

10 Danforth Street
Portland, ME 04101
Ph : (207) 773-3625

Submittal

Job: 1332
Press Hotel
390 Congress Street
Portland, ME 04101

Spec Section No: 07840
Submittal No: 002
Revision No: 0
Sent Date: 3/12/2014

Spec Section Title: Firestopping
Submittal Title: Plumbing and HVAC Firestopping Data


Contractor:
Wright-Ryan Construction, Inc.
Alyssa Parker

SUBMITTAL REVIEW:
Reviewed for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the Subcontractor from compliance with the project plans and specifications, nor departure therefrom. The Subcontractor remains responsible for details and accuracy, for conforming and correlating all quantities and dimensions, for selecting fabrication processes, for techniques of assembly and for performing the work in a safe manner.
WRIGHT-RYAN CONSTRUCTION, INC
BY: RRC DATE: 3-12-14

Architect (Primary):
Archetype PA
Kevin Gough

Architect's Stamp

Engineer's Stamp

PROJECT PRESS HOTEL	
PROJECT #	SHOP DWG # 065
<input type="checkbox"/> REVIEWED	<input checked="" type="checkbox"/> NO EXCEPTIONS TAKEN
<input type="checkbox"/> NOT REVIEWED	<input type="checkbox"/> MAKE CORRECTIONS NOTED
<input type="checkbox"/> REJECTED	<input type="checkbox"/> REVISE AND RESUBMIT
Date <u>2 April 14</u> by 	
Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the drawings and specifications. This review is only for general conformance with the design concept of the project and general conformance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions for selecting fabrication processes and techniques of construction, for coordinating his work with that of all other trades and for performing his work in a safe and satisfactory manner.	
ARCHETYPE, PA. 48 UNION WHARF PORTLAND, ME 04101 TELE. (207) 772-6022	

Project Name: Press Hotel, Portland, Maine

Architect: Archetype Architects
48 Union Wharf
Portland, Maine 04101

Contractor: Wright Ryan Construction, Inc.
10 Danforth Street
Portland, Maine 04101

Subcontractor: Warren Mechanical, Inc.
P.O. Box 149
Westbrook, Maine 04098-0149

Supplier: Hilti, Inc.
P.O. Box 21148
Tulsa, Ok. 74121

Manufacturer: Hilti

Section: 07840 Firestopping

Contractor Review

Architect's Review

Firestop Submittal Package

Project:

Date:

Submitted by:

*This submittal is auto-generated based on user-selected inputs.
Therefore, Hilti makes no representation as to the suitability of these systems for their intended use.*

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Firestop Submittal Package

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Firestop Systems

UL System #	Barrier Construction	Description	Rating	Products
F-A-2213	Concrete Floor	Max. 6" PVC, ABS, CPVC or FRPP	2 or 3-hour	CFS-DID Drop-In Device
C-AJ-2095	Concrete Floor Concrete/Masonry Wall	Max. 4" PVC or CPVC (closed or open)	2 or 3-hour	FS-ONE Intumescent Firestop Sealant
C-AJ-2109	Concrete Floor Concrete/Masonry Wall	Max. 10" PVC, CPVC, max 6" FRPP or ABS (c, v) (optional sleeve) (AS=0" to 1/2" on pipes 6" and smaller, 0" to 1-1/4" on pipes larger than 6")	2 or 3-hour	CP 643N Firestop Collar CP 644 Firestop Collar
C-AJ-2170	Concrete Floor Concrete/Masonry Wall	Max. 1" Polyethylene (PEX) SDR 9 Tubing (closed or open)	2-hour	FS-ONE Intumescent Firestop Sealant
W-L-2084	Gypsum Board Wall	Max. 6" PVC, CPVC, ABS or FRPP (closed or open) (sleeve optional)	1 or 2-hour	CP 643N Firestop Collar
W-L-2098	Gypsum Board Wall	Max. 2" PVC or CPVC (closed system only)	1 or 2-hour	FS-ONE Intumescent Firestop Sealant
W-L-2186	Gypsum Board Wall	Max. 1" PEX (closed system only)(sleeved)	1 or 2-hour	FS-ONE Intumescent Firestop Sealant
W-L-2217	Gypsum Board Wall	Max. 4" PVC or CPVC (c,v) (shaft wall) (AS=0" to 1/4")	2-hour	CP 643N Firestop Collar
W-L-2235	Gypsum Board Wall	Max. 2" ABS, PVC, CPVC, FRPP or 1" PEX (closed or open)	1 or 2-hour	CP 648-E Firestop Wrap Strip CP 648-S Firestop Wrap Strip

Product Data Sheet(s) / Material Safety Data Sheet(s) (MSDS)

CFS-DID Drop-In Device

CP 643N Firestop Collar

CP 644 Firestop Collar

CP 648-E Firestop Wrap Strip

CP 648-S Firestop Wrap Strip

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Firestop Submittal Package

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FS-ONE Intumescent Firestop Sealant

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Hilti (Canada) Corp. 1-800-363-4458 www.hilti.ca • 2360 Meadowpine Blvd., Mississauga, Ontario L5N 6S2



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UL SYSTEM NO. F-A-2213

PLASTIC PIPE THROUGH CONCRETE FLOOR ASSEMBLY

F-RATING = 2-HR. OR 3-HR.

T-RATING = 0-HR. OR 1/2-HR.

L-RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT. (SEE NOTE NO. 2 BELOW)

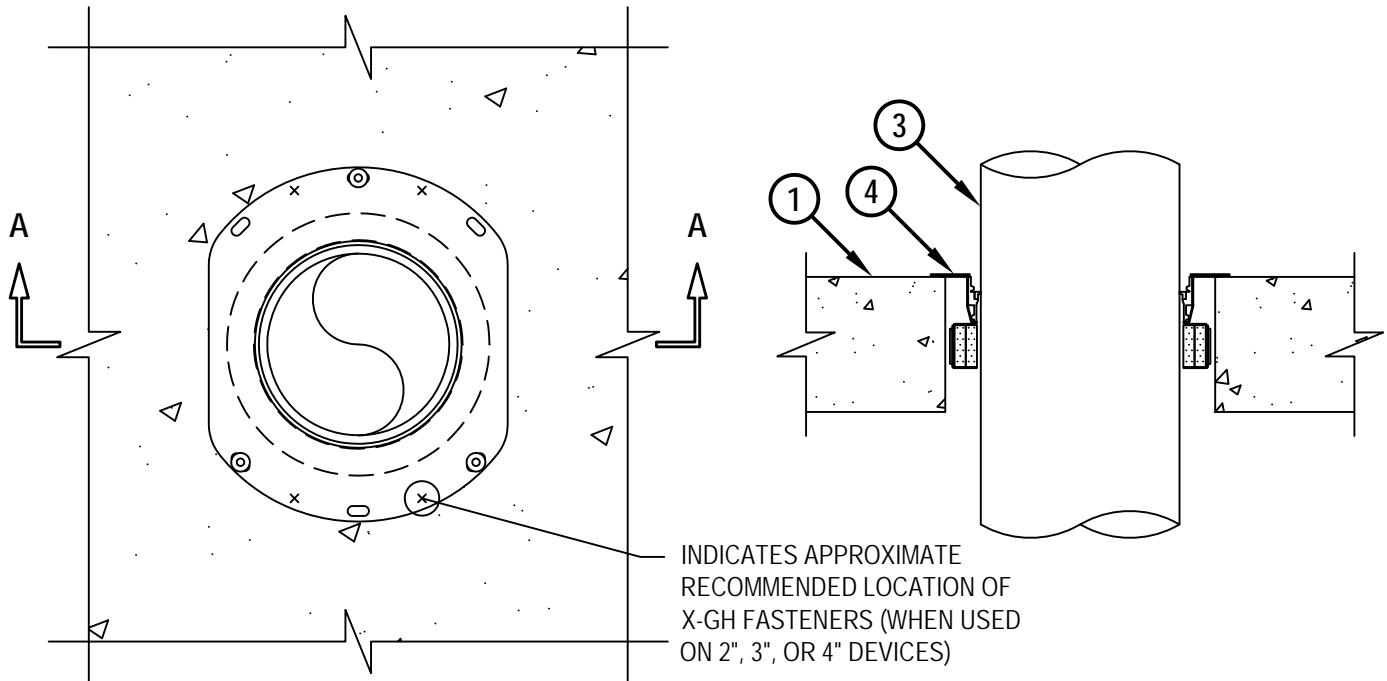
L-RATING AT 400°F = LESS THAN 1 CFM/SQ. FT. (SEE NOTE NO. 2 BELOW)

W-RATING = CLASS I (SEE NOTE NO. 2 BELOW)

FA2213b.051311

TOP VIEW

SECTION A-A



1. CONCRETE FLOOR ASSEMBLY (2-HR. OR 3-HR. FIRE-RATING) :
 - A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR (MINIMUM 2-1/2" TO 8" THICK).
 - B. STEEL FLOOR UNIT/FLOOR ASSEMBLY - LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR (MINIMUM 2-1/2" TO 8" THICK) OVER METAL DECKING (UL CLASSIFIED D700, D800, OR D900 SERIES).
2. [OPTIONAL - NOT SHOWN] ANY OF THE FOLLOWING SLEEVES MAY BE USED :
 - A. NOMINAL 4", 5", OR 6" DIAMETER STEEL PIPE SLEEVE (SCHEDULE 10 OR HEAVIER) CAST OR GROUTED INTO FLOOR ASSEMBLY, FLUSH WITH FLOOR SURFACES.
 - B. NOMINAL 4", 5", 6", OR 9" DIAMETER GALVANIZED STEEL SLEEVE (MIN. 26 GA.) WITH SQUARE FLANGE SPOT WELDED TO BOTTOM OR MID-HEIGHT OF SLEEVE AND SIZED MINIMUM 2" LARGER THAN SLEEVE DIAMETER. SLEEVE IS TO BE CAST IN PLACE, AND MAY EXTEND A MAXIMUM 4" BELOW BOTTOM SURFACE OF FLOOR AND SIT FLUSH WITH TOP SURFACE OF FLOOR.



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Sheet	1 of 2
Scale	5/32" = 1"
Date	May 13, 2011

Drawing No.

**FA
2213b**

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UL SYSTEM NO. F-A-2213

PLASTIC PIPE THROUGH CONCRETE FLOOR ASSEMBLY

F-RATING = 2-HR. OR 3-HR.

T-RATING = 0-HR. OR 1/2-HR.

L-RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT. (SEE NOTE NO. 2 BELOW)

L-RATING AT 400°F = LESS THAN 1 CFM/SQ. FT. (SEE NOTE NO. 2 BELOW)

W-RATING = CLASS I (SEE NOTE NO. 2 BELOW)

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3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING :

- A. MAXIMUM 6" NOMINAL DIAMETER PVC PLASTIC PIPE (CELLULAR OR SOLID CORE).
- B. MAXIMUM 6" NOMINAL DIAMETER ABS PLASTIC PIPE (CELLULAR OR SOLID CORE).
- C. MAXIMUM 6" NOMINAL DIAMETER CPVC PLASTIC PIPE.
- D. MAXIMUM 6" NOMINAL DIAMETER FRPP PLASTIC PIPE.

4. HILTI CFS-DID FIRESTOP DROP-IN DEVICE INSERTED INTO OPENING (SEE TABLE BELOW) AND SECURED TO TOP OF FLOOR WITH THREE HILTI 1/4" (6mm) DIAMETER BY 1-1/4" (32mm) LONG KWIK-CON II+ CONCRETE SCREW ANCHORS, HILTI 1/4" (6mm) DIAMETER BY 1-3/4" (45mm) LONG KWIK BOLT 3 STEEL EXPANSION ANCHORS, OR HILTI 1/4" (6mm) BY 3/4" (19mm) LONG METAL HIT ANCHORS (INSTALLED IN A TRIANGULAR FASHION THROUGH HOLES PROVIDED). IN ADDITION, FOR NOMINAL 2", 3", AND 4" DEVICES, FOUR 11/16" (18mm) LONG HILTI X-GH P18 MX STEEL FASTENERS MAY BE INSTALLED THROUGH THE STEEL FLANGE, TWO ON EACH SIDE.

MINIMUM CONCRETE THICKNESS	CORE HOLE OR SLEEVE DIAMETER	PRODUCT DESCRIPTION	NOMINAL PIPE DIAMETER	F-RATING
2-1/2"	4"	CFS-DID 2" MD	2" (OR SMALLER)+	2-HR.
2-1/2"	5"	CFS-DID 3" MD	3"	2-HR.
2-1/2"	6"	CFS-DID 4" MD	4"	2-HR.
2-1/2"	9"	CFS-DID 6" MD	6"	2-HR.
4-1/2"	4"	CFS-DID 2" MD	2" (OR SMALLER)+	3-HR.
4-1/2"	5"	CFS-DID 3" MD	3"	3-HR.
4-1/2"	6"	CFS-DID 4" MD	4"	3-HR.
4-1/2"	9"	CFS-DID 6" MD	6"	3-HR.

+ FOR PIPE SMALLER THAN NOMINAL 2" DIAMETER, AN ADAPTER AND HILTI IPS OR CPS TOP SEAL PLUG MUST BE USED IN CONJUNCTION WITH THE CFS-DID 2" MD DEVICE.

NOTES : 1. CLOSED OR VENTED PIPING SYSTEM (PVC, ABS, FRPP = SCH 40; CPVC = SDR 13.5).
 2. [OPTIONAL] TO ACHIEVE W-RATING AND/OR L-RATING, WATER BARRIER MODULES MAY BE THREADED ON TOP OF CFS-DID DEVICES FOR NOMINAL 2", 3", 4", AND 6" PIPES (LISTED ABOVE).



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Scale	-
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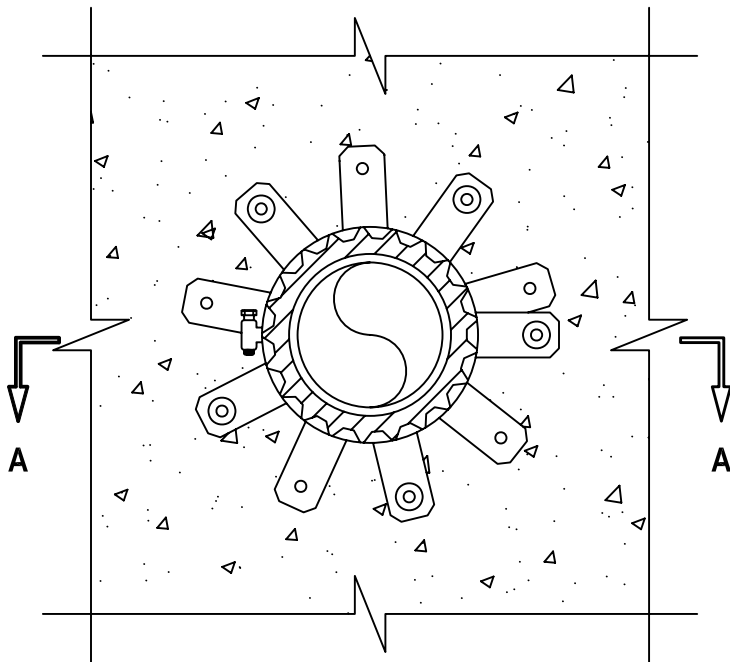
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PLASTIC PIPE THROUGH CONCRETE FLOOR/WALL OR BLOCK WALL

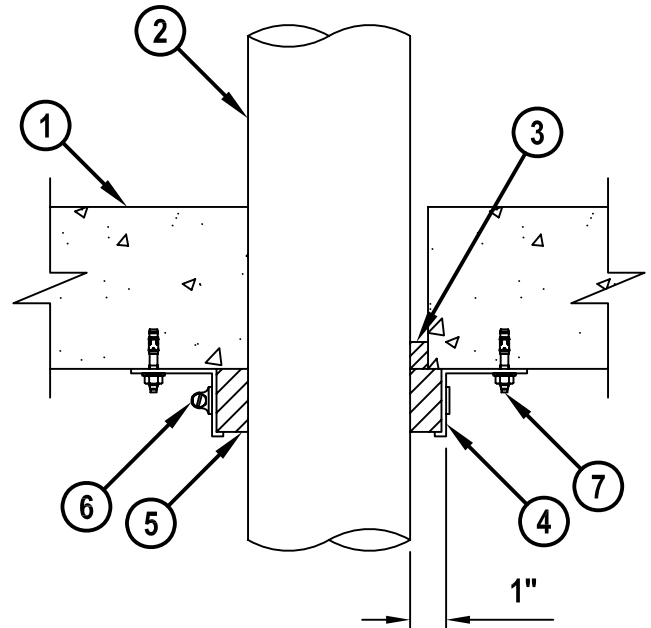
F-RATING = 3-HR.
T-RATING = 2-1/2-HR.

CAJ2095j_091205

BOTTOM VIEW



SECTION A-A



1. CONCRETE FLOOR OR WALL ASSEMBLY (3-HR. FIRE-RATING) :
 - A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR OR WALL (MINIMUM 4-1/2" THICK).
 - B. ANY UL CLASSIFIED CONCRETE BLOCK WALL.
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING :
 - A. MAXIMUM 4" NOMINAL DIAMETER PVC PLASTIC PIPE (SOLID CORE).
 - B. MAXIMUM 4" NOMINAL DIAMETER CPVC PLASTIC PIPE.
3. MINIMUM 1-1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT, APPLIED WITHIN THE ANNULAR SPACE.
4. HILTI RETAINING COLLAR WRAPPED AROUND PIPE, MAINTAINING A 1" DISTANCE BETWEEN PIPE AND COLLAR, AND OVERLAPPING MINIMUM 1" AT SEAM.
5. HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT TO COMPLETELY FILL HILTI RETAINING COLLAR.
6. HILTI COLLAR CLAMP(S) FASTENED TO MID-HEIGHT OF COLLAR.
7. EVERY OTHER TAB OF RETAINING COLLAR SECURED TO BOTTOM OF FLOOR WITH 1/4" x 1-3/4" LONG STEEL EXPANSION BOLTS OR 0.145 DIAMETER x 1-1/4" LONG POWDER ACTUATED FASTENERS IN CONJUNCTION WITH 1-7/16" DIAMETER STEEL WASHERS (EX. HILTI KWIK-BOLT 3, DX PINS).

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 5".
 2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 1/2".
 3. CLOSED OR VENTED PIPING SYSTEM (PVC = SCHEDULE 40; CPVC = SDR 17).
 4. HILTI RETAINING COLLAR AND FS-ONE ARE REQUIRED ON BOTH SIDES OF A WALL ASSEMBLY.



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Scale	3/16" = 1"
Date	Sep. 12, 2005

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UL SYSTEM NO. C-AJ-2109

PLASTIC PIPE THROUGH FLOOR/WALL OR BLOCK WALL ASSEMBLY

F-RATING = 2-HR. OR 3-HR.

T-RATING = 0-HR., 2-HR., OR 3-HR.

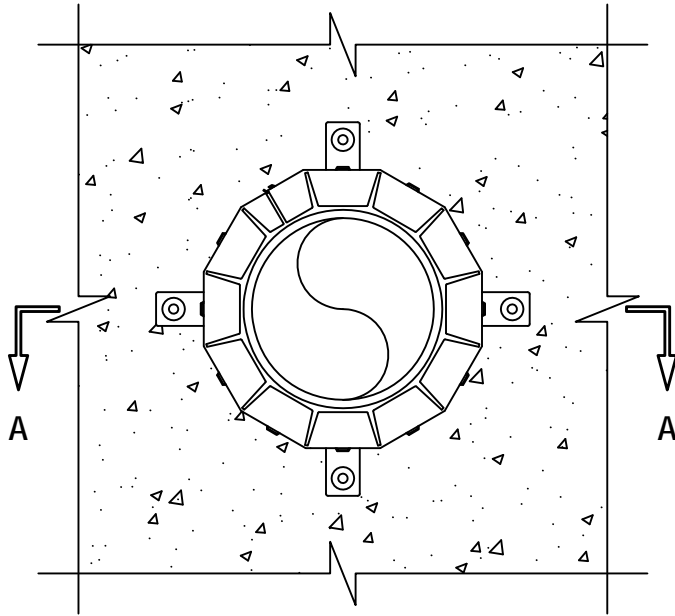
L-RATING AT AMBIENT = LESS THAN 1 CFM / SQ FT (SEE NOTE NO. 9 BELOW)

L-RATING AT 400°F = LESS THAN 1 CFM / SQ FT (SEE NOTE NO. 9 BELOW)

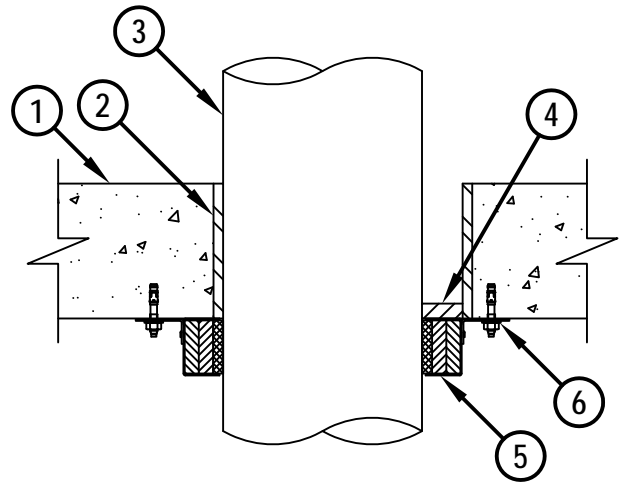
W-RATING = CLASS I (SEE NOTES NO. 7 AND 8 BELOW)

CAJ2109s.122013

BOTTOM VIEW



SECTION A-A



1. CONCRETE FLOOR OR WALL ASSEMBLY (2-HR. OR 3-HR. FIRE-RATING) :
 - A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR OR WALL (MINIMUM 4-1/2" THICK).
 - B. ANY UL CLASSIFIED CONCRETE BLOCK WALL.
2. [OPTIONAL] MAXIMUM 12" NOMINAL DIAMETER STEEL PIPE SLEEVE (SCHEDULE 40 OR HEAVIER) MAY EXTEND MAXIMUM 3" ABOVE FLOOR.
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING (ALSO SEE NOTE NO. 3 BELOW) :
 - A. MAXIMUM 10" NOMINAL DIAMETER PVC PLASTIC PIPE (CELLULAR OR SOLID CORE).
 - B. MAXIMUM 10" NOMINAL DIAMETER CPVC PLASTIC PIPE (CLOSED PIPING SYSTEM ONLY).
 - C. MAXIMUM 6" NOMINAL DIAMETER ABS PLASTIC PIPE (CELLULAR OR SOLID CORE).
 - D. MAXIMUM 6" NOMINAL DIAMETER FRPP PLASTIC PIPE.
4. MINIMUM 1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT, HILTI CP 601S ELASTOMERIC FIRESTOP SEALANT, HILTI CP 604 SELF-LEVELING FIRESTOP SEALANT, HILTI CFS-S SIL GG FIRESTOP SILICONE SEALANT, OR HILTI CFS-S SIL SL FIRESTOP SILICONE SEALANT INSTALLED FLUSH WITH TOP OR BOTTOM SURFACE OF FLOOR.



Hilti Firestop Systems

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Sheet	1 of 2
Scale	5/32" = 1"
Date	Dec. 20, 2013

Drawing No.

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2109s**

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UL SYSTEM NO. C-AJ-2109

PLASTIC PIPE THROUGH FLOOR/WALL OR BLOCK WALL ASSEMBLY

F-RATING = 2-HR. OR 3-HR.

T-RATING = 0-HR., 2-HR., OR 3-HR.

L-RATING AT AMBIENT = LESS THAN 1 CFM / SQ FT (SEE NOTE NO. 9 BELOW)

L-RATING AT 400°F = LESS THAN 1 CFM / SQ FT (SEE NOTE NO. 9 BELOW)

W-RATING = CLASS I (SEE NOTES NO. 7 AND 8 BELOW)

CAJ2109s.122013

- 5. HILTI CP 643N OR CP 644 FIRESTOP COLLAR WITH FASTENING HOOKS (SEE TABLE BELOW).
- 6. EACH FASTENING HOOK SECURED TO BOTTOM OF FLOOR WITH 1/4" x 1-1/4" LONG STEEL EXPANSION BOLTS, MIN. 0.145" x 1-1/4" POWDER ACTUATED FASTENERS WITH 1-7/16" DIAMETER STEEL WASHER, 1/4" x 1-1/4" HILTI KWIK-CON II+ CONCRETE SCREW ANCHOR, 1/4" x 1-3/4" HILTI KWIK-BOLT 3 STEEL EXPANSION ANCHOR, OR HILTI X-DNI 27 P8 S15 POWDER ACTUATED FASTENER WITH INTEGRATED WASHER.

NOMINAL PIPE DIAMETER	PRODUCT DESCRIPTION	F-RATING
1-1/2"	CP 643 50/1.5" N	3
2"	CP 643 63/2" N	3
3"	CP 643 90/3" N	3
4"	CP 643 110/4" N	3
6"	CP 643 160/6" N	3
8"	CP 644 200/8"	2
10"	CP 644 250/10"	2

- NOTES :
1. HILTI FIRESTOP COLLARS, HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT, HILTI CP 601S ELASTOMERIC FIRESTOP SEALANT, OR HILTI CFS-S SIL GG FIRESTOP SILICONE SEALANT ARE REQUIRED ON BOTH SIDES OF A WALL ASSEMBLY.
 2. MAXIMUM DIAMETER OF OPENING = 12".
 3. ANNULAR SPACE ON PIPES NOMINAL 6" AND SMALLER = MINIMUM 0", MAXIMUM 1/2".
 4. ANNULAR SPACE ON PIPES LARGER THAN NOMINAL 6" = MINIMUM 0", MAXIMUM 1-1/4".
 5. CLOSED OR VENTED PIPING SYSTEM (PVC, ABS, & FRPP = SCHEDULE 40, CPVC = SDR 13.5).
 6. HILTI FIRESTOP SEALANT IS OPTIONAL ON PIPES HAVING A MAXIMUM DIAMETER OF NOMINAL 6" INSTALLED IN UNSLEEVED OPENINGS.
 7. W-RATING DOES NOT APPLY IN SLEEVED OPENINGS.
 8. W-RATING APPLIES ONLY WHEN ANNULAR SPACE IS MINIMUM 0", MAXIMUM 1/2", AND HILTI CP 601S ELASTOMERIC FIRESTOP SEALANT, HILTI CP 604 SELF-LEVELING FIRESTOP SEALANT, HILTI CFS-S SIL GG FIRESTOP SILICONE SEALANT, OR HILTI CFS-S SIL SL FIRESTOP SILICONE SEALANT IS USED.
 9. L-RATING APPLIES ONLY WHEN HILTI CP 601S ELASTOMERIC FIRESTOP SEALANT, HILTI CP 604 SELF-LEVELING FIRESTOP SEALANT, HILTI CFS-S SIL GG FIRESTOP SILICONE SEALANT, OR HILTI CFS-S SIL SL FIRESTOP SILICONE SEALANT IS USED.
 10. WHEN HILTI CP 604 SELF-LEVELING FIRESTOP SEALANT OR HILTI CFS-S SIL SL FIRESTOP SILICONE SEALANT IS USED, A MINIMUM 1/2" THICKNESS OF MINERAL WOOL (MIN. 4 PCF DENSITY) TIGHTLY PACKED IS TO BE INSTALLED WITHIN THE ANNULAR SPACE AND RECESSED FROM THE TOP SURFACE OF CONCRETE FLOOR TO ACCOMMODATE SEALANT.



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Drawing No.

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2109s**

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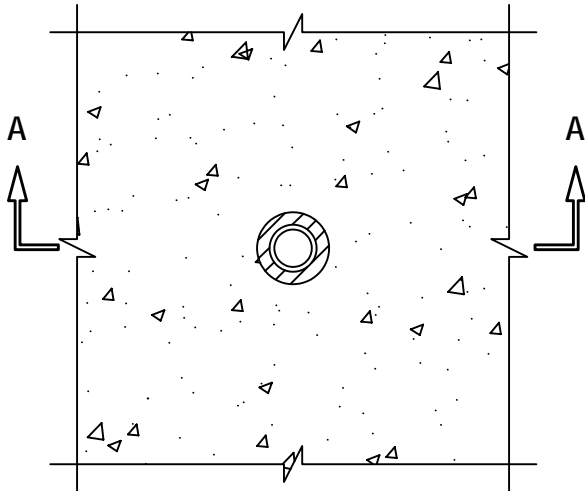
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PLASTIC PIPE THROUGH CONCRETE FLOOR/WALL OR BLOCK WALL

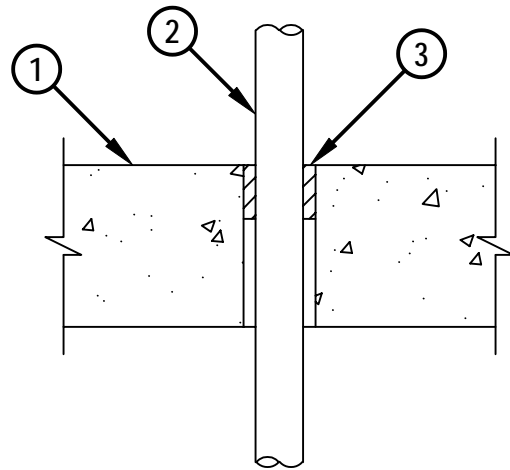
F-RATING = 2-HR.

T-RATING = 0-HR.

TOP VIEW



SECTION A-A



1. CONCRETE FLOOR OR WALL ASSEMBLY (2-HR. FIRE-RATING):
 - A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR OR WALL (MIN. 4-1/2" THICK).
 - B. ANY U.L. CLASSIFIED CONCRETE BLOCK WALL.
2. MAXIMUM 1" NOMINAL DIAMETER CROSS LINKED POLYETHYLENE (PEX) SDR 9 TUBING (CLOSED OR VENTED PIPING SYSTEM).
3. MINIMUM 1-1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 2".
2. ANNULAR SPACE = MINIMUM 1/4", MAXIMUM 3/4".
3. MINIMUM 1-1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT IS REQUIRED ON BOTH SIDES OF A WALL ASSEMBLY.

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FIRESTOP SYSTEMS

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Sheet	1 of 1
Scale	3/16" = 1"
Date	JULY 09, 1998

Drawing No.

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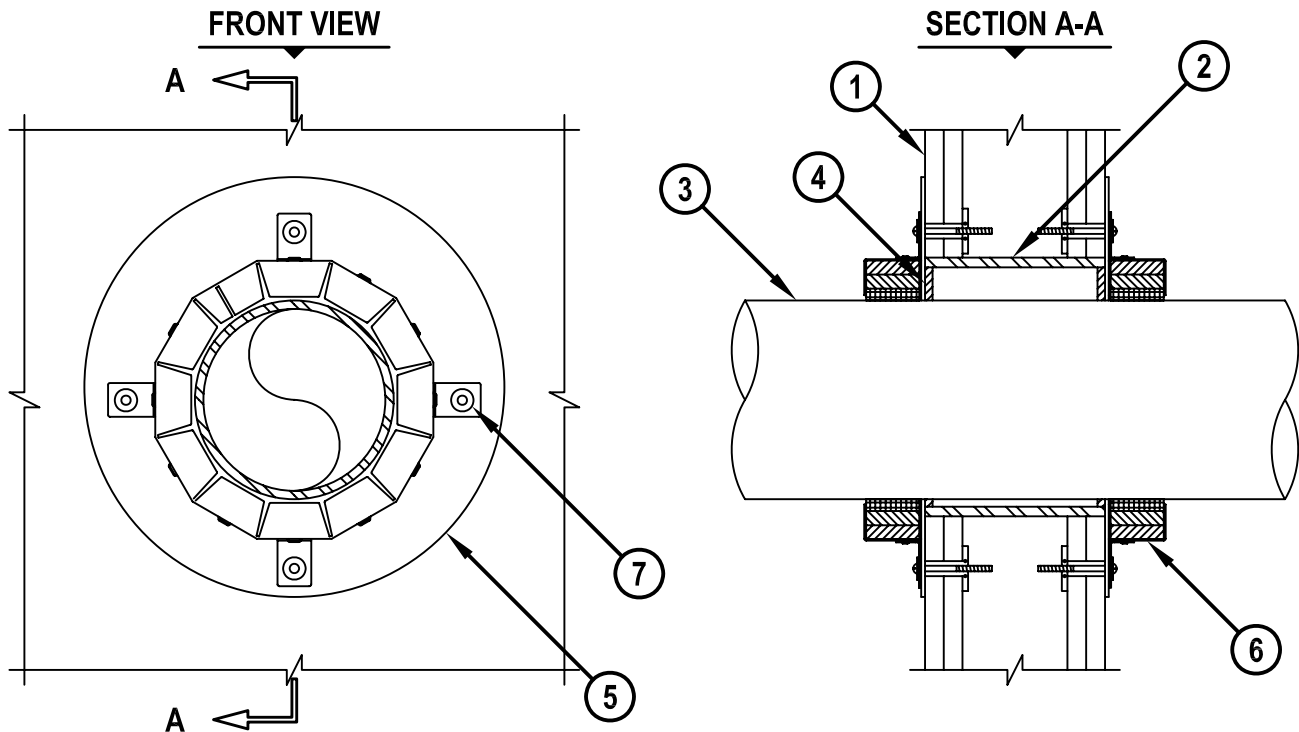
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UL SYSTEM NO. W-L-2084

PLASTIC PIPE THROUGH GYPSUM WALL ASSEMBLY

F-RATING = 1-HR. OR 2-HR.
T-RATING = 0-HR. OR 1/2-HR.

WL2084e.121505



1. GYPSUM WALL ASSEMBLY (UL CLASSIFIED U300 OR U400 SERIES) (1-HR. OR 2-HR. FIRE-RATING). (2-HR. SHOWN).
2. MAXIMUM 8" NOMINAL DIAMETER STEEL PIPE SLEEVE (SCHEDULE 40 OR THINNER).
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING (ALSO SEE NOTE NO. 3 BELOW) :
 - A. MAXIMUM 6" NOMINAL DIAMETER PVC PLASTIC PIPE (CELLULAR OR SOLID CORE).
 - B. MAXIMUM 6" NOMINAL DIAMETER ABS PLASTIC PIPE (CELLULAR OR SOLID CORE).
 - C. MAXIMUM 6" NOMINAL DIAMETER FRPP PLASTIC PIPE.
 - D. MAXIMUM 6" NOMINAL DIAMETER CPVC PLASTIC PIPE.
4. [OPTIONAL] MINIMUM 1/4" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.
5. SHEET METAL COVER PLATE (MINIMUM 18 GA.) PLACED OVER OPENING PRIOR TO ATTACHING HILTI CP 643N FIRESTOP COLLAR (ALSO SEE NOTE NO. 4 BELOW).
6. HILTI CP 643N FIRESTOP COLLAR WITH FASTENING HOOKS.
7. HILTI 3/16" TOGGLER BOLTS AND WASHERS TO ATTACH EACH FASTENING HOOK TO GYPSUM WALL ASSEMBLY. FOR PIPES 4" OR SMALLER, COLLARS MAY BE FASTENED WITH NO. 10 x 1-1/2" LONG DRYWALL OR LAMINATE SCREWS WITH 3/4" STEEL WASHERS.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 8".
2. ANNULAR SPACE = MINIMUM 1/4", MAXIMUM 1-1/4".
3. CLOSED OR VENTED PIPING SYSTEM (ABS, PVC, FRPP = SCHEDULE 40; CPVC = SDR 17).
4. INSIDE DIAMETER OF COVER PLATE SHOULD BE MAXIMUM 1/4" LARGER THAN OUTSIDE DIAMETER OF PIPE. OUTSIDE DIAMETER OF COVER PLATE SHOULD BE MINIMUM 2-1/2" LARGER THAN OUTSIDE DIAMETER OF PIPE.

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Sheet	1 of 1
Scale	5/32" = 1"
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Drawing No.

WL
2084e

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UL SYSTEM NO. W-L-2098

**CLOSED PVC/CPVC PLASTIC PIPE THROUGH 1-HR. OR 2-HR.
GYPSUM WALL ASSEMBLY**

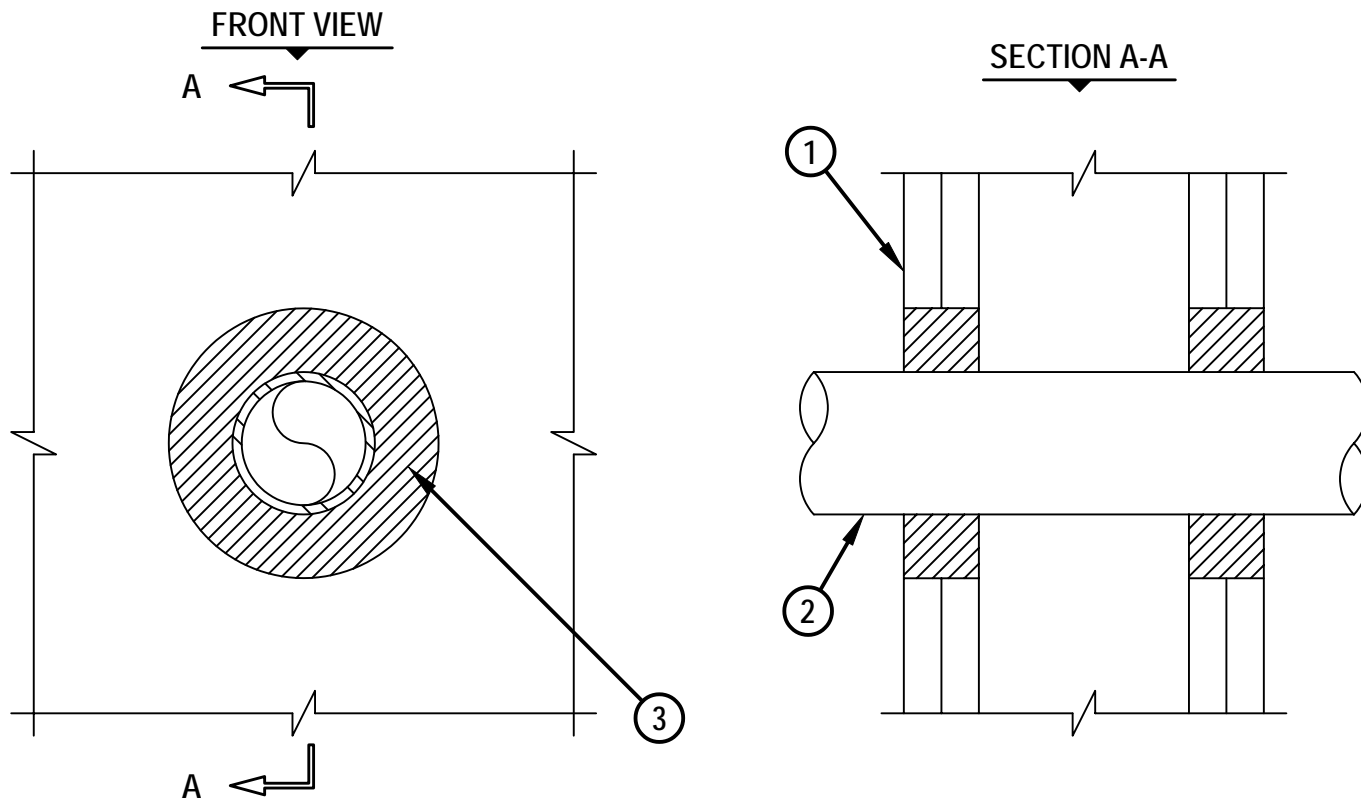
F-RATING = 1-HR. OR 2-HR.

T-RATING = 1-HR. OR 2-HR.

L-RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.

L-RATING AT 400°F = 4 CFM/SQ. FT.

WL2098d.071403



1. GYPSUM WALL ASSEMBLY (UL CLASSIFIED U300 OR U400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING :
 - A. MAXIMUM 2" NOMINAL DIAMETER PVC PLASTIC PIPE (SCHEDULE 40) (CLOSED PIPING SYSTEM).
 - B. MAXIMUM 2" NOMINAL DIAMETER CPVC PLASTIC PIPE (SDR 17) (CLOSED PIPING SYSTEM).
3. HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT:
 - A. MINIMUM 5/8" DEPTH OF SEALANT FOR A 1-HR. FIRE-RATING.
 - B. MINIMUM 1-1/4" DEPTH OF SEALANT FOR A 2-HR. FIRE-RATING.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 4-3/8".
2. ANNULAR SPACE = MINIMUM 3/4", MAXIMUM 1-1/4".

HILTI®
FIRESTOP SYSTEMS

HILTI, Inc.
Tulsa, Oklahoma USA (918) 252-6000

Sheet	1 of 1
Scale	5/16" = 1"
Date	July 14, 2003

Drawing No.
WL
2098d

Saving Lives through Innovation and Education

UL SYSTEM NO. W-L-2186

PLASTIC PIPE THROUGH GYPSUM WALL ASSEMBLY

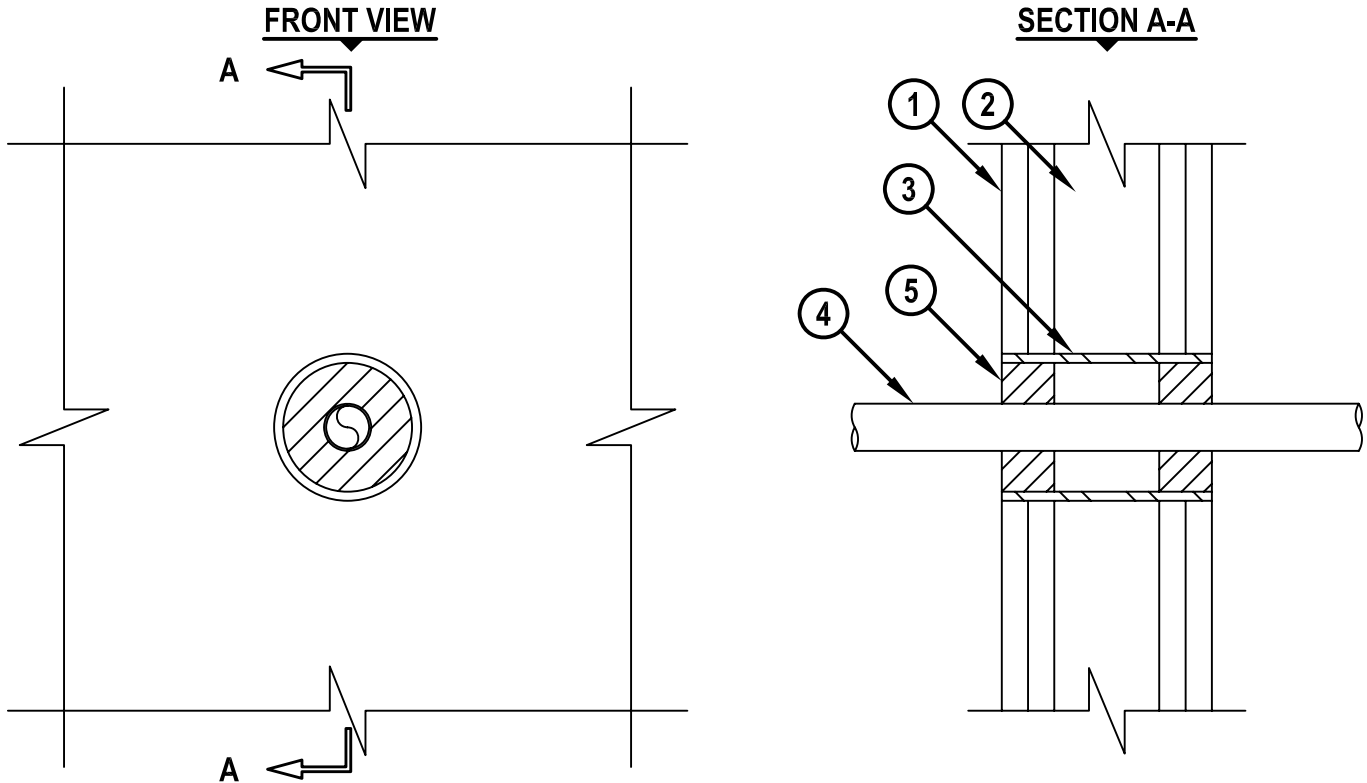
F-RATING = 1-HR OR 2-HR.

T-RATING = 1/2-HR OR 1-HR.

L-RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.

L-RATING AT 400°F = 2 CFM/SQ. FT.

WL2186d.080106



1. GYPSUM WALL ASSEMBLY (UL CLASSIFIED U300, U400 OR V400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
2. [NOT SHOWN] WOOD STUDS TO CONSIST OF 2" x 4" LUMBER. STEEL STUDS TO BE MIN. 2-1/2" WIDE.
3. [OPTIONAL] MAXIMUM 3" NOMINAL DIAMETER STEEL PIPE SLEEVE (SCHEDULE 40 OR LIGHTER).
4. MAXIMUM 1" NOMINAL DIAMETER SDR 9 CROSS-LINKED POLYETHYLENE (PEX) TUBING (CLOSED PIPING SYSTEM).
5. HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT :
A. MINIMUM 5/8" DEPTH, FOR A 1-HR. FIRE-RATING.
B. MINIMUM 1-1/4" DEPTH, FOR A 2-HR. FIRE-RATING.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 3".
2. ANNULAR SPACE = MINIMUM 1/2", MAXIMUM 1-3/8".
3. WHEN A STEEL SLEEVE IS PROVIDED FOR ASSEMBLIES WITH L-RATINGS, APPLY HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT AROUND PERIPHERY OF OPENING TO COVER EXPOSED ENDS OF SLEEVE AND TO LAP MINIMUM 1/4" ONTO GYPSUM BOARD ON EACH SIDE OF WALL.
4. WHEN A STEEL SLEEVE IS NOT PROVIDED, PENETRANT MAY BE INSTALLED AT AN ANGLE NOT GREATER THAN 45° FROM PERPENDICULAR.

HILTI
Hilti Firestop Systems

HILTI, Inc.
Tulsa, Oklahoma USA (800) 879-8000

Sheet	1 of 1
Scale	7/32" = 1"
Date	Aug. 01, 2006

Drawing No.

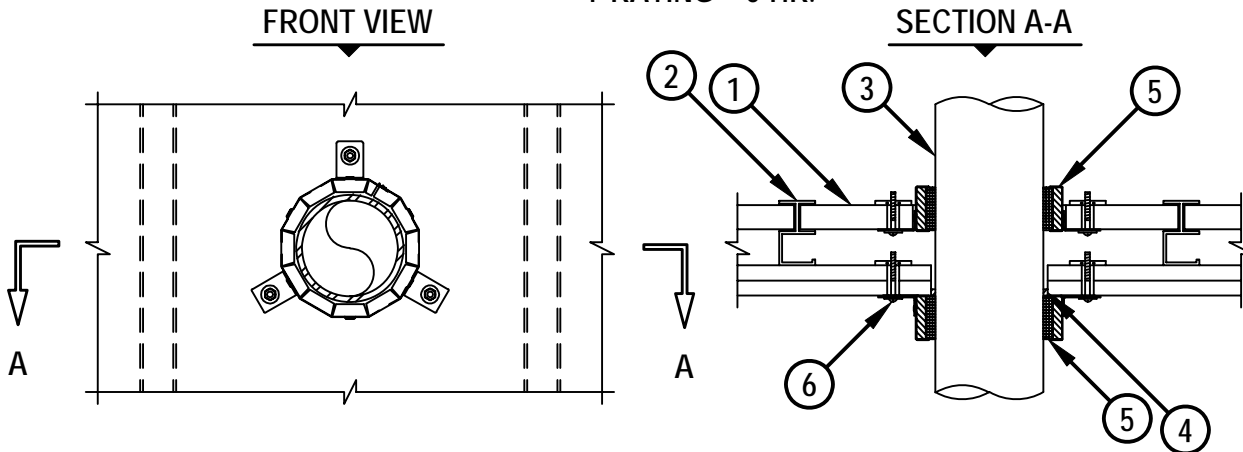
WL
2186d

Saving Lives through Innovation and Education

PLASTIC PIPE THROUGH GYPSUM SHAFT WALL ASSEMBLY

F-RATING = 2-HR.

T-RATING = 0-HR.



WL2217e.090805

1. GYPSUM SHAFT WALL ASSEMBLY (UL CLASSIFIED U400 SERIES) (2-HR. FIRE-RATING).
2. "C-T" SHAPED STUDS (1-5/8" WIDE x 2-1/2" DEEP, MIN. 25 GA.) SPACED MAXIMUM 24" C/C.
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING :
 - A. MAXIMUM 4" NOMINAL DIAMETER PVC PLASTIC PIPE (CELLULAR OR SOLID CORE).
 - B. MAXIMUM 4" NOMINAL DIAMETER CPVC PLASTIC PIPE.
4. MINIMUM 1/4" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.
5. HILTI CP 643N FIRESTOP COLLAR WITH FASTENING HOOKS (SEE TABLE BELOW) (SEE NOTE NO. 3 BELOW).
6. HILTI 3/16" TOGGLER BOLTS AND MINIMUM 3/4" DIAMETER WASHERS TO ATTACH EACH FASTENING HOOK TO GYPSUM WALL ASSEMBLY.

NOMINAL PIPE DIAMETER	PRODUCT DESCRIPTION	MAX. HOLE SIZE IN 1" GYPSUM LINER	MAX. HOLE SIZE IN GYPSUM BOARD
1-1/2"	CP 643 50/15" N	2-7/8"	2-1/8"
2"	CP 643 63/2" N	3-1/2"	2-5/8"
3"	CP 643 90/3" N	4-7/8"	4"
4"	CP 643 110/4" N	6"	5"

- NOTES :
1. ANNULAR SPACE IN GYPSUM BOARD = MINIMUM 0", MAXIMUM 1/4".
 2. CLOSED OR VENTED PIPING SYSTEMS (PVC = SCHEDULE 40; CPVC = SDR 17).
 3. FOR THE HILTI CP 643N INSTALLED WITHIN THE 1" GYPSUM LINER, ATTACH THE FASTENING HOOKS TO THE COLLAR BODY WITH NO. 7 SHEET METAL SCREWS MAXIMUM 5/16" IN LENGTH).
 4. AS AN ALTERNATE TO THE ABOVE SHAFT WALL ASSEMBLY, A 1 OR 2-HR. GYPSUM WALL ASSEMBLY MAY BE USED (U300, U400 OR V400 SERIES). STEEL STUDS TO BE MINIMUM 2-1/2" WIDE. WOOD STUDS TO CONSIST OF NOMINAL 2 x 4 LUMBER.



HILTI, Inc.
Tulsa, Oklahoma USA (918) 252-6000

Sheet	1 of 1
Scale	5/32" = 1"
Date	Sep. 08, 2005

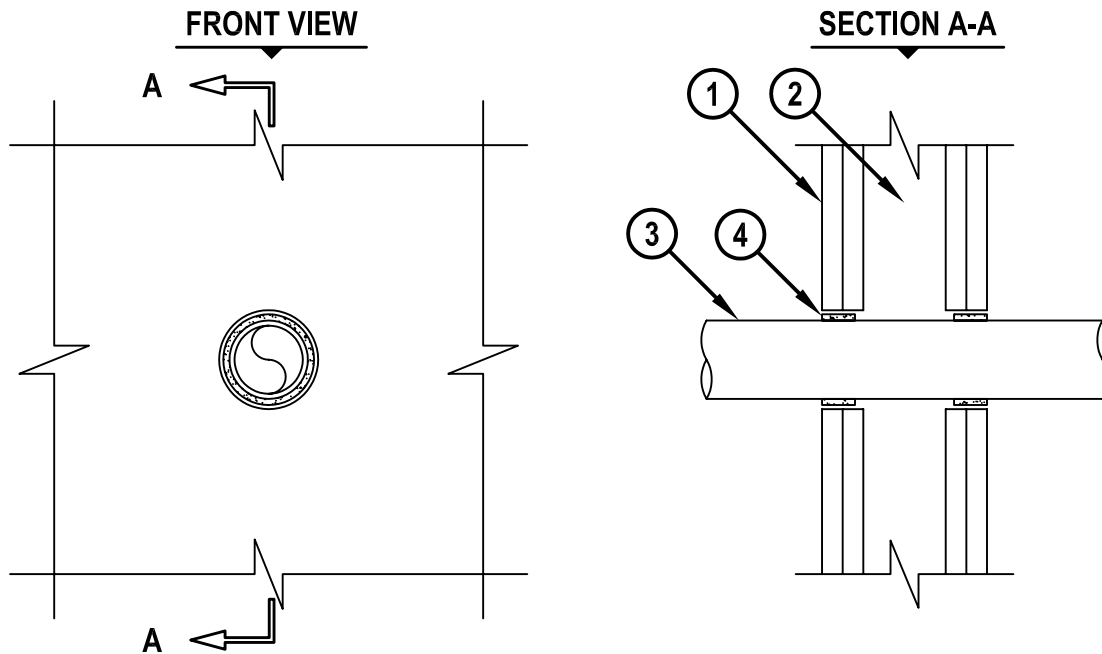
Drawing No.
WL
2217e

PLASTIC PIPE THROUGH GYPSUM WALL ASSEMBLY

F-RATING = 1 AND 2-HR.

T-RATING = 0-HR.

WL2235d.061505



1. GYPSUM WALL ASSEMBLY (UL CLASSIFIED U300 OR U400 SERIES) (1-HR. OR 2-HR. FIRE- RATING) (2-HR. SHOWN).
2. (NOT SHOWN). WOOD STUDS TO CONSIST OF NOMINAL 2" x 4" LUMBER. STEEL STUDS TO BE MINIMUM 2-1/2" WIDE.
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING :
 - A. MAXIMUM 2" NOMINAL DIAMETER PVC PLASTIC PIPE (CELLULAR OR SOLID CORE).
 - B. MAXIMUM 2" NOMINAL DIAMETER ABS PLASTIC PIPE (CELLULAR OR SOLID CORE).
 - C. MAXIMUM 2" NOMINAL DIAMETER FRPP PLASTIC PIPE.
 - D. MAXIMUM 2" NOMINAL DIAMETER CPVC PLASTIC PIPE (CLOSED PIPING SYSTEM ONLY).
 - E. MAXIMUM 1" NOMINAL DIAMETER PEX PLASTIC TUBE (CLOSED PIPING SYSTEM ONLY).
4. HILTI CP 648E WRAP STRIP (NOMINAL 3/16" THICK x 1" WIDE) CONTINUOUSLY WRAPPED AROUND THE OUTER CIRCUMFERENCE OF THE PIPE, COVERING ONE TIME, AND HELD IN PLACE WITH TAPE. WRAP STRIP TO BE SLID INTO ANNULAR SPACE, FLUSH WITH WALL SURFACES.

NOTES :

1. MAXIMUM DIAMETER OF OPENING = 3".
2. ANNULAR SPACE = NOMINAL 5/16".
3. CLOSED OR VENTED PIPING SYSTEM (PVC, ABS, FRPP = SCHEDULE 40; CPVC = SDR 13.5, PEX = SDR 9).
4. AS AN ALTERNATE TO HILTI CP 648E WRAP STRIP, HILTI CP 648S/1.5" AND CP 648S/2" WRAP STRIP MAY BE USED ON 1-1/2" AND 2" PIPES, RESPECTIVELY. WRAP HILTI CP 648S WRAP STRIP AROUND THE CIRCUMFERENCE OF THE PIPE AND HOLD IN PLACE WITH INTEGRATED TAPE. WRAP STRIP TO BE SLID INTO ANNULAR SPACE, FLUSH WITH WALL SURFACES.



HILTI, Inc.
Tulsa, Oklahoma USA (918) 252-6000

Sheet	1 of 1
Scale	11/64" = 1"
Date	June 15, 2005

Drawing No.

WL
2235d

Firestop Drop-In Device (CFS-DID)

Product description

- One step firestop solution for a variety of pipe materials and diameters
- Helps reduce labor costs and increase productivity
- Ready-to-use out of box
- Internationally tested and approved by UL

Product features

- Integrated moisture and smoke seal
- Simple, quick error free installation
- Easily identifiable to building inspectors
- All-in-one solution for renovation, retrofit, and new construction
- Buy American Compliant

Areas of application

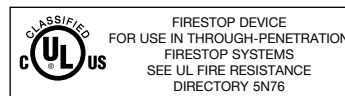
- For use in concrete, hollow core, and metal deck slab thicknesses ranging from 2-1/2" to 12-1/2"
- For use in firestopping plastic, metal, and insulated pipes through cored or sleeved holes
- Installation complete with several fastening options including gas actuated fasteners, metal hit anchors, and kwik con screw anchor systems



Technical Data	CFS-DID
Expansion temperature	~ 356° F (~ 180° C)
Expansion rate	1:15 load expansion, load = 5g/cm ³ 1:40 free expansion
Temperature resistance	-4 up to 190° F (20 up to 88° C)
Storage temperature	23 up to 122° F (-5 up to 50° C)

Tested in accordance with

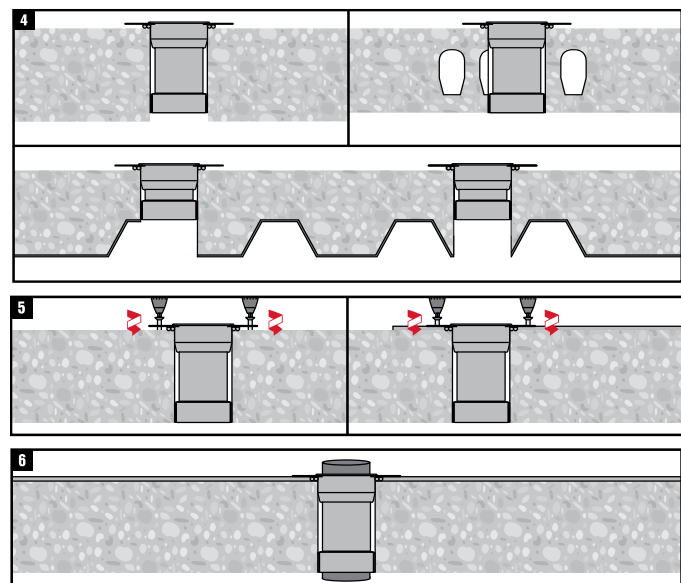
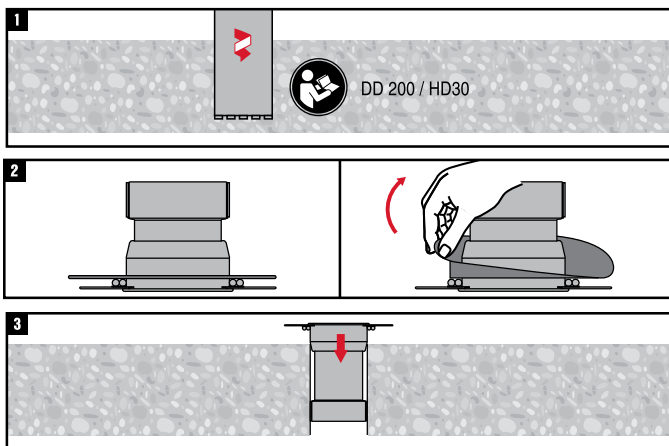
- ASTM E814
- UL 1479



Installation instructions for CFS-DID

Notice

Always refer to the MSDS before use and the UL Fire Resistance Directory or Hilti Firestop Systems Guide for complete installation information.



Hilti Firestop
Saving lives
through innovation
and education

Hilti. Outperform. Outlast.

Certificate of Compliance

Certificate Number 20110422-R15431

Report Reference 2011 April 22

Issue Date 2011 April 22

Page 1 of 1



Issued to: Hilti Inc.

5400 S 122ND East Ave
Tulsa, OK 74146

*This is to certify that
representative samples of*

Firestop Devices

CFS-DID for use in Through-Penetration Firestop Systems as currently described in the UL Fire Resistance Directory.

Have been investigated by Underwriters Laboratories Inc.® (UL) or any authorized licensee of UL in accordance with the Standard(s) indicated on this Certificate.


Standard(s) for Safety:

ANSI/UL 1479, "Fire Tests of Through-Penetration Firestops."
CAN/ULC-S115-2005, "Standard Method of Fire Tests of Firestop Systems."

Additional Information:

See UL On-Line Certification Directory at www.UL.com for additional information.

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

William R. Carney

Director, North American Certification Programs

Underwriters Laboratories Inc.

Any information and documentation involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at <http://www.ul.com/global/eng/pages/corporate/contactus/>



MATERIAL SAFETY DATA SHEET

Product name: CFS-DID
Description: Metal Firestop Insert containing a black intumescent material.
Supplier: Hilti, Inc. P.O. Box 21148, Tulsa, OK 74121
Emergency # (Chem-Trec.): 1 800 424 9300 (USA, PR, Virgin Islands, Canada); 001 703 527 3887 (other countries)

INGREDIENTS AND EXPOSURE LIMITS

Not applicable. This product is considered to be an "article" as defined in the federal OSHA Hazard Communication Standard 29 CFR 1910.1200 / 1926.59.

PHYSICAL DATA

Appearance:	Galvanized metal sleeve with red plastic top cap	Odor:	None.
Vapor Density: (air = 1)	Not applicable.	Vapor Pressure:	Not applicable.
Boiling Point:	Not applicable.	VOC Content:	0.19 g/l
Evaporation Rate:	Not applicable.	Solubility in Water:	Not determined.
Specific Gravity:	Not determined.	pH:	Not applicable.

FIRE AND EXPLOSION HAZARD DATA

Flash Point:	Not applicable.	Flammable Limits:	Not applicable.
Extinguishing Media:	Use extinguishing media appropriate for surrounding fire.		
Special Fire Fighting Procedures:	None known.		
Unusual Fire and Explosion Hazards:	None known. Product serves as a firestop; intumescent material sleeve expands when exposed to temperatures > 160° C / 320° F.		

REACTIVITY DATA

Stability:	Stable.	Hazardous Polymerization:	Will not occur.
Incompatibility:	None known.	Decomposition Products:	None known.
Conditions to Avoid:	None known.		

HEALTH HAZARD DATA

Known Hazards:	None known.	Routes of Exposure:	None known.
Signs and Symptoms of Exposure:	None expected from routine use/installation according to manufacturer's specifications and technical guides.		
Carcinogenicity:	The enclosed intumescent strip contains carbon black which has been classified by the IARC as 2B – "Possibly Carcinogenic to Humans". This data is based on long term inhalation studies. As this product is used, no carbon black dust is present or produced, so this classification is not relevant.		
Medical Conditions Aggravated by Exposure:	None known.		

EMERGENCY AND FIRST AID PROCEDURES

Eyes:	Immediately flush with plenty of water. Call a physician if symptoms occur.
Skin:	Not applicable. Practice good hygiene; i.e. wash hands during breaks, before eating or smoking, and after work.
Inhalation:	Not applicable.
Ingestion:	Not a potential route of exposure.
Other:	Referral to a physician is recommended if there is any question about the seriousness of any 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:	None required; however, gloves recommended.
Respiratory Protection:	No respiratory protection is needed for normal application of this product.

PRECAUTIONS FOR SAFE HANDLING AND USE

Handling and Storing Precautions:	Store in a cool dry area. Follow installation instructions.
Spill Procedures:	No special requirements.

REGULATORY INFORMATION

Hazard Communication:	This product is considered to be an "article" as defined in the federal OSHA Hazard Communication Standard.
DOT Shipping Name:	Not regulated.
IATA / ICAO Shipping Name:	Not regulated.
TSCA Inventory Status:	Chemical components listed on TSCA inventory.
SARA Title III, Section 313:	This product is classified as an "article" and is not 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
Health / Safety:	1 800 879 6000	Jerry Metcalf	(x1003704)
Emergency # (Chem-Trec):	1 800 424 9300 (USA, PR, Virgin Islands, Canada); 001 703 527 3887 (other countries)		

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.

Firestop Collar (CP 643N)

Product description

- A ready-to-use firestop collar, made of a galvanized steel housing and intumescent inserts for firestopping combustible pipes

Product features

- Ready-to-use collar
- No construction required
- Fast installation time
- Adjustable mounting tabs
- Low profile for tight installations

Areas of application

- Firestopping combustible pipes up to 6" diameter in penetrations through fire walls and floors
- Suitable for the following pipe materials:
- PVC, CPVC, ABS, PVDF, PP and FRPP

For use with

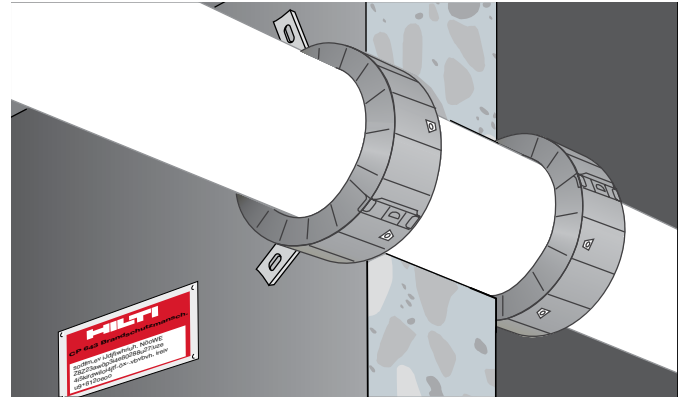
- Concrete, masonry, wood floor and gypsum wall assemblies
- Wall and floor assemblies rated up to 4 hours

Types of installation

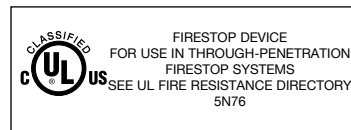
- Wall: two collars, one on each side
- Floor: one collar on underside (bottom)

Example

- Waste water pipes
- Fresh water pipes



Technical Data		CP 643N		
Description	Pipe outside dia. (in.)	Collar outside dia. (in.)	Collar Height (in.)	No. of hooks and fasteners
CP 643-50/1.5"N	1.4-2.0	2.8	0.9	2
CP 643-63/2"N	2.0-2.5	3.4	1.3	2
CP 643-90/3"N	2.6-3.6	4.9	1.7	3
CP 643-110/4"N	3.6-4.5	6.0	1.9	3
CP 643-160/6"N	6.6	9.8	1.9	4
Temperature resistance		-40°F to 140°F (-40°C to 60°C)		
Intumescent activation		Approx. 392°F (200°C)		
Expansion ratio (unrestricted)		Up to 1:10		
Tested in accordance with				
• UL 1479 • ASTM E 814 • ASTM G21				



Installation instructions for CP 643N

Notice

- Before handling, read Material Safety Data Sheet and product label for safe usage and health information.
- Instructions below are general guidelines — always refer to the applicable drawing in the UL Fire Resistance Directory or Hilti Firestop Systems Guide for complete installation information

Opening

1. Clean the plastic pipes. Expansion of the intumescent material during a fire acts to close the plastic pipe. Very dirty pipes (ie: with remains of mortar) may lead to a delay in this closing action. Soiled plastic pipes should, therefore, be cleaned in the area where the CP 643N Firestop Collar is to be installed.

Application of firestop system

2. Seal the opening if required. Gaps may be closed with FS-ONE. The approved methods vary and are given in the specific UL system.
3. Close the CP 643N Firestop Collar. Place the CP 643N Firestop Collar around the plastic pipe and lock the closure by applying firm pressure until it latches.
4. Attach fastening hooks. The fastening hooks can be attached to various points on the metal housing. This allows the fastening points to be made to suit the space available in each case. The hooks must be positioned as symmetrically as possible. The required number of fastening hooks is indicated on the packaging.

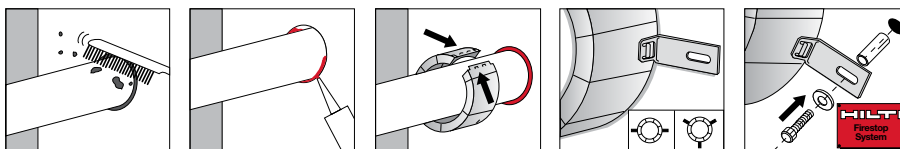
5. Fastening the CP 643N Firestop Collar. Only when fastened properly can CP 643N offer protection against fire.
 - a. Mark the fastening points.
 - b. Drill holes with a Hilti rotary hammer drill (i.e. TE 4-A18) or, depending on base material, fasten using Hilti powder-actuated tool.
 - c. To secure the CP 643N Firestop Collar, use Hilti anchors/fasteners.
 - d. For maintenance reasons, a penetration can be permanently marked with an identification plate and fastened in a visible position next to the seal.

Not for use

- With metal pipes
- In highly corrosive surroundings
- With unapproved anchors/fasteners

Storage

- Store only in the original packaging in a location protected from moisture



1. Clean plastic pipe.
2. Close remaining gap to provide smoke and gas resistant seal.
3. Close collar.
4. Attach fastening hooks.
5. Fasten collar and identification plate (if required).

Hilti. Outperform. Outlast.

Hilti, Inc. (U.S.) 1-800-879-8000 • www.us.hilti.com • en español 1-800-879-5000 • Hilti Firestop Systems Guide



CERTIFICATE OF COMPLIANCE

CERTIFICATE NUMBER: 260204 - R15431B

ISSUE DATE: February 26, 2004

Page 1 of 1

Issued to: Hilti Construction Chemicals, Div Of Hilti Inc
5400 S 122nd East Ave
Tulsa, OK 74146

Report Reference: R15431 - 03NK33473 (R13240)


This is to Certify that representative samples of: CP 643-N (may include a size designation between "643" and "N") Firestop Collar.

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


Standard(s) for Safety: Fire Tests of Through Penetration Firestops, UL1479 dated May 23, 2003.
Standard Method of Fire Tests of Firestop Systems, ULC - S115 - 95.

Additional Information: The products noted in this Certificate of Compliance are intended for Through-Penetration Firestop Systems described in the Underwriters Laboratories Fire Resistance Directory and the Products Certified for Canada 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: 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 MARKING ON THE PRODUCT

Engineer:

Howard Gruszynski
Underwriters Laboratories Inc.

Review Engineer:
Richard Walke
Underwriters Laboratories Inc.





MATERIAL SAFETY DATA SHEET

Product name: CP 643N Firestop Collar/ CP 644 Firestop Collar
Description: Galvanized metal housing containing black polymer-bonded intumescent firestop material
Supplier: Hilti, Inc. P.O. Box 21148, Tulsa, OK 74121
Emergency # (Chem-Trec.): 1 800 424 9300 (USA, PR, Virgin Islands, Canada); 001 703 527 3887 (other countries)

INGREDIENTS AND EXPOSURE LIMITS

Not applicable. This product is considered to be an "article" as defined in the federal OSHA Hazard Communication Standard 29 CFR 1910.1200 / 1926.59.

PHYSICAL DATA

Appearance:	Metal collar/ black firestop material	Odor:	None
Vapor Density: (air = 1)	Not applicable	Vapor Pressure:	Not applicable
Boiling Point:	Not applicable	VOC Content:	7.6 g/l
Evaporation Rate:	Not applicable	Solubility in Water:	Not determined
Specific Gravity:	Not determined	pH:	Not applicable

FIRE AND EXPLOSION HAZARD DATA

Flash Point:	Not applicable	Flammable Limits:	Not applicable
Extinguishing Media:	Use extinguishing media appropriate for surrounding fire.		
Special Fire Fighting Procedures:	None known.		
Unusual Fire and Explosion Hazards:	None known. Product serves as a Firestop; intumescent material inside the collar expands when exposed to temperatures > 160° C / 320° F.		

REACTIVITY DATA

Stability:	Stable.	Hazardous Polymerization:	Will not occur.
Incompatibility:	None known	Decomposition Products:	None known
Conditions to Avoid:	None known		

HEALTH HAZARD DATA

Known Hazards:	None known	Routes of Exposure:	None known
Signs and Symptoms of Exposure:	None expected from routine use/installation according to manufacturer's specifications and technical guides.		
Carcinogenicity:	No ingredients are classified as a carcinogen by IARC, NTP or OSHA.		
Medical Conditions Aggravated by Exposure:	None known		

EMERGENCY AND FIRST AID PROCEDURES

Eyes:	Immediately flush with plenty of water. Call a physician if symptoms occur.
Skin:	Not applicable. Practice good hygiene; i.e. wash hands during breaks, before eating or smoking, and after work.
Inhalation:	Not applicable.
Ingestion:	Not a potential route of exposure
Other:	Referral to a physician is recommended if there is any question about the seriousness of any 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:	None required; however, (cotton) gloves recommended.
Respiratory Protection:	No respiratory protection is needed for normal application of this product.

PRECAUTIONS FOR SAFE HANDLING AND USE

Handling and Storing Precautions:	Store in a cool dry area. Follow installation instructions.
Spill Procedures:	No special requirements.

REGULATORY INFORMATION

Hazard Communication:	This product is considered to be an "article" as defined in the federal OSHA Hazard Communication Standard.
DOT Shipping Name:	Not regulated.
IATA / ICAO Shipping Name:	Not regulated.
TSCA Inventory Status:	Chemical components listed on TSCA inventory.
SARA Title III, Section 313:	This product is classified as an "article" and is not 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
Health / Safety:	1 800 879 6000	Jerry Metcalf	(x6704)
Emergency # (Chem-Trec):	1 800 424 9300 (USA, PR, Virgin Islands, Canada); 001 703 527 3887 (other countries)		

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.

Firestop Collar (CP 644)

Product description

- A ready-to-use firestop collar, made of galvanized steel housing and intumescent inserts for firestopping large combustible pipes

Product features

- Ready-to-use collar
- No construction required
- Fast installation time
- Adjustable/moveable fastening tabs

Areas of application

- Sealing of penetrations for combustible pipes from 8" to 10" in diameter
- Vented or closed pipe
- PVC or CPVC pipe

For use with

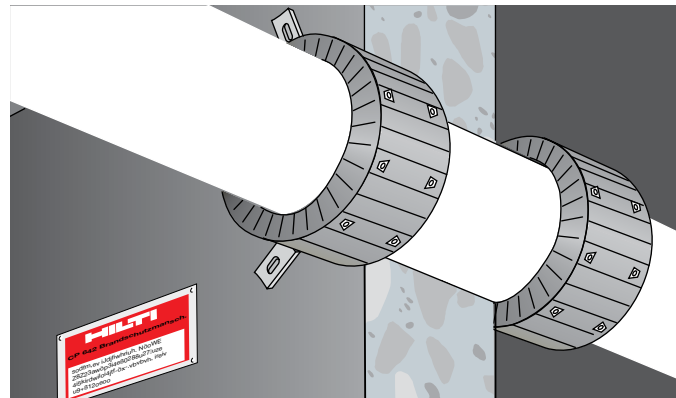
- Concrete, masonry, and gypsum walls
- Wall and floor assemblies rated up to 2 hours

Types of installation

- Wall: two collars, one on each side
- Floor: one collar on underside (bottom)

Examples

- Waste water pipes
- Fresh water pipes

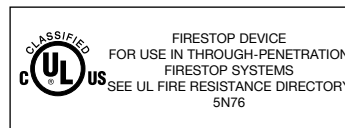


Technical Data

Description	Pipe outside dia (in.)	CP 644		
		Collar outside dia. (in.)	Collar Height (in.)	No. of hooks and fasteners
CP 644-200/8"	8.8	10.0	6.9	10
CP 644-250/10"	10.8	12.4	9.1	12
Temperature resistance		-40°F to 140°F (-40°C to 60°C)		
Intumescent Activation		Approx. 392°F (200°C)		
Expansion ratio (unrestricted)		Up to 1:10		

Tested in accordance with

- UL 1479 • ASTM E 814 • ASTM G21



Installation instructions for CP 644

Notice

- Before handling, read Material Safety Data Sheet and product label for safe usage and health information.
- Instructions below are general guidelines — always refer to the applicable drawing in the UL Fire Resistance Directory or Hilti Firestop Systems Guide for complete installation information

Opening

1. Clean the plastic pipes. Expansion of the intumescent material during a fire acts to close the plastic pipe. Very dirty pipes, (ie: with remains of mortar) may lead to a delay in this closing action. Soiled plastic pipes should, therefore, be cleaned in the area where the CP 644 Firestop Collar is to be installed.

Application of firestop system

2. Seal the opening. Gaps must be closed with FS-ONE. The approved methods vary and are given in the specific UL system.
3. Close the CP 644 Firestop Collar. Place the CP 644 Firestop Collar around the plastic pipe and lock the closure by applying firm pressure until it latches.
4. Attach fastening hooks. The fastening hooks can be attached to various points on the metal housing. This allows the fastening points to be made to suit the space available in each case.
The hooks must be positioned as symmetrically as possible. The required number of fastening hooks is indicated on the packaging.

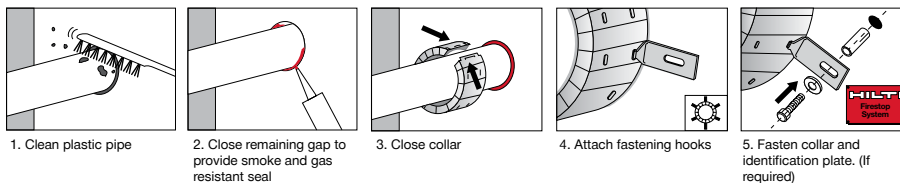
5. Fastening the CP 644 Firestop Collar. Only when fastened properly can CP 644 offer protection against fire passing through.
 - a. Mark the fastening points.
 - b. Drill holes with a Hilti rotary hammer drill (i.e. TE 4-A18) or, depending on base material, fasten using Hilti powder-actuated tool.
 - c. To secure the CP 644 Firestop Collar, use Hilti anchors/fasteners.
 - d. For maintenance reasons, a penetration can be permanently marked with an identification plate and fastened in a visible position next to the seal.

Not for use

- With metal pipes
- In highly corrosive surroundings
- With unapproved anchors/fasteners

Storage

- Store only in the original packaging in a location protected from moisture



CERTIFICATE OF COMPLIANCE

CERTIFICATE NUMBER: 260204 - R15431A

ISSUE DATE: February 26, 2004

Page 1 of 1

Issued to: Hilti Construction Chemicals, Div Of Hilti Inc
5400 S 122nd East Ave
Tulsa, OK 74146

Report Reference: R15431 - 03NK33473 (R13240)


This is to Certify that representative samples of: CP 644 (product may be suffixed to denote size) Firestop Collar

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

Standard(s) for Safety: Fire Tests of Through Penetration Firestops, UL1479 dated May 23, 2003.
Standard Method of Fire Test of Firestop Systems, ULC - S115 - 95.


Additional Information: The products noted in this Certificate of Compliance are intended for Through-Penetration Firestop Systems described in the Underwriters Laboratories Fire Resistance Directory and the Products Certified for Canada 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: 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 MARKING ON THE PRODUCT

Engineer:


Howard Gruszynski
Underwriters Laboratories Inc.

Review Engineer:

Richard Walke
Underwriters Laboratories Inc.





MATERIAL SAFETY DATA SHEET

Product name: CP 643N Firestop Collar/ CP 644 Firestop Collar
Description: Galvanized metal housing containing black polymer-bonded intumescent firestop material
Supplier: Hilti, Inc. P.O. Box 21148, Tulsa, OK 74121
Emergency # (Chem-Trec.): 1 800 424 9300 (USA, PR, Virgin Islands, Canada); 001 703 527 3887 (other countries)

INGREDIENTS AND EXPOSURE LIMITS

Not applicable. This product is considered to be an "article" as defined in the federal OSHA Hazard Communication Standard 29 CFR 1910.1200 / 1926.59.

PHYSICAL DATA

Appearance:	Metal collar/ black firestop material	Odor:	None
Vapor Density: (air = 1)	Not applicable	Vapor Pressure:	Not applicable
Boiling Point:	Not applicable	VOC Content:	7.6 g/l
Evaporation Rate:	Not applicable	Solubility in Water:	Not determined
Specific Gravity:	Not determined	pH:	Not applicable

FIRE AND EXPLOSION HAZARD DATA

Flash Point:	Not applicable	Flammable Limits:	Not applicable
Extinguishing Media:	Use extinguishing media appropriate for surrounding fire.		
Special Fire Fighting Procedures:	None known.		
Unusual Fire and Explosion Hazards:	None known. Product serves as a Firestop; intumescent material inside the collar expands when exposed to temperatures > 160° C / 320° F.		

REACTIVITY DATA

Stability:	Stable.	Hazardous Polymerization:	Will not occur.
Incompatibility:	None known	Decomposition Products:	None known
Conditions to Avoid:	None known		

HEALTH HAZARD DATA

Known Hazards:	None known	Routes of Exposure:	None known
Signs and Symptoms of Exposure:	None expected from routine use/installation according to manufacturer's specifications and technical guides.		
Carcinogenicity:	No ingredients are classified as a carcinogen by IARC, NTP or OSHA.		
Medical Conditions Aggravated by Exposure:	None known		

EMERGENCY AND FIRST AID PROCEDURES

Eyes:	Immediately flush with plenty of water. Call a physician if symptoms occur.
Skin:	Not applicable. Practice good hygiene; i.e. wash hands during breaks, before eating or smoking, and after work.
Inhalation:	Not applicable.
Ingestion:	Not a potential route of exposure
Other:	Referral to a physician is recommended if there is any question about the seriousness of any 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:	None required; however, (cotton) gloves recommended.
Respiratory Protection:	No respiratory protection is needed for normal application of this product.

PRECAUTIONS FOR SAFE HANDLING AND USE

Handling and Storing Precautions:	Store in a cool dry area. Follow installation instructions.
Spill Procedures:	No special requirements.

REGULATORY INFORMATION

Hazard Communication:	This product is considered to be an "article" as defined in the federal OSHA Hazard Communication Standard.
DOT Shipping Name:	Not regulated.
IATA / ICAO Shipping Name:	Not regulated.
TSCA Inventory Status:	Chemical components listed on TSCA inventory.
SARA Title III, Section 313:	This product is classified as an "article" and is not 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
Health / Safety:	1 800 879 6000	Jerry Metcalf	(x6704)
Emergency # (Chem-Trec):	1 800 424 9300 (USA, PR, Virgin Islands, Canada); 001 703 527 3887 (other countries)		

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.

Firestop Wrap Strip (CP 648-E)

Product description

- An intumescent, flexible firestop wrap strip for plastic and insulated pipe penetrations

Product features

- Highly Intumescent
- Long length avoids waste
- Can be continuously wrapped
- Cost effective
- Quick and easy closure without tools
- Ideal for very tight installations

Areas of application

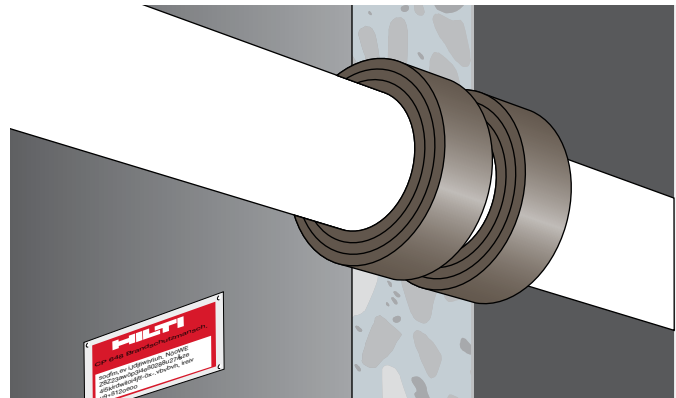
- Firestopping combustible pipe penetrations
- Difficult applications where space is limited
- Penetrations through concrete over metal deck
- Plastic and insulated penetrations using PVC, CPVC, ABS, FRPP and PEX

For use with

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

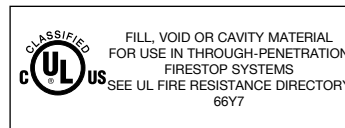
Examples

- Waste water pipes
- Fresh water pipes
- Decking penetrations



Technical Data*	CP 648-E
Density	Approx. 1.35 g/cm ³
Dimensions (approximate)	3/16" x 1" x 33 ft or 3/16" x 1-3/4" x 33 ft
Color	Black with foil backing
Temperature resistance	-40°F to 212°F (-40°C to 100°C)
Intumescent activation	Approx. 320°F (160°C)
Expansion ratio (unrestricted)	1:40
Tested in accordance with	
• UL 1479 • ASTM E 814 • ASTM G21	

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



Installation instructions for CP 648-E

Notice

- Before handling, read Material Safety Data Sheet and product label for safe usage and health information.
- Instructions below are general guidelines — always refer to the applicable drawing in the UL Fire Resistance Directory or Hilti Firestop Systems Guide for complete installation information

Opening

1. Clean the plastic or insulated pipe penetration. Expansion of the intumescent material during a fire closes the plastic or insulated pipe penetration. Very dirty pipes (ie: with remains of mortar) may lead to a delay in this closing action. Soiled plastic pipes or insulated pipe penetrations should, therefore, be cleaned in the area where the CP 648-E Firestop Wrap Strip is to be installed.

Application of firestop system

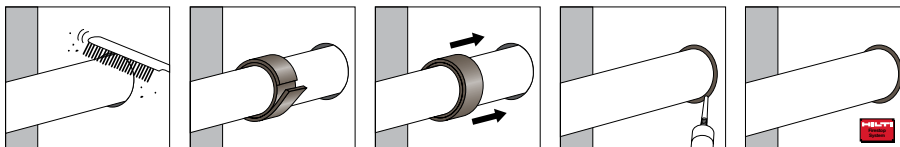
2. Tightly wrap the required number of strips continuously around the penetrant, and hold in place with tape.
3. Push the Hilti Wrap Strip into the opening until it is flush with the substrate surface unless otherwise required by the UL system. It may be required by the UL system to clamp, wire or use a Hilti Retaining Collar to secure the wrap strip in place for some applications.
4. If the UL system requires a cold smoke seal, then apply the proper amount of Hilti FS-ONE sealant in the opening over the wrap strip.
5. For maintenance reasons, a penetration seal can be permanently marked with an identification plate and fastened in a visible position next to the seal.

Not for use

- In highly corrosive surroundings
- With unapproved retaining collars, anchors/fasteners
- Outdoors

Storage

- Store only in the original packaging in a location protected from moisture at temperatures between 23°F and 86°F (-5°C and 30°C).



1. Clean penetration

2. Wrap strips around pipe the specified number of times

3. Push Wrap Strips into hole

4. Seal penetration against smoke with FS-ONE

5. Fasten installation plate (if required)



Hilti Firestop
Saving lives
through innovation
and education

Hilti. Outperform. Outlast.

Certificate of Compliance

Certificate Number **20060214-R13240L**
Report Reference **2006 February 14**
Issue Date **2006 February 14**

Page 1 of 1



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**
CP 648E, CP 648S

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


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

Additional Information: CP 648E and CP648S (Product number may be suffixed to denote size) Wrap Strip for use in Through-Penetration Firestop Systems as currently described in the UL Fire Resistance Directory.

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:

Mona Couloute
Underwriters Laboratories Inc.

Reviewed by:

Christopher Johnson
Underwriters Laboratories Inc.



MATERIAL SAFETY DATA SHEET

Product name: CP 648-S & CP 648-E Firestop Wrap Strip
Description: 1" or 1 3/4" wide - intumescent wrap for plastic or insulated pipe
Supplier: Hilti, Inc. P.O. Box 21148, Tulsa, OK 74121
Emergency # (Chem-Trec.): 1 800 424 9300 (USA, PR, Virgin Islands, Canada); 703 527 3887 (Other countries)

INGREDIENTS AND EXPOSURE LIMITS

Not a hazardous chemical as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200

PHYSICAL DATA

Appearance:	Dark gray colored putty strips.	Odor:	Mild odor.
Vapor Density: (air = 1)	Not applicable.	Vapor Pressure:	Not applicable.
Boiling Point:	Not applicable.	VOC Content:	7.6 g/l.
Evaporation Rate:	Not applicable.	Solubility in Water:	Not determined.
Density:	1.3-1.4 g/cm ³	pH:	Not determined.

FIRE AND EXPLOSION HAZARD DATA

Flash Point:	Not applicable.	Flammable Limits:	Not applicable.
Extinguishing Media:	Use extinguishing media appropriate for the surrounding fire.		
Special Fire Fighting Procedures:	None known.		
Unusual Fire and Explosion Hazards:	None known. Product serves as a firestop; intumescent material begins to expand when exposed to temperatures > 160° C (320° F)		

REACTIVITY DATA

Stability:	Stable.	Hazardous Polymerization:	Will not occur.
Incompatibility:	None known.	Conditions to Avoid:	None known.
Decomposition Products:	None known.		

HEALTH HAZARD DATA

Known Hazards:	Irritation of the eyes and skin is possible with some individuals.		
Signs and Symptoms of Exposure:	Eyes: Can cause irritation and watering but injury is unlikely. Skin: Irritation. is possible with some individuals. Inhalation: No effects expected. Ingestion: Not a likely route of exposure. Can cause irritation. Considered to have a low acute oral toxicity.		
Routes of Exposure:	Contact.		
Carcinogenicity:	No ingredients are classified as a carcinogen by IARC, NTP or OSHA.		
Medical Conditions Aggravated by Exposure:	None known.		

EMERGENCY AND FIRST AID PROCEDURES

Eyes:	Immediately 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:	Not applicable
Ingestion:	Only induce vomiting if directed by a physician. 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

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:	Cloth gloves are suitable; impermeable (neoprene or rubber) gloves recommended.
Respiratory Protection:	Not required.

PRECAUTIONS FOR SAFE HANDLING AND USE

Handling and Storing Precautions:	Avoid prolonged or repeated contact with the skin. Do not rub the eyes after contact with the hands. Practice good hygiene; i.e. wash after using and before eating or smoking. Store above 32° F and below 140° F (0 - 60° C). For industrial use only. Keep out of reach of children.
Spill Procedures:	No special requirements.

REGULATORY INFORMATION

Hazard Communication:	Not a hazardous chemical as defined by 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.
IATA / ICAO Shipping Name:	Not regulated.
TSCA Inventory Status:	Chemical components listed on TSCA inventory.
SARA Title III, Section 313:	This product does not contain any ingredients 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
Health / Safety:	1 800 879 6000	Jerry Metcalf	(x6704)
Emergency # (Chem-Trec):	1 800 424 9300 (USA, PR, Virgin Islands, Canada); 703 527 3887 (Other countries)		

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.

Firestop Wrap Strip (CP 648-S)

Product description

- A single wrap strip of intumescent, flexible firestop for use with plastic and insulated pipe penetrations

Product features

- Highly intumescent
- Pre-measured — no cutting required
- Integrated fastening tape
- Cost effective
- Quick and easy closure without tools
- Ideal for very tight installations

Areas of application

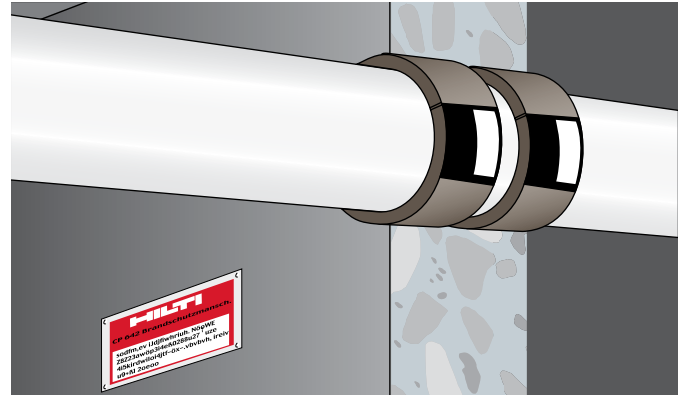
- Firestopping combustible pipe penetrations
- Difficult applications where space is limited
- Penetrations through concrete over metal deck
- Suitable for the following plastic pipe materials: PVC, CPVC, ABS, FRPP

For use with

- Concrete, masonry, wood floor and gypsum wall assemblies
- Wall and floor assemblies rated up to 3 hours

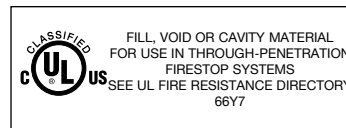
Examples

- Waste water pipes
- Fresh water pipes
- Decking penetrations



Technical Data*	CP 648-S
Density	Approx. 1.35 g/cm ³
Dimension (approximate) (thkns" x width" x length")	1.5": 3/16" x 1" x 6-3/4" 2": 3/16" x 1" x 8-1/4" 3": 3/16" x 1-3/4" x 11-1/2" 4": 3/8" x 1-3/4" x 15" 6": 1/2" x 1-3/4" x 22-1/4"
Color	Black with foil backing
Temperature resistance	-40°F to 212°F (-40°C to 100°C)
Intumescent activation	Approx. 320°F (160°C)
Expansion ratio (unrestricted)	1:40
Tested in accordance with	
• UL 1479 • ASTM E 814 • ASTM G21	

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



Installation instructions for CP 648-S

Notice

- Before handling, read Material Safety Data Sheet and product label for safe usage and health information.
- Instructions below are general guidelines — always refer to the applicable drawing in the UL Fire Resistance Directory or Hilti Firestop Systems Guide for complete installation information

Installation

1. Clean the plastic or insulated pipe penetration. Expansion of the intumescent material during a fire closes the plastic pipe. Very dirty pipes (ie: with remains of mortar) may lead to a delay in the closing action. Soiled plastic or insulated pipes should, therefore, be cleaned in the area where the CP 648-S Firestop Wrap Strip is to be installed.
2. Install Wrap Strip. First check the annular space to ensure compatibility with the appropriate UL System. Use the CP 648-S Firestop Wrap Strip corresponding to the diameter of the pipe to be installed. Wrap the CP 648-S strip around the pipe and fasten it tightly using the integrated adhesive strip.

Push the CP 648-S Firestop Wrap Strip into the annular space in accordance with the UL listing.

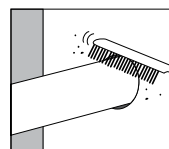
3. Seal against smoke and gas. Seal the remaining gap with Hilti FS-ONE sealant.
4. For maintenance reasons, a penetration seal can be permanently marked with an identification plate and fastened in a visible position next to the seal.

Not for use

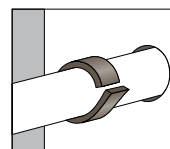
- In highly corrosive surroundings
- Outdoors

Storage

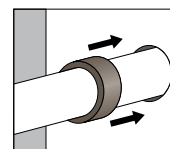
- Store only in the original packaging in a location protected from moisture at temperatures between 23°F and 86°F (-5°C and 30°C).



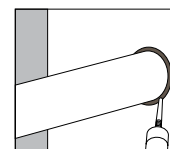
1. Clean penetration



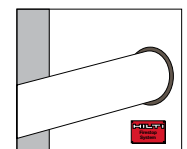
2A. Wrap the CP 648-S Wrap Strip around the pipe and fasten it tightly with the adhesive strip.



2B. Push the CP 648-S Wrap Strip along the pipe and into the annular space as indicated above.



3. Seal penetration against smoke with FS-ONE sealant.



4. Fasten installation plate (if required)



Hilti Firestop
Saving lives through innovation and education

Hilti. Outperform. Outlast.

Certificate of Compliance

Certificate Number **20060214-R13240L**
Report Reference **2006 February 14**
Issue Date **2006 February 14**

Page 1 of 1



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**
CP 648E, CP 648S

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

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

Additional Information: CP 648E and CP648S (Product number may be suffixed to denote size) Wrap Strip for use in Through-Penetration Firestop Systems as currently described in the UL Fire Resistance Directory.

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:

Mona Couloute
Underwriters Laboratories Inc.

Reviewed by:

Christopher Johnson
Underwriters Laboratories Inc.



MSDS No.: 302
Revision No.: 002
Revision Date: 02/28/05
Page: 1 of 2

MATERIAL SAFETY DATA SHEET

Product name: CP 648-S & CP 648-E Firestop Wrap Strip
Description: 1" or 1 3/4" wide - intumescent wrap for plastic or insulated pipe
Supplier: Hilti, Inc. P.O. Box 21148, Tulsa, OK 74121
Emergency # (Chem-Trec.): 1 800 424 9300 (USA, PR, Virgin Islands, Canada); 703 527 3887 (Other countries)

INGREDIENTS AND EXPOSURE LIMITS

Not a hazardous chemical as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200

PHYSICAL DATA

Appearance:	Dark gray colored putty strips.	Odor:	Mild odor.
Vapor Density: (air = 1)	Not applicable.	Vapor Pressure:	Not applicable.
Boiling Point:	Not applicable.	VOC Content:	7.6 g/l.
Evaporation Rate:	Not applicable.	Solubility in Water:	Not determined.
Density:	1.3-1.4 g/cm ³	pH:	Not determined.

FIRE AND EXPLOSION HAZARD DATA

Flash Point:	Not applicable.	Flammable Limits:	Not applicable.
Extinguishing Media:	Use extinguishing media appropriate for the surrounding fire.		
Special Fire Fighting Procedures:	None known.		
Unusual Fire and Explosion Hazards:	None known. Product serves as a firestop; intumescent material begins to expand when exposed to temperatures > 160° C (320° F)		

REACTIVITY DATA

Stability:	Stable.	Hazardous Polymerization:	Will not occur.
Incompatibility:	None known.	Conditions to Avoid:	None known.
Decomposition Products:	None known.		

HEALTH HAZARD DATA

Known Hazards:	Irritation of the eyes and skin is possible with some individuals.		
Signs and Symptoms of Exposure:	Eyes: Can cause irritation and watering but injury is unlikely. Skin: Irritation. is possible with some individuals. Inhalation: No effects expected. Ingestion: Not a likely route of exposure. Can cause irritation. Considered to have a low acute oral toxicity.		
Routes of Exposure:	Contact.		
Carcinogenicity:	No ingredients are classified as a carcinogen by IARC, NTP or OSHA.		
Medical Conditions Aggravated by Exposure:	None known.		

EMERGENCY AND FIRST AID PROCEDURES

Eyes:	Immediately 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:	Not applicable
Ingestion:	Only induce vomiting if directed by a physician. 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

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:	Cloth gloves are suitable; impermeable (neoprene or rubber) gloves recommended.
Respiratory Protection:	Not required.

PRECAUTIONS FOR SAFE HANDLING AND USE

Handling and Storing Precautions:	Avoid prolonged or repeated contact with the skin. Do not rub the eyes after contact with the hands. Practice good hygiene; i.e. wash after using and before eating or smoking. Store above 32° F and below 140° F (0 - 60° C). For industrial use only. Keep out of reach of children.
Spill Procedures:	No special requirements.

REGULATORY INFORMATION

Hazard Communication:	Not a hazardous chemical as defined by 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.
IATA / ICAO Shipping Name:	Not regulated.
TSCA Inventory Status:	Chemical components listed on TSCA inventory.
SARA Title III, Section 313:	This product does not contain any ingredients 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
Health / Safety:	1 800 879 6000	Jerry Metcalf	(x6704)
Emergency # (Chem-Trec):	1 800 424 9300 (USA, PR, Virgin Islands, Canada); 703 527 3887 (Other countries)		

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.

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 after material has cured
- Contains no halogen, solvents or asbestos
- High fire rating properties
- Water based, easy to clean
- Protects most typical firestop penetration applications
- Paintable
- Single component systems available
- Meets LEED™ requirements for indoor environmental quality credit 4.1 Low Emitting Materials, Sealants and Adhesives and 4.2 Paints and Coatings

Areas of application

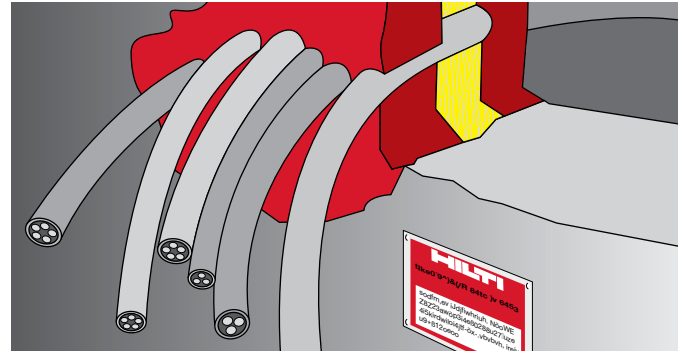
- Steel, copper and EMT pipes
- Insulated steel and copper pipes
- Cable bundles
- Closed or vented plastic pipes
- HVAC penetrations

For use with

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

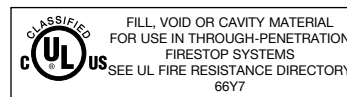
Examples

- Sealing around combustible pipe penetrations in fire rated construction
- Sealing around non-combustible penetrations in fire rated construction



Technical Data*	FS-ONE
Chemical basis	Water-based intumescent acrylic dispersion
Color	Red
Application temperature	40°F to 104°F (5°C to 40°C)
Skin forming time	Approx. 20-30 min.
Curing time	Approx. 2 mm / 3 days
Average volume shrinkage (ASTM C1241)	24.1%
Movement capability	Approx. 5%
Expansion rate (unrestricted)	Up to 3-5 times original volume
Temperature resistance (cured)	-40°F to 212°F (-40°C to 100°C)
Surface burning characteristics (ASTM E 84-96)	Flame Spread: 0 Smoke Development: 5
Sound transmission classification (ASTM E 90-99)	56 (Relates to specific construction)
Tested in accordance with	• UL 1479 • ASTM E 814 • ASTM E 84 • ASTM G21

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



Installation instructions for FS-ONE

Notice

- Before handling, read Material Safety Data Sheet and product label for safe usage and health information.
- Instructions below are general guidelines — always refer to the applicable drawing in the UL Fire Resistance Directory or Hilti Firestop Systems Guide for complete installation information

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.

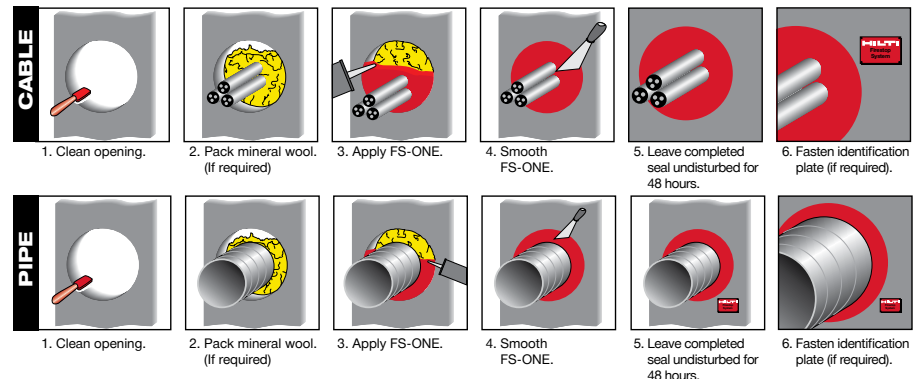
Not for use

- 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

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 package



Hilti. Outperform. Outlast.

Certificate of Compliance

Certificate Number 20100512-R13240

Report Reference 2010 May 12

Issue Date 2010 May 12

Page 1 of 1



**Underwriters
Laboratories Inc.®**

Issued to: **Hilti, Inc.**

54 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.® (UL) or any authorized
licensee of UL in accordance with the Standard(s) indicated on this Certificate.*


Standard(s) for Safety:

ANSI/UL 1479, ANSI/UL 2079, CAN/ULC-S115-05
Third Edition, revised March 1, 2010

Additional Information:

FS-ONE Sealant for use in Joint Systems and FS-ONE for use in
Through-Penetration Firestop Systems as currently described in the UL Fire
Resistance Directory.

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:

Mona Couloute
Mona Couloute

Underwriters Laboratories Inc.

Reviewed by:

Chris J. Johnson
Chris J. Johnson

Underwriters Laboratories Inc.

Any information and documentation involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.



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Revision No.: 011
Revision Date: 02/29/12
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MATERIAL SAFETY DATA SHEET

Product name: FS-ONE High Performance Intumescent Firestop Sealant
Description: One-part acrylic-based sealant
Supplier: Hilti, Inc. P.O. Box 21148, Tulsa, OK 74121
Emergency # (Chem-Trec.): 1 800 424 9300 (USA, PR, Virgin Islands, Canada); 001 703 527 3887 (other countries)

INGREDIENTS AND EXPOSURE LIMITS

Ingredients:	CAS Number:	PEL:	TLV:	STEL:
Polyacrylate dispersion	Mixture	NE	NE	NE
Calcium carbonate	001317-65-3	5 mg/m ³ (R)	NE	NE
Zinc borate	138265-88-0	NE	NE	NE
Talc	014807-96-6	20 mppcf	2 mg/m ³ (R)	NE
Ethylene glycol	000107-21-1	NE	NE	C:100 mg/m ³ (A)
Iron oxide	001309-37-1	10 mg/m ³ (F)	5 mg/m ³ (R)	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. F = Fume

PHYSICAL DATA

Appearance:	Red paste.	Odor:	Odorless.
Vapor Density: (air = 1)	Not determined.	Vapor Pressure:	23mbar @ 20C / 68F
Boiling Point:	Not applicable.	VOC Content:	75.0 g/L.
Evaporation Rate:	Not applicable.	Solubility in Water:	Soluble.
Specific Gravity:	1.5	pH:	Not determined.

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 such as oxides of carbon, sulfur and phosphorous.		

REACTIVITY DATA

Stability:	Stable.	Hazardous Polymerization:	Will not occur.
Incompatibility:	Strong acids, peroxides, and oxidizing agents.		
Decomposition Products:	Thermal decomposition can yield CO and CO ₂ .		
Conditions to Avoid:	None known.		

HEALTH HAZARD DATA

Known Hazards:	None known.		
Signs and Symptoms of Exposure:	Possibly irritating upon contact with the eyes or upon repeated contact with the skin.		
Medical Conditions Aggravated by Exposure:	Eye and skin conditions.		
Routes of Exposure:	Dermal.		
Carcinogenicity:	No ingredients are classified as carcinogens.		

EMERGENCY AND FIRST AID PROCEDURES

Eyes:	Immediately flush with plenty of water. Contact a physician if symptoms occur.
Skin:	Immediately wipe off material and wash with soap and water. Contact a physician if symptoms occur.
Inhalation:	Move victim to fresh air if discomfort develops. Contact a physician if symptoms occur. persist.
Ingestion:	Seek medical attention. Do not induce vomiting unless directed by a physician.
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:	Safety glasses with side shields.
Skin Protection:	Impermeable gloves. Other protective clothing as required to prevent skin contact.
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 40° and 77° 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.
IATA / ICAO Shipping Name:	Not regulated.
TSCA Inventory Status:	Chemical components listed on TSCA inventory.
SARA Title III, Section 313:	This product contains < 3% ethylene glycol (CAS 107-21-1) and < 15% zinc borate (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
Health / Safety:	1 800 879 6000	Jerry Metcalf	(x71003704)
Emergency # (Chem-Trec):	1 800 424 9300 (USA, PR, Virgin Islands, Canada); 001 703 527 3887 (other countries)		

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.