Signature]
Underwriters Laboratories Inc.

Reviewed by: [Signature]
Underwriters Laboratories Inc.