HILTI FS 0584041

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 4/11/14

KEVIN Colfer

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

SIGNATURE OF AUTHORIZED INSTRUCTOR — 73781 — INSTRUCTOR CARD NUMBER

I have been apprised of all general instructions and precautions customarily provided by HILTI to entities involved in the proper use of HILTI Firestop Products/Systems.

Signature of Seminar Participant

HILTI FS 0584042

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 4/11/14

JIM MELANSON

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

SIGNATURE OF AUTHORIZED INSTRUCTOR — 73781 — INSTRUCTOR CARD NUMBER

I have been apprised of all general instructions and precautions customarily provided by HILTI to entities involved in the proper use of HILTI Firestop Products/Systems.

Signature of Seminar Participant

HILTI FS 0584043

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 4/11/14

STEVE VINING

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

SIGNATURE OF AUTHORIZED INSTRUCTOR — 73781 — INSTRUCTOR CARD NUMBER

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Signature of Seminar Participant

HILTI FS 0584044

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 4/11/14

RON BROWN

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

SIGNATURE OF AUTHORIZED INSTRUCTOR — 73781 — INSTRUCTOR CARD NUMBER

I have been apprised of all general instructions and precautions customarily provided by HILTI to entities involved in the proper use of HILTI Firestop Products/Systems.

Signature of Seminar Participant

HILTI FS 0584037

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 4/11/14

ERIC MELANSON

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

SIGNATURE OF AUTHORIZED INSTRUCTOR — 73781 — INSTRUCTOR CARD NUMBER

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Signature of Seminar Participant

HILTI FS 0584038

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 4/11/14

JAMES FALANDYS

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

SIGNATURE OF AUTHORIZED INSTRUCTOR — 73781 — INSTRUCTOR CARD NUMBER

I have been apprised of all general instructions and precautions customarily provided by HILTI to entities involved in the proper use of HILTI Firestop Products/Systems.

Signature of Seminar Participant

HILTI FS 0584039

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 4/11/14

JONATHAN MC NALLY

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

SIGNATURE OF AUTHORIZED INSTRUCTOR — 73781 — INSTRUCTOR CARD NUMBER

I have been apprised of all general instructions and precautions customarily provided by HILTI to entities involved in the proper use of HILTI Firestop Products/Systems.

Signature of Seminar Participant

HILTI FS 0584040

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 4/11/14

KYLE SAWYER

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

SIGNATURE OF AUTHORIZED INSTRUCTOR — 73781 — INSTRUCTOR CARD NUMBER

I have been apprised of all general instructions and precautions customarily provided by HILTI to entities involved in the proper use of HILTI Firestop Products/Systems.

Signature of Seminar Participant

HILTI FS 0584049

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 4/2/14

BARRY MOORE

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

SIGNATURE OF AUTHORIZED INSTRUCTOR — 73781 — INSTRUCTOR CARD NUMBER

I have been apprised of all general instructions and precautions customarily provided by HILTI to entities involved in the proper use of HILTI Firestop Products/Systems.

Signature of Seminar Participant Barry Moore

HILTI FS 0584050

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 4/2/14

JUSTIN ST. GERMAIN

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

SIGNATURE OF AUTHORIZED INSTRUCTOR — 73781 — INSTRUCTOR CARD NUMBER

I have been apprised of all general instructions and precautions customarily provided by HILTI to entities involved in the proper use of HILTI Firestop Products/Systems.

Signature of Seminar Participant Justin St Germain

HILTI FS 0584051

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 4/2/14

JESSE BOULAH

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

SIGNATURE OF AUTHORIZED INSTRUCTOR — 73781 — INSTRUCTOR CARD NUMBER

I have been apprised of all general instructions and precautions customarily provided by HILTI to entities involved in the proper use of HILTI Firestop Products/Systems.

Signature of Seminar Participant Jesse Boulah

HILTI FS 0584052

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 4/2/14

ARCHIE WATT

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

SIGNATURE OF AUTHORIZED INSTRUCTOR — 73781 — INSTRUCTOR CARD NUMBER

I have been apprised of all general instructions and precautions customarily provided by HILTI to entities involved in the proper use of HILTI Firestop Products/Systems.

Signature of Seminar Participant Archie Watt

HILTI FS 0584045

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 4/2/14

JEFF THIBODEAU

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

SIGNATURE OF AUTHORIZED INSTRUCTOR — 73781 — INSTRUCTOR CARD NUMBER

I have been apprised of all general instructions and precautions customarily provided by HILTI to entities involved in the proper use of HILTI Firestop Products/Systems.

Signature of Seminar Participant Jeffrey Thibodeau

HILTI FS 0584046

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 4/2/14

SHAWN THIBODEAU

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

SIGNATURE OF AUTHORIZED INSTRUCTOR — 73781 — INSTRUCTOR CARD NUMBER

I have been apprised of all general instructions and precautions customarily provided by HILTI to entities involved in the proper use of HILTI Firestop Products/Systems.

Signature of Seminar Participant Shawn Thibodeau

HILTI FS 0584047

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 4/2/14

JASON FOGG

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

SIGNATURE OF AUTHORIZED INSTRUCTOR — 73781 — INSTRUCTOR CARD NUMBER

I have been apprised of all general instructions and precautions customarily provided by HILTI to entities involved in the proper use of HILTI Firestop Products/Systems.

Signature of Seminar Participant Jason Fogg

HILTI FS 0584048

Firestop Systems
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Date Issued 4/2/14

ROBERT DAVIS

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

SIGNATURE OF AUTHORIZED INSTRUCTOR — 73781 — INSTRUCTOR CARD NUMBER

I have been apprised of all general instructions and precautions customarily provided by HILTI to entities involved in the proper use of HILTI Firestop Products/Systems.

Signature of Seminar Participant Robert Davis

Firestop Submittal Package

EASTERN FIRE CO.

Project: 62 INDIA ST.
PORTLAND, ME.
PROJECTADDRESS2

Date: 6/13/17

Submitted by: ERIC MELANSON
170 KITTYHAWK AVE.
AUBURN, ME.

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.

Hilti. Outperform. Outlast.

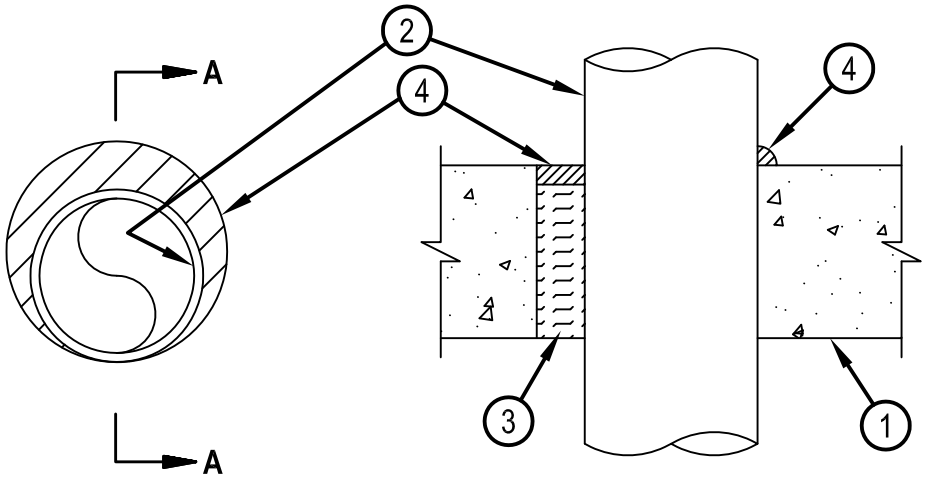
Hilti Firestop
Saving lives
through innovation
and education

Table Of Contents

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. C-AJ-1149

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating —2 Hr
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Rating — 2 Hr
L Rating At 400 F — 4 CFM/sq ft	FTH Rating — 0 Hr
W Rating — Class 1 (See Item 4)	L Rating At Ambient — Less Than 1 CFM/sq ft
	L Rating At 400 F — 4 CFM/sq ft



SECTION A-A

1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks *. Max diam of opening is 12 in. (305 mm).

See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. Through Penetrants — One metallic pipe, conduit or tubing to be installed within the firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The annular space shall be 0 in. (point contact) to max 1-1/4 in. (32 mm). The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 10 in. (254 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 10 in. (254 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or steel conduit.
   D. Copper Tubing — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe — Nom 4 in. (102 in.) diam (or smaller) Regular (or heavier) copper pipe.
3. Packing Material — Min 3 in. (76 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation for nom 4 in. diam (and smaller) pipes, conduits or tubings and a min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation for pipe greater than nom 4 in. diam, firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall to accommodate the required thickness of fill material.
4. Fill, Void or Cavity Material* — Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with the top surface of floor or both surfaces of wall. At the point of contact location between pipe and concrete, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the concrete/pipe interface on the top surface of floor and on both surfaces of wall. W Rating applies only when CFS-S SIL GG, CFS-S SIL SL (floors only), CP601S, CP604 sealant or FS-ONE MAX Intumescent Sealant is used. For W Rating when FS-ONE MAX is used, packing material to be a min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation.

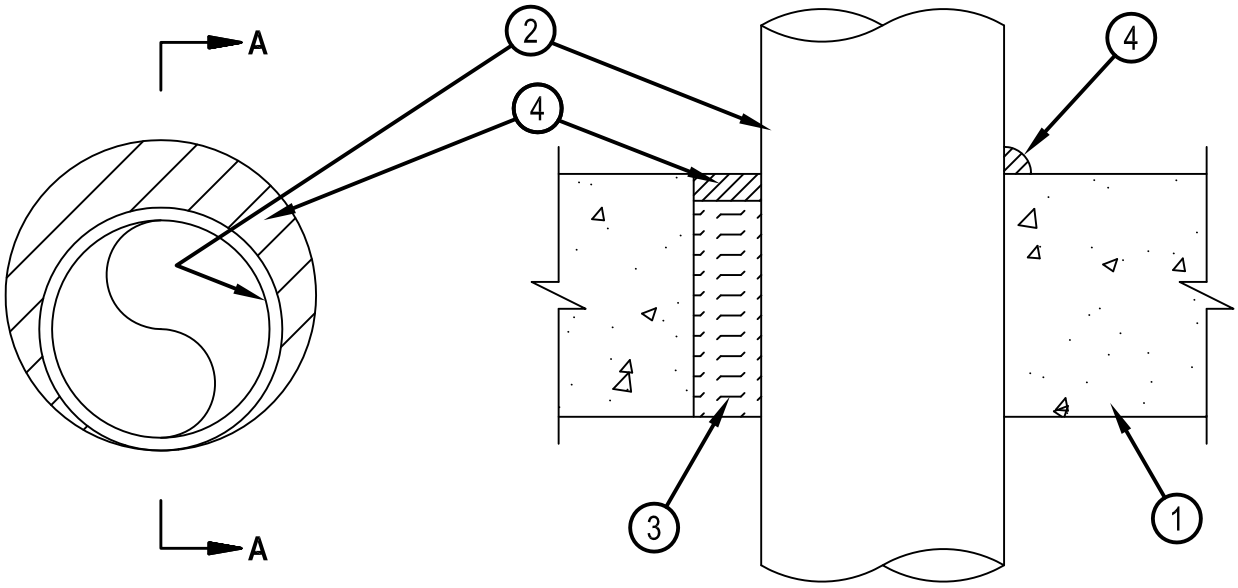
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP601S, CP604, CFS-S SIL GG, CFS-S SIL SL (floors only), CP606 or FS-ONE Sealant or FS-ONE MAX Intumescent Sealant.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

System No. C-AJ-1150

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 3 Hr	F Rating — 3 Hr
T Rating —0 Hr	FT Rating — 0 Hr
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Rating — 3 Hr
L Rating At 400 F — 4 CFM/sq ft	FTH Rating — 0 Hr
W Rating — Class 1 (See Item 4)	L Rating At Ambient — Less Than 1 CFM/sq ft
	L Rating At 400 F — 4 CFM/sq ft



SECTION A-A

1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks *. Max diam of opening is 8 in. (203 mm).

See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. Through Penetrants — One metallic pipe or conduit to be installed within the firestop system. Pipe or conduit to be rigidly supported on both sides of floor or wall assembly. The annular space shall be min 0 in. (point contact) to max 1-3/8 in. (35 mm). The following types and sizes of metallic pipes or conduits may be used:
   A. Steel Pipe — Nom 6 in. (152 mm) diam (or smaller) Schedule 40 (or heavier) steel pipe.
   B. Iron Pipe — Nom 6 in. (152 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or nom 6 in. diam (or smaller) steel conduit.

3. Packing Material — Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall to accommodate the required thickness of fill material.

4. Fill, Void or Cavity Material* — Sealant — Min 1/4 in. (6 mm) thickness of fill material applied within the annulus, flush with top surface of floor and with both surfaces of wall. At the point contact location between pipe and concrete, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the concrete/pipe interface on the top surface of floor and on both surfaces of wall. W Rating applies only when CFS-S SIL GG, CFS-S SIL SL (floors only), CP601S or CP604 sealant is used.

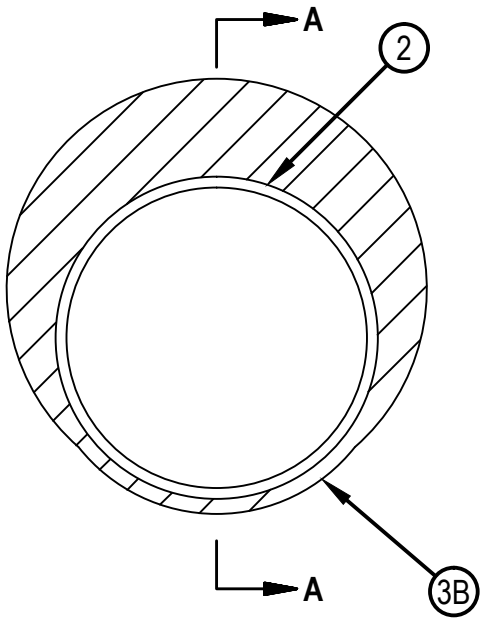
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP601S, CP604, CFS-S SIL GG, CFS-S SIL SL (floors only), CP606 or FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

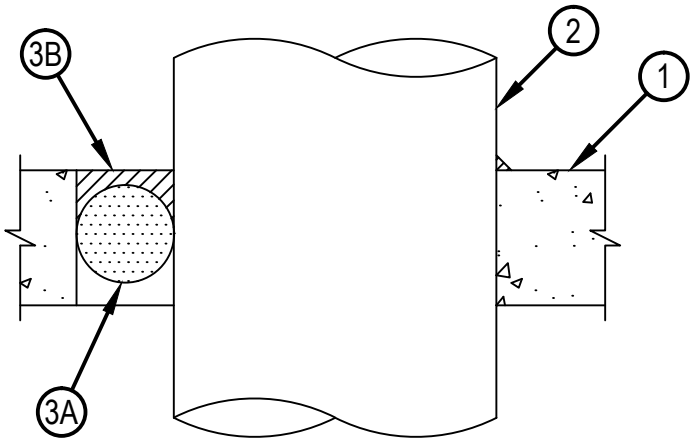
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. C-AJ-1154

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 3 Hr	F Rating — 3 Hr
T Rating —1/4 Hr	FT Rating — 1/4 Hr
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Rating — 3 Hr
L Rating At 400 F — 4 CFM/sq ft	FTH Rating — 1/4 Hr
	L Rating At Ambient — Less Than 1 CFM/sq ft
	L Rating At 400 F — 4 CFM/sq ft





SECTION A-A

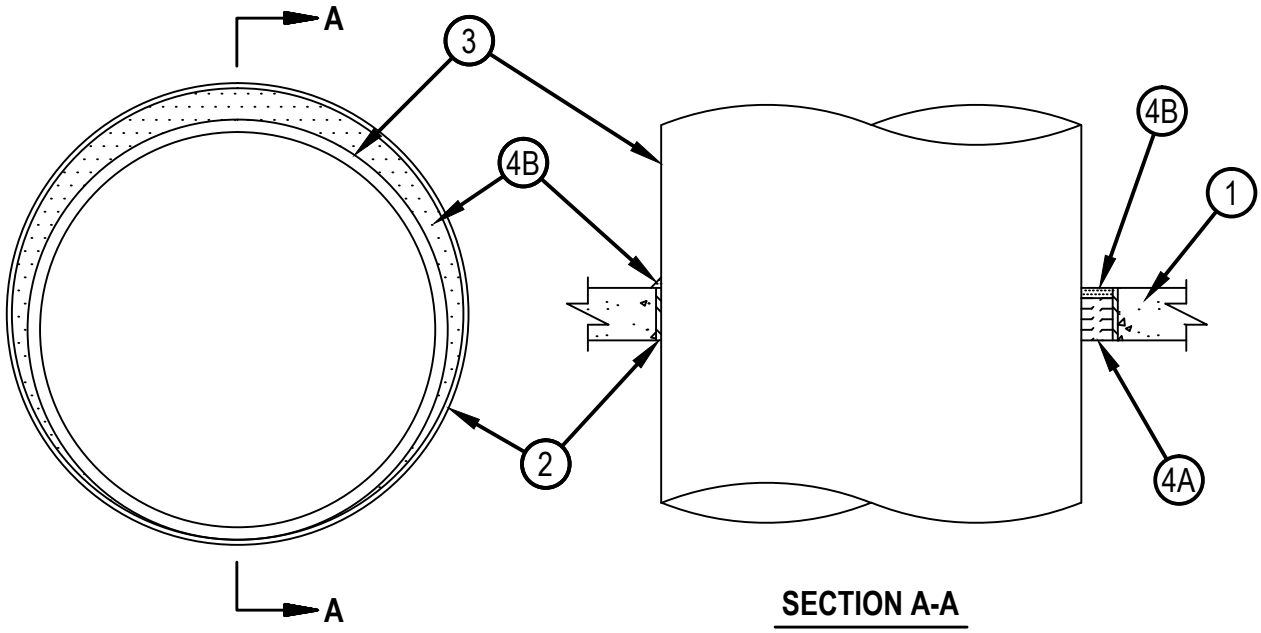
1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 14 in. (356 mm).
   See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Through-Penetrants — One metallic pipe, conduit or tubing to installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 3-1/4 in. (83 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 10 in. (254 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Conduit — Nom 4 in. (254 mm) diam (or smaller) steel electrical metallic tubing or steel conduit.
   C. Copper Tubing — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.
   D. Copper Pipe — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.
3. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall to accommodate the required thickness of fill material. As an option to the above, backer rod and/or foamed plastic backer material may be used.
   B. Fill, Void or Cavity Material* — Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall. At the point contact location between pipe and concrete, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the concrete/pipe interface on the top surface of floor and on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. C-AJ-1155

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 and 3 Hr (See Item 3)	F Rating — 2 and 3 Hr (See Item 3)
T Rating —0 Hr	FT Rating — 0 Hr
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Rating — 2 and 3 Hr (See Item 3)
L Rating At 400 F — 4 CFM/sq ft	FTH Rating — 0 Hr
W Rating — Class 1 (See Item 4)	L Rating At Ambient — Less Than 1 CFM/sq ft
	L Rating At 400 F — 4 CFM/sq ft



SECTION A-A

Hilti Firestop Systems

System No. C-AJ-1155

1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 32 in. (813 mm).

See Concrete Blocks (CAZT) category in Fire Resistance Directory for names of manufacturers.

2. Metallic Sleeve (Optional) — Nom 32 in. (813 mm) diam (or smaller) Schedule 40 (or heavier) steel pipe cast or grouted into floor or wall assembly, flush with floor or wall assembly.

3. Through Penetrants — One metallic pipe or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe or tubing to be rigidly supported on both sides of floor or wall assembly. The annular space shall be min 0 in. (point contact) to max 12 in. (305 mm). When maximum annular space exceeds 2-1/4 in. (57 mm) the F Rating is 2 hr. The following types and sizes of metallic pipes or tubing may be used:

   A. Steel Pipe — Nom 20 in. (508 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

   B. Iron Pipe — Nom 20 in. (508 mm) diam (or smaller) cast or ductile iron pipe.

   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or nom 6 in. (152 mm) diam (or smaller) steel electrical metallic tubing or nom 6 in. (152 mm) diam (or smaller) steel conduit.

   D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.

   E. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe

4. Firestop System — The firestop system shall consist of the following:

   A. Packing Material — Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top end of sleeve for floors or from both ends of sleeve for walls to accommodate the required thickness of fill material.

   B. Fill, Void or Cavity Material* — Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with the top end of the sleeve for floors, or with both ends of the sleeve for walls. Min 1/2 in. (13 mm) thick bead of all material to be installed around pipe at interface of sleeve for point contact installations. W Rating applies only when FS-ONE MAX Intumescent Sealant is used. For the W Rating, max annular space is 1-7/8 in. (48 mm) and an additional film of sealant shall be applied over the sleeve (when used) lapping at least 1/2 in. (13 mm) onto top surface of floor or both surfaces of wall.

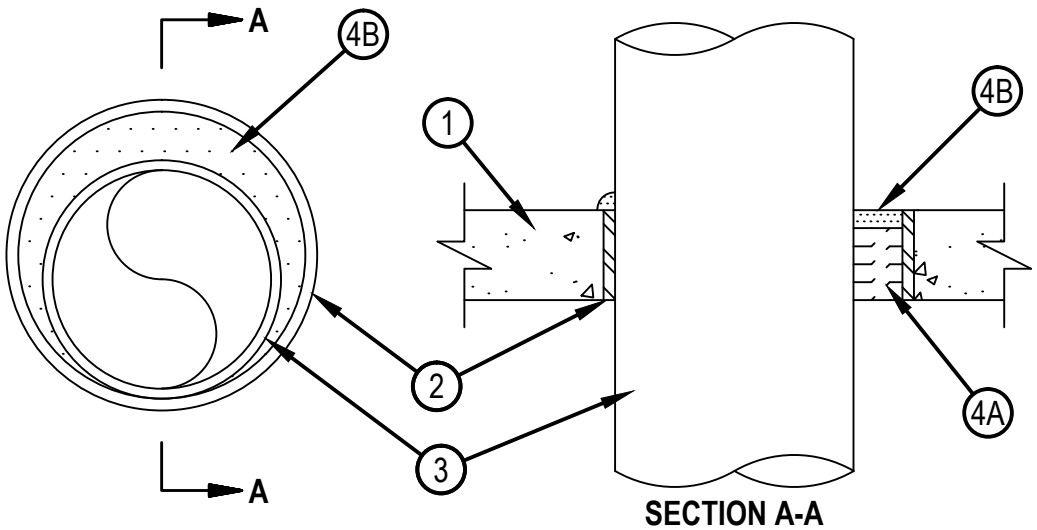
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. C-AJ-1380

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating - 2 Hr	F Rating - 2 Hr
T Rating - 0 Hr	FT Rating - 0 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Rating - 2 Hr
L Rating At 400 F - 4 CFM/sq ft	FTH Rating - 0 Hr
	L Rating At Ambient - Less Than 1 CFM/sq ft
	L Rating At 400 F - 4 CFM/sq ft



SECTION A-A

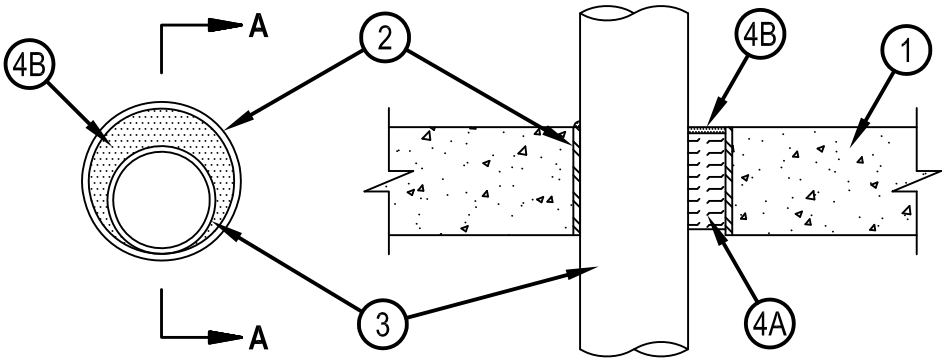
1. Floor or Wall Assembly — Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 31-7/8 in. (810 mm).
   See Concrete Blocks (CAZT) in the Fire Resistance Directory for names of manufacturers.
2. Metallic Sleeve — (Optional) Nom 32 in. (813 mm) diam (or smaller) Schedule 40 steel pipe cast or grouted into floor or wall assembly, flush with floor or wall surfaces.
3. Through-Penetrant — One metallic pipe or conduit to be installed either concentrically or eccentrically within the firestop system. Pipe or conduit to be rigidly supported on both sides of floor assembly. The annular space between pipe or conduit and periphery of opening shall be min 0 in. (point contact) to max 1-7/8 in. (48 mm). The following types and sizes of metallic pipes or conduits may be used:
   A. Steel Pipe — Nom 30 in.(762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Cast Iron Pipe — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
   C. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
   D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Conduit — Nom 6 in. (152 mm) diam (or smaller) steel conduit.
   F. Conduit — Nom 4 in. (102 mm) (or smaller) steel electrical metallic tubing (EMT).
4. Firestop System — The firestop system shall consist of the following:
   A. Packing Materials — Min 2 in. (51 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor to accommodate the required thickness of fill material.
   B. Fill Void or Cavity Materials* - Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within annulus, flush with top surface of floor. At point contact, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the concrete/sleeve/pipe interface on the top surface of the floor and both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. C-AJ-1421

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 2 or 3 Hr	F Ratings — 2 or 3 Hr
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating at Ambient — Less Than 1 CFM/sq ft	FH Ratings — 2 or 3 Hr
L Rating at 400 F — Less Than 1 CFM/sq ft	FTH Rating — 0 Hr
	L Rating at Ambient — Less Than 1 CFM/sq ft
	L Rating at 400 F — Less Than 1 CFM/sq ft



SECTION A-A

1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 6 in. (152 mm).
   See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Metallic Sleeve — (Optional) Nom 6 in. (152 mm) diam (or smaller) Schedule 40 (or heavier) steel sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces.
3. Through-Penetrant — One metallic pipe or conduit to be installed either concentrically or eccentrically within the firestop system. The annular space between pipe, tube or conduit and periphery of opening shall be min 0 in. (point contact) to max 5-3/8 in. (137 mm). Pipe or conduit to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or conduits may be used:
   A. Steel Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.
   C. Copper Pipe — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.
   D. Copper Tubing — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel conduit.
   F. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing (EMT).
4. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m³) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material* - Sealant — Min 1/4 in. (6 mm) thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall. For 3 Hr rated assemblies, a min 1/4 in. (6 mm) diam bead of fill material shall be applied at the concrete/pipe interface at the point contact location on the top surface of floor and on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-S SIL GG, CFS-S SIL SL, FS-ONE Sealant, FS-ONE MAX Intumescent Sealant or CP604 Self-Leveling Firestop Sealant. CP604 and CFS-S SIL SL shall be used in floor applications only.
   When CP604, CFS-S SIL GG or CFS-S SIL SL (floors only) is used, F Rating is 2 Hr.

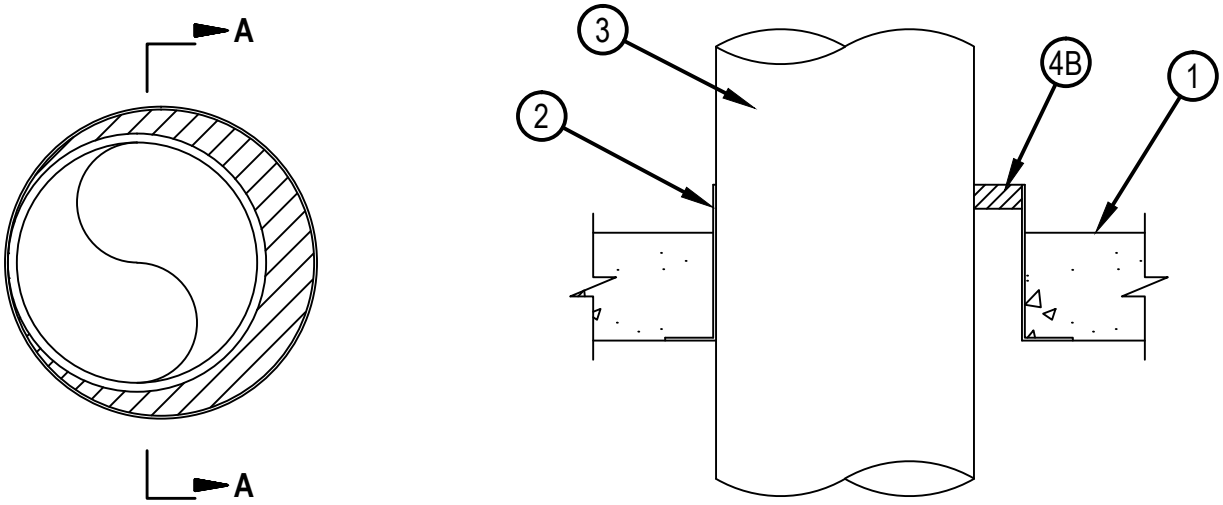
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. C-AJ-1575

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 2 and 3 Hr (See Item 4B)	F Ratings — 2 and 3 Hr (See Item 4B)
T Rating — 0 Hr	FT Rating — 0 Hr
W Rating — Class 1 (See Item 4)	FH Ratings — 2 and 3 Hr (See Item 4B)
	FTH Rating — 0 Hr



SECTION A-A

1. Floor or Wall Assembly — Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Floor may also be constructed of any min 6 in. (152 mm) thick UL Classified hollow core Precast Concrete Units*. Max diam of opening is 30-7/8 in. (784 mm) when concrete floor or wall is used and max 7 in. (178 mm) when precast concrete units are used.

   See Concrete Blocks (CAZT) and Precast Concrete Units (CFTV) categories in the Fire Resistance Directory for names of manufacturers.

1A. Floor Assembly - (Optional - Not Shown) — The fire rated unprotected concrete and steel floor assembly shall be constructed of the materials and in the manner specified in the individual D900 Series designs in the UL Fire Resistance Directory and as summarized below:

   A. Concrete — Min 2-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete.

   B. Steel Floor and Form Units* — Composite or non-composite max 3 in. (76 mm) deep galv steel fluted units as specified in the individual Floor-Ceiling Design.

2. Steel Sleeve — See Table in Item 4B for when sleeve is required. Also not required for hollow core precast concrete floors. Schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly. Sleeve may extend a max of 8 in. (203 mm) above top of floor or beyond either surface of wall. As an alternate, in floors only, min 26 gauge galvanized sheet steel sleeve provided with a min. 26 gauge galvanized steel square flange spot welded to the bottom of the sleeve and sized to be a min of 2 in. (51 mm) larger than the sleeve diam. The sheet metal sleeve is to be cast in place and may extend a max of 2 in. (51 mm) above the top surface of the concrete floor, except that when sleeve is greater than nom 13 in. (330 mm) diam, sleeve shall be installed flush with both surfaces of floor.

3. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening or sleeve shall be min 0 in. (point contact). See Table in Item 4B for max annular space. Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

   A. Steel Pipe — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

   B. Iron Pipe — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.

   C. Conduit — Nom 6 in. (152 mm) diam (or smaller) rigid steel conduit.

   D. Conduit — Nom 4 in. (102 mm) diam (or smaller) electrical metallic tubing (EMT).

   E. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.

   F. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) regular (or heavier) copper pipe.

System No. C-AJ-1575

4. Firestop System — The firestop system shall consist of the following:

A. Packing Material — (Not Shown.) - Min 1 in. (25 mm) thickness of polyethylene backer rod, mineral wool batt or glass fiber insulation firmly packed into opening as a permanent form. Packing material to be recessed from top or bottom surface of floor/sleeve or from both surfaces of wall/sleeve to accommodate the required thickness of fill material (Item 4B). Packing material is required as specified in Table below.

A1. Forming Materials* — (Optional, Not Shown) As an alternate to Item 4A, min 1 in. (25 mm) thickness of forming material to be foamed into the opening as a permanent form. Forming material to be recessed from top or bottom surface of floor/sleeve or from both surfaces of wall/sleeve to accommodate the required thickness of fill material (Item 4B).

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CF812 or CF-AS CJP Foam Sealant

A2. Packing Material — (Not Shown.) - For W Rating, floors only, min 4 in. thick, min 4 pcf (64 kg/m3) mineral batt insulation tightly packed into sleeve and recessed from top of sleeve to accommodate the required thickness of fill material.

B. Fill, Void or Cavity Materials* — Sealant — Applied to fill the annular space flush with top or bottom surface of floor/sleeve. In hollow core precast concrete floors, fill material to be installed flush with the bottom of the floor. Fill material may optionally be installed flush with the top of the assembly. In wall assemblies, fill material to be installed symmetrically on both sides of wall or floor, flush with wall/sleeve or floor surface. In wall assemblies, an additional bead of fill material shall be applied at the point contact location between penetrant and sleeve or between penetrant and concrete, at top surface of floor/sleeve and at both surfaces of wall/sleeve. The bead shall be min 1/2 in. (13 mm) diam and shall extend over the point contact location to the 1/4 in. (6 mm) annular space. For W Rating, fill material to be installed flush with top of sleeve only and an additional min 1/2in. (13 mm) bead of sealant shall be applied at the sleeve/concrete interface on the top surface of the floor. The min required fill material thickness and the location of the sealant at top or bottom of floor opening are dependent upon a number of parameters, as shown in the table below.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

Note: W Rating applies only when FS-ONE MAX Intumescent Sealant is used.

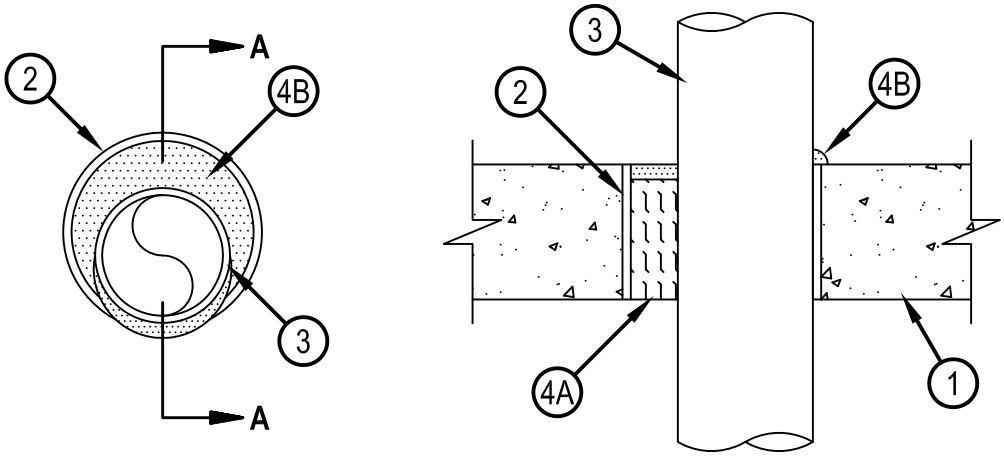
Min Floor or Wall Thick, In. (mm)	Nom Diam of Copper Pipe or Tube In. (mm)	Nom Diam of Steel/Iron Pipe or Conduit In. (mm)	Max Annular Space In. (mm)	Min Sealant Thick. In. (mm)	Sealant Flush with Top or Bottom	Sleeve	Packing Mtl	F Rating Hr
2-1/2 (64)	½ - 4(13 - 102)	½ - 30 (13 - 762)	7/8 (22)	½ (13)	Top	No	No	2
2-1/2 (64)	½ - 4(13 - 102)	½ - 8(13 - 203)	2-7/8 (73)	1 (25)	Top	Yes	No	2
2-1/2 (64)	½ - 4(13 - 102)	½ - 8(13 - 203)	1-7/8 (48)	½ (13)	Top	Yes	No	2
2-1/2 (64)	½ - 4(13 - 102)	½ - 12(13 - 305)	7/8 (22)	1 (25)	Bottom	Yes	No	2
2-1/2 (64)	½ - 4(13 - 102)	½ - 8(13 - 203)	2-7/8 (73)	1 (25)	Top	Optional	Yes	2
2-1/2 (64)	½ - 6(13 - 152)	½ - 30 (13 - 762)	2-7/8 (73)	1 (25)	Top	Yes	Yes	2
4-1/2 (114)	½ - 4(13 - 102)	½ - 10(13 - 254)	3-1/4 (83)	1 (25)	Top or Bottom	No	No	3
4-1/2 (114)	½ - 4(13 - 102)	½ - 30(13 - 762)	7/8 (22)	½ (13)	Top	No	No	3
4-1/2 (114)	½ - 4(13 - 102)	½ - 8(13 - 203)	1-7/8 (48)	½ (13)	Bottom	No	No	2

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. C-AJ-1609

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2Hr	F Rating — 2 Hr
T Ratings — 0 Hr	FT Ratings — 0 Hr
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Rating — 2 Hr
L Rating At 400 F — 4 CFM/sq ft	FTH Ratings — 0 Hr
W Rating — Class 1 (See Item 4)	L Rating At Ambient — Less Than 1 CFM/sq ft
	L Rating At 400 F — 4 CFM/sq ft



SECTION A-A

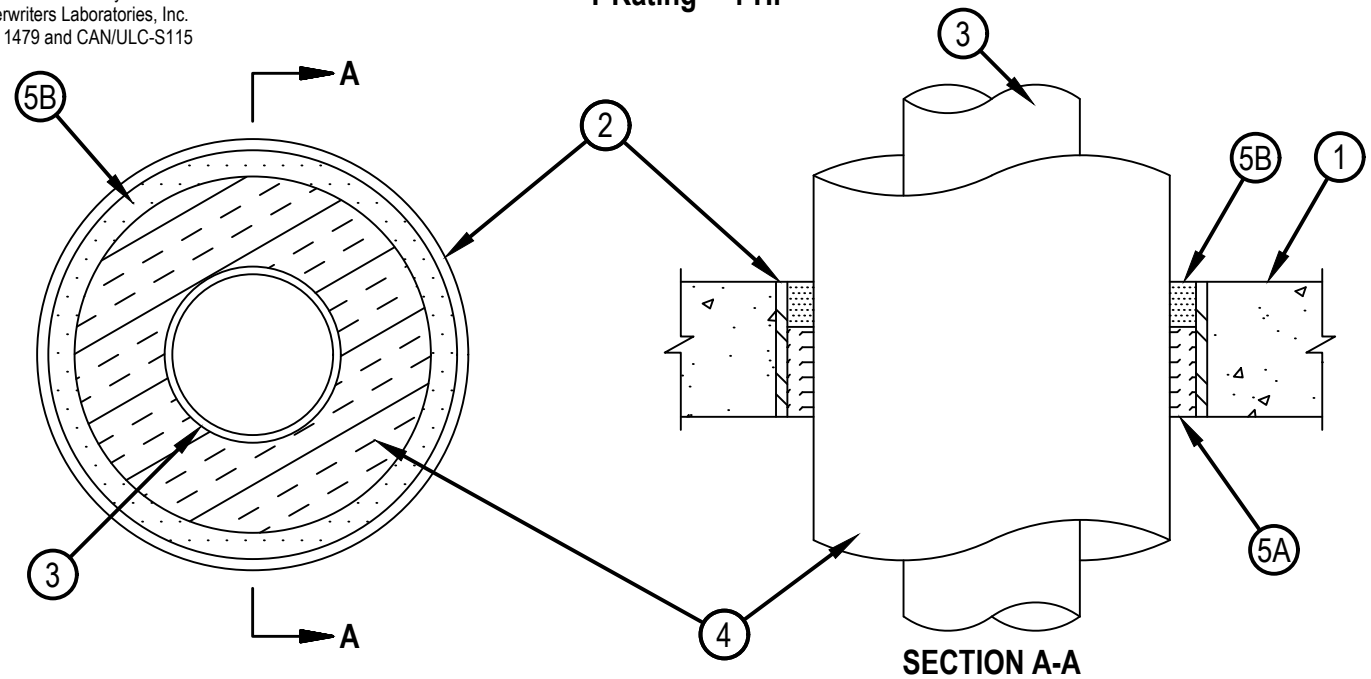
1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*.
   See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Nonmetallic Sleeve — Nom 6 in. (152 mm) diam (or smaller) Sch 40 polyvinyl chloride (PVC) pipe cast or grouted into floor or wall assembly, flush with floor or wall surfaces.
3. Through Penetrant — One metallic pipe or tube to be installed either concentrically or eccentrically within the firestop system. Pipe or tube to be rigidly supported on both sides of floor or wall assembly. The annular space shall be min 0 in.(point contact) to max 2-7/8 in. (73 mm). The following types and sizes of metallic pipes or tubing may be used:
   A. Steel Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or steel conduit.
   D. Copper Tubing — Nom 3 in. (76 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe — Nom 3 in. (76 mm) diam (or smaller) Regular (or heavier) copper pipe
4. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into sleeved opening as a permanent form. Packing material to be recessed from top end of sleeve for floors or from both ends of sleeve for walls to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material* — Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with the top end of the sleeve for floors or with both ends of the sleeve for walls. Min 1/2 in. (13 mm) thick bead of sealant to be installed around pipe at interface with sleeve at point contact installations. W Rating applies only when FS-ONE MAX Intumescent Sealant is used. an additional film of sealant shall be applied over the sleeve lapping at least 1/2 in. (13 mm) onto top surface of floor or both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP606 Sealant, FS-ONE Sealant or FS-ONE MAX Intumescent Sealant.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. C-AJ-5098

F Rating -- 2 Hr
T Rating -- 1 Hr



SECTION A-A

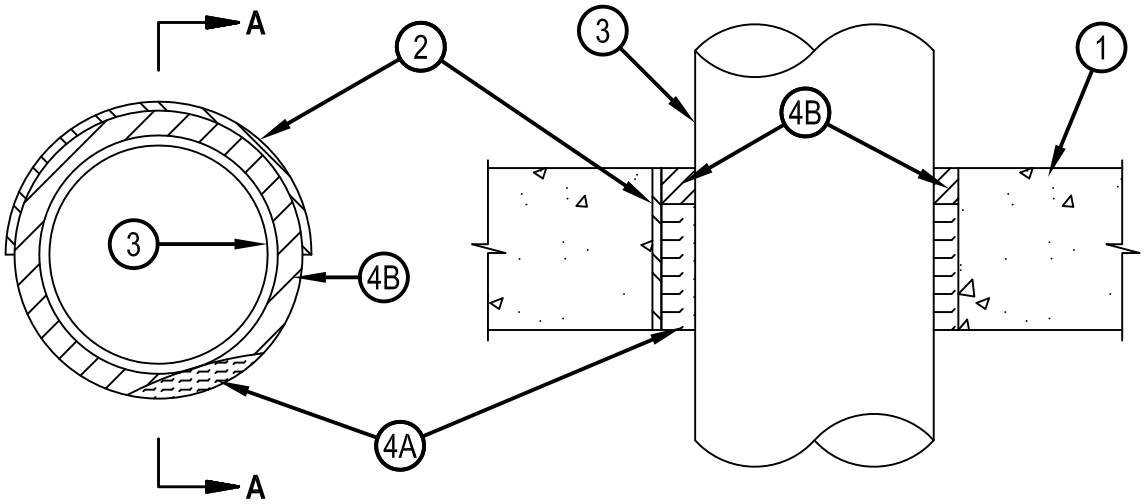
1. Floor or Wall Assembly — Min 114 mm (4-1/2 in.) thick reinforced lightweight or normal weight (1600-2400 kg/m3 or 100-150 pcf) concrete floor or min 6 in. thick reinforced lightweight or normal weight concrete wall. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 346 mm (13-5/8 in.).
   See Concrete Blocks (CAZT) Category in the Fire Resistance Directory for names of manufacturers.
2. Metallic Sleeve — (Optional) — Nom 356 mm (14 in.) diam (or smaller) Schedule 10 (or heavier) steel pipe.
3. Through Penetrants — One metallic pipe or tubing to be installed concentrically within the firestop system. Pipe or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or tubing may be used:
   A. Steel Pipe — Nom 152 mm (6 in.) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Copper Pipe — Nom 152 mm (6 in.) diam (or smaller) Regular (or heavier) copper pipe.
   C. Copper Tubing — Nom 152 mm (6 in.) diam (or smaller) Type L (or heavier) copper tubing.
4. Pipe Covering — Nom 76 mm (3 in.) thick hollow cylindrical heavy density (min 56 kg/m3 or 3.5 pcf) glass fiber units jacketed on the outside with an all-service jacket. Longitudinal joints sealed with metal fasteners or factory-applied, self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space betweeen the insulated pipe and the edges of the periphery of the opening shall be 13 mm (1/2 in.).
   See Pipe Equipment Covering — Materials — (BRGU) Category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
5. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 76 mm (3 in.) thickness of min 4 pcf mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material* — Sealant — Min 38 mm (1-1/2 in.) thickness of fill material applied within the annulus, flush on top surface of floor or with both surfaces of wall. When steel pipe (Item 3A) larger than 102 mm (4 in.) diam and FS-ONE MAX Intumescent Sealant is used, a 13 by 13 mm (1/2 by 1/2 in.) bead of sealant shall be installed around periphery of insulated steel pipe at top surface of floor or at both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

System No. C-BJ-1037

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 4 Hr	F Rating — 4 Hr
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Rating — 4 Hr
	FTH Rating — 0 Hr



SECTION A-A

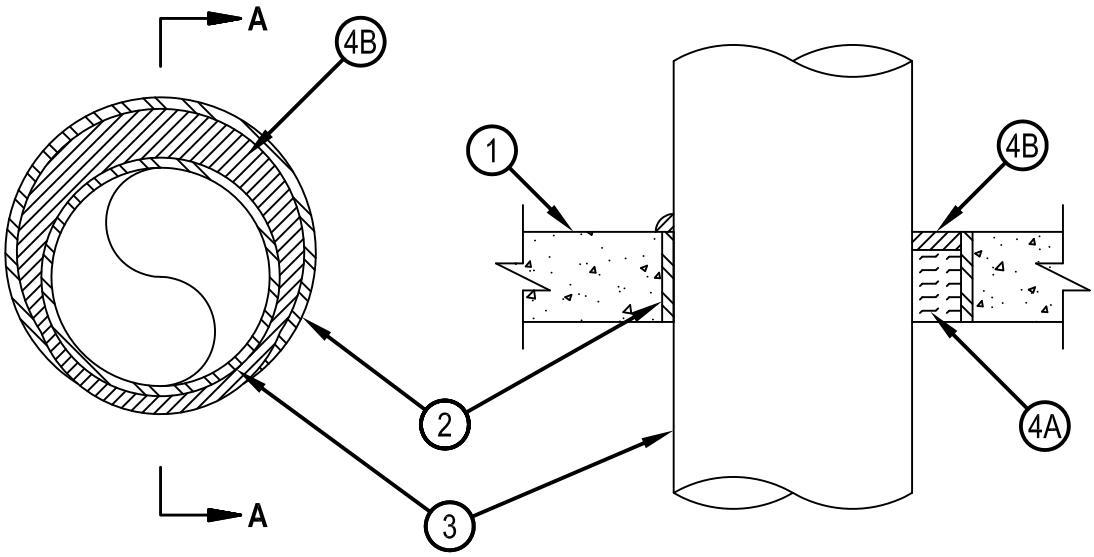
1. Floor, Roof or Wall Assembly* — The fire-rated floor- or roof-ceiling assembly shall be constructed of Precast Autoclaved Aerated Concrete* in the manner specified in Design Nos. K908 or P931, respectively, and the fire rated wall assembly shall be constructed of Precast Autoclaved Aerated Concrete* in the manner specified in Design Nos. U916 or U917 in the UL Fire Resistance Directory. Max diam of opening is 8 in. (203 mm).
   AERCON FLORIDA L L C — Types AC-3.3, AC-4, AC-4.4, AC-6, AC-6.6.
   BABB INTERNATIONAL/HEBEL — HBL-32, HBL-38 and HBL-44
2. Metallic Sleeve — (Optional) — Nom 8 in. (203 mm) diam (or smaller) Schedule 10 steel pipe, cast or grouted into floor or wall assembly, flush with floor or wall surfaces.
3. Through Penetrants — One metallic pipe, conduit or tubing to be installed within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening shall be 15/16 in. (24 mm) when sleeve is used and min 0 in. (point contact) to max 1-7/8 in. (48 mm) when sleeve is not used. Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 6 in. (152 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 6 in. (152 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or nom 6 in. (152 mm) diam (or smaller) steel conduit.
   D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
4. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of the floor or both surfaces of the wall as required to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material* — (Sealant) — Min 1 in. (25 mm) thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall. At the point contact location between pipe and concrete, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the concrete/pipe interface on the top surface of floor and on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

System No. F-A-1028

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Rating — 2 Hr
	FTH Rating — 0 Hr



SECTION A-A

1. Floor Assembly — Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Max diameter of opening is 31-7/8 in. (810 mm).

   1A. Floor Assembly — (Optional) - (Not Shown) -The fire rated unprotected concrete and steel floor assembly shall be constructed of the materials and in the manner specified in the individual D900 Series designs in the UL Fire Resistance Directory and as summarized below.

   A. Concrete — Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete.

   B. Steel Floor and Form Units* — Composite or non-composite max 3 in. (76 mm) deep galv steel fluted units as specified in the individual Floor-Ceiling Design. Max diam of opening is 31-7/8 in. (810 mm).

2. Steel Sleeve — (Optional) - Nom 32 in. (813 mm) diam (or smaller) Schedule 40 steel pipe cast or grouted into floor assembly, flush with floor surfaces.

   2A. Sheet Metal Sleeve — (Optional) - Max 6 in. (152 mm) diam, min 26 ga galv steel provided with a 26 ga galv steel square flange spot welded to the sleeve at approx mid-height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. (51 mm) larger than the sleeve diam. The sleeve is to be cast in place and may extend a max of 4 in. (102 mm) below the bottom of the deck and a max of 1 in. (25 mm) above the top surface of the concrete floor.

   2B. Sheet Metal Sleeve — (Optional) - Max 12 in. (305 mm) diam, min 24 ga galv steel provided with a 24 ga galv steel square flange spot welded to the sleeve at approx mid-height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. (51 mm) larger than the sleeve diam. The sleeve is to be cast in place may extend a max of 4 in. below the bottom of the deck and a max of 1 in. (25 mm) above the top surface of the concrete floor.

3. Through Penetrants — One metallic pipe, conduit or tubing to be installed concentrically within the firestop device. Pipe, conduit or tubing to be rigidly supported on both sides of floor assembly. The annular space between pipe conduit or tubing and the periphery of the opening shall be min 0 in. (point contact) to max 1-7/8 in. (48 mm).

   The following types of pipe, conduit or tubing may be used:

   Steel Pipe — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

   Iron Pipe — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.

   Conduit — Nom 6 in. (152 mm) diam (or smaller) rigid steel conduit.

   Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic conduit.

   Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.

   Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

4. Firestop System — The firestop system shall consist of the following:

   A. Packing Material — Min 2. (51 mm) in thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation tightly packed into the opening as a permanent form. Packing material to be recessed from top surface of floor as required to accommodate the required thickness of fill material.

   B. Fill, Void or Cavity Materials* - Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor. At point contact, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the concrete/sleeve/pipe interface on top surface of floor.

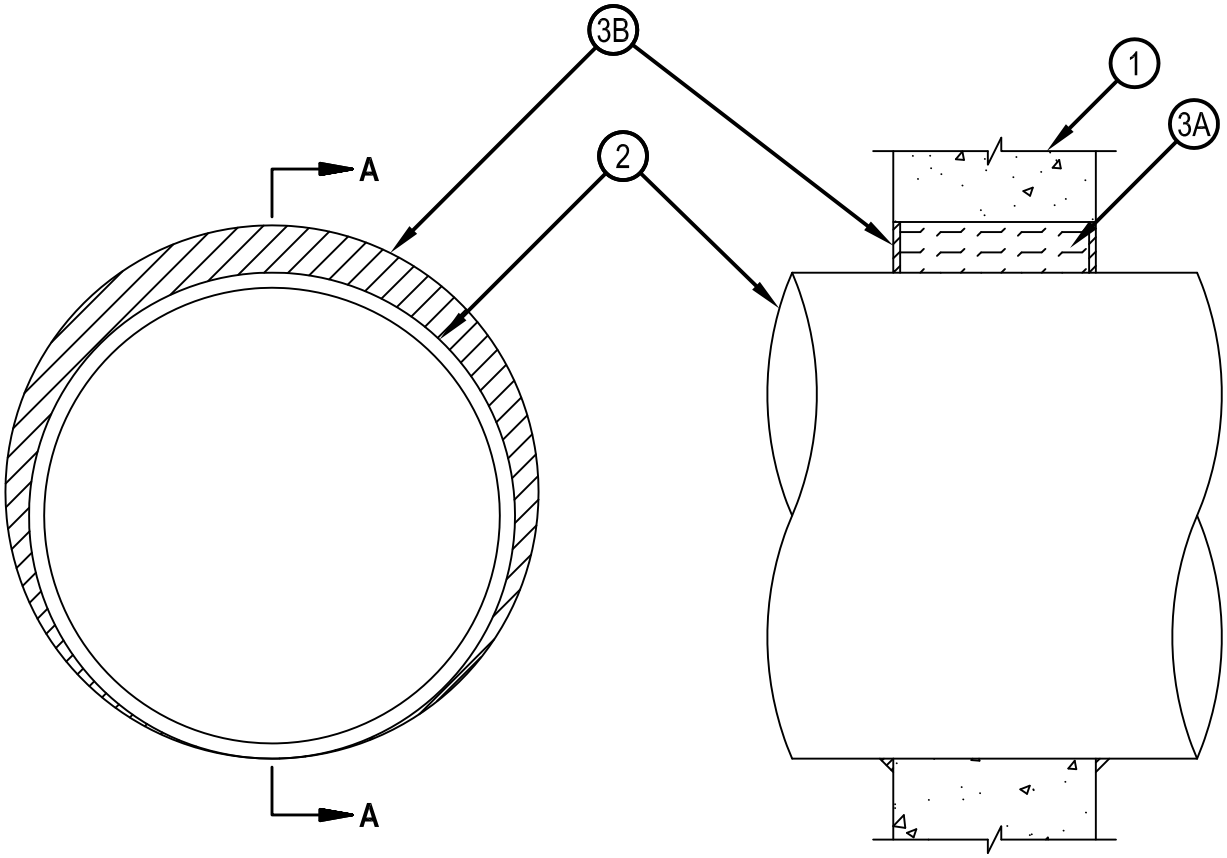
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. W-J-1021

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Rating — 0 and 1/4 Hr (See Item 2)	FT Rating — 0 and 1/4 Hr (See Item 2)
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Rating — 2 Hr
L Rating At 400 F — 4 CFM/sq ft	FTH Rating — 0 and 1/4 Hr (See Item 2)
	L Rating At Ambient — Less Than 1 CFM/sq ft
	L Rating At 400 F — 4 CFM/sq ft



SECTION A-A

1. Wall Assembly — Min 5 in. (127 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Diam of circular through opening to be min 3/8 in. (5 mm) to max 2-3/4 in. (70 mm) larger than diam of through penetrants (Item 2).
   See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Through-Penetrants — One metallic pipe or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes or tubing may be used:
   A. Steel Pipe — 17-1/4 in. (438 mm) diam (or smaller) by 0.125 (or heavier) steel pipe. The annular space shall be min 0 to max 2-3/4 in. (70 mm). The T, FT, FTH Rating is 1/4 hr when steel pipe is used.
   B. Copper Tubing — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing. The annular space shall be min 0 to max 3 in. (76 mm). The T, FT, FTH rating is 0 hr when copper tubing is used.

System No. W-J-1021

3. Firestop System — The firestop system shall consist of the following:

A. Packing Material — Min 4-1/2 in. (114 mm) thickness of flexible urethane sheet or mineral wool insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material.

B. Fill, Void or Cavity Material* — Sealant — Min 1/4 in. (6 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point contact location between pipe and wall, a min 1/2 in. (13 mm) diam bead of sealant shall be applied to the wall/pipe interface on both surfaces of wall assembly.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-ONE MAX Intumescent Sealant

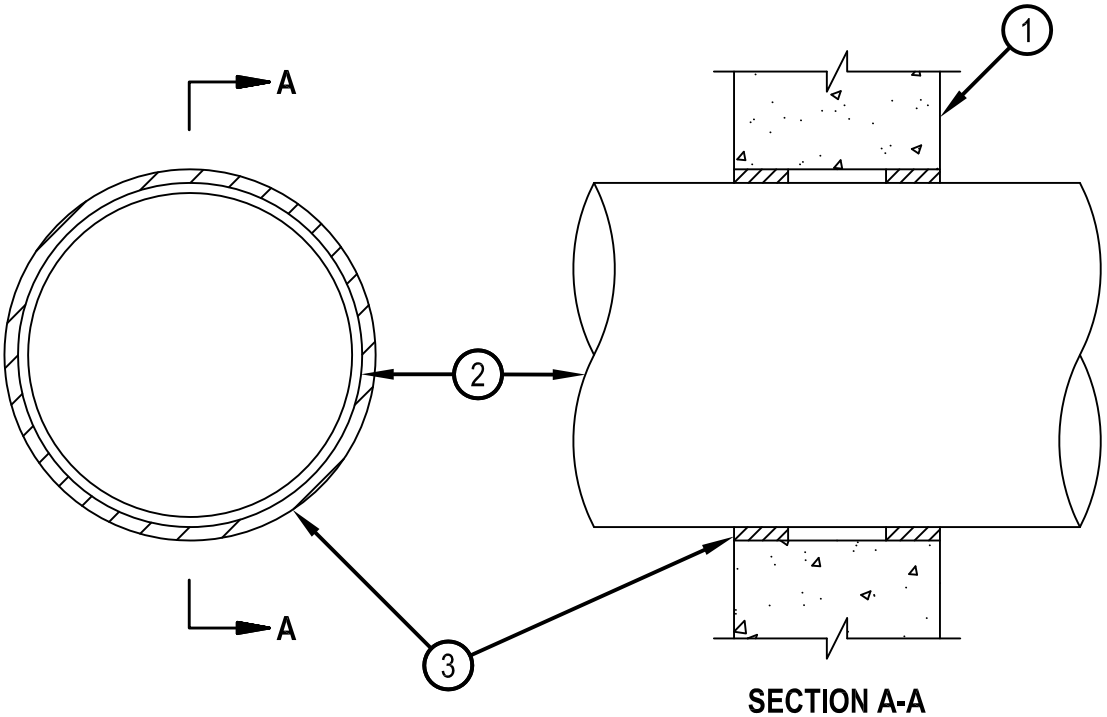
C. Steel Wire Mesh (Optional) (Not Shown) — No. 8 steel wire mesh having a min 1 in. (25 mm) lap along the longitudinal seam. Length of steel wire mesh to be 5 in. (127 mm), centered and formed to fit periphery of through opening.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

System No. W-J-1042

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 4 Hr	F Rating — 4 Hr
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Rating — 4 Hr
	FTH Rating — 0 Hr



SECTION A-A

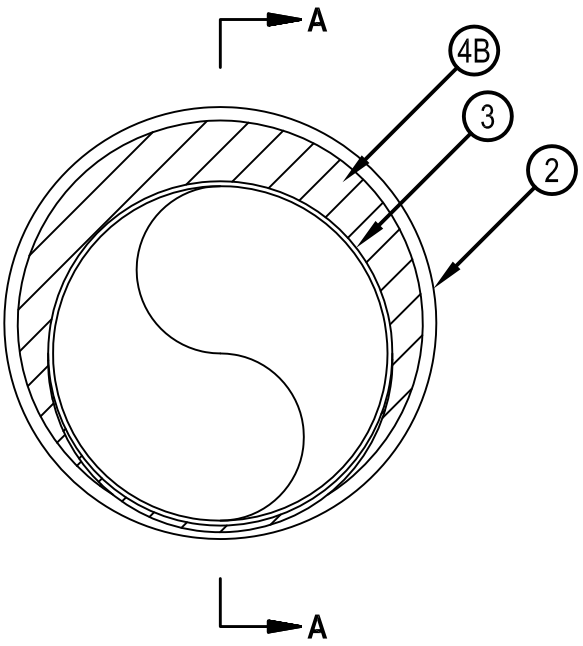
1. Wall Assembly — Min 7-5/8 in. (194 mm) thick wall assembly constructed of any UL Classified Concrete Blocks*. Min 4 hr fire rated wall. Max diam of opening is 13-5/8 in. (346 mm).
   See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Through Penetrants — OOne metallic pipe, conduit or tubing to be installed concentrically within the firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The annular space between pipe, conduit or tubing and the periphery of the opening shall be min 3/8 in. (5 mm) to 1/2 in. (13 mm) maximum. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electric metallic tubing or 6 in. (152 mm) diam steel conduit.
   C. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   D. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* — Sealant — Min 2 in. (51 mm) thickness applied within annulus flush with both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FX-ONE MAX Intumescent Sealant

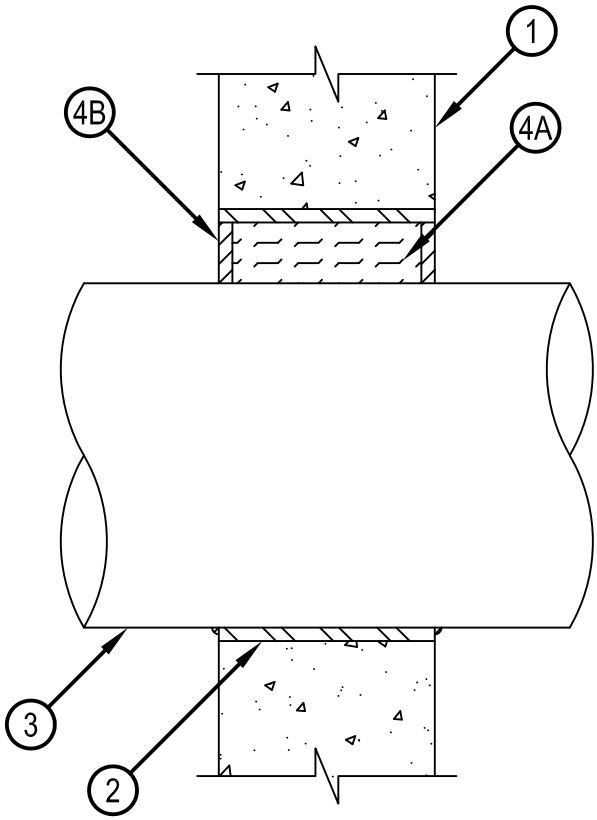
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. W-J-1193

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating At Ambient — Less Than 1 CFM/Sq Ft	FH Rating — 2 Hr
L Rating At 400°F — 4 CFM/Sq Ft	FTH Rating — 0 Hr
	L Rating At Ambient — Less Than 1 CFM/Sq Ft
	L Rating At 400°F — 4 CFM/Sq Ft





SECTION A-A

Hilti Firestop Systems

System No. W-J-1193

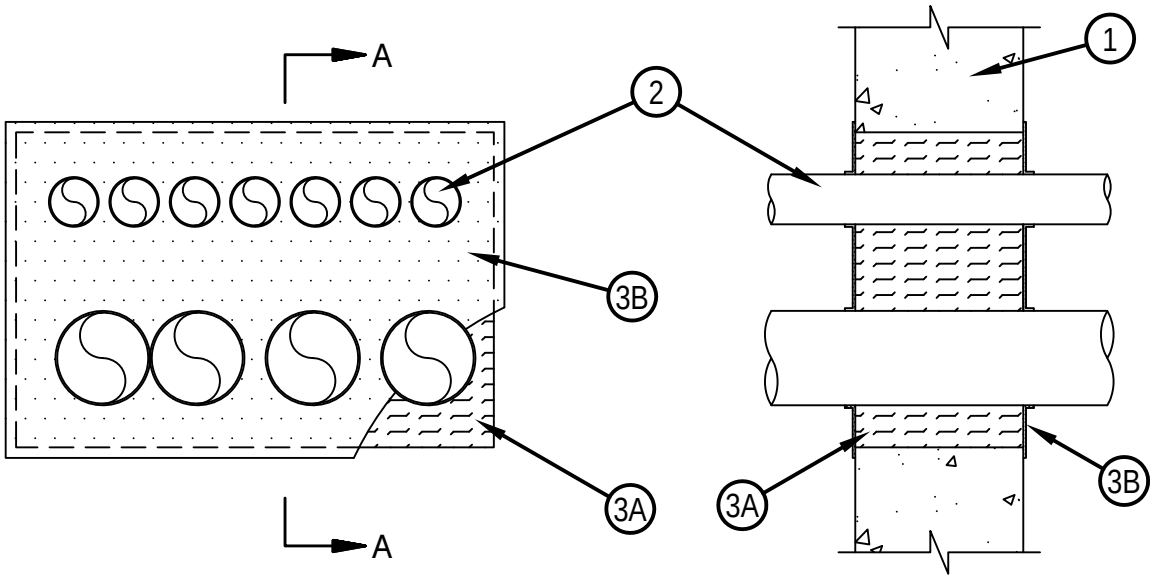
1. Wall Assembly — Min 6 in. (127 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 16 in. (406 mm).
   See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Steel Sleeve — Nom 16 in. (406 mm) diam (or smaller) Schedule 40 (or lighter) steel sleeve friction fitted into opening. Length of steel sleeve to be equal to the thickness of wall.
3. Through Penetrants — One metallic pipe, tubing or conduit to be installed concentrically or eccentrically within opening. The annular space between the pipes and conduits and the edges of the opening shall be min 0 in. (0 mm, point contact) to max 3-7/8 in. (98 mm). Through penetrant to be rigidly supported on both sides of wall assembly. The following types and sizes of through penetrants may be used:
   A. Steel Pipe — Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.
   C. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tube.
   D. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
   E. Conduit — Nom 6 in. (152 mm) diam (or smaller) electrical metallic tubing (EMT) or rigid steel conduit.
4. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 5 in. (1 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material.
   B. Fill Void or Cavity Materials* — Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of fill material applied to the through penetrant/steel sleeve interface at the point contact locations on both sides of the wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. W-J-1201

F Rating — 2 Hr
T Rating — 1/4 Hr



SECTION A-A

1. Wall Assembly — Min 6 in. (152 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max area of opening is 342 sq in. (2206 cm2) with a max dimension of 22-3/4 in. (578 mm). See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Through Penetrants — One or more metallic pipes or conduits to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipes or conduits shall be min 1/4 in. (6 mm) to max 5-1/2 in. (140 mm). The annular space between the pipes or conduits and the periphery of the opening shall be min 0 in. (point contact) to max 1-3/4 in. (44 mm). Pipes or conduits to be rigidly supported on both sides of the wall assembly. The following types and sizes of metallic pipes or conduits may be used:
   A. Steel Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. Iron Pipe — Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) rigid steel conduit, or electrical metallic tubing (EMT).
3. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 4 pcf (64 kg/m3) mineral wool batt insulation cut into strips equal in width to thickness of the wall and tightly-compressed to completely fill opening flush with both wall surfaces.
   B. Fill, Void, or Cavity Material*—Spray — Min 1/8 in. (3 mm) wet thickness applied to completely cover mineral wool batt packing material on both sides of wall. Spray material to overlap min 1/2 in. (13 mm) onto wall surfaces and onto pipes or conduits.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP672 Firestop Spray or CFS-SP WB Firestop Joint Spray

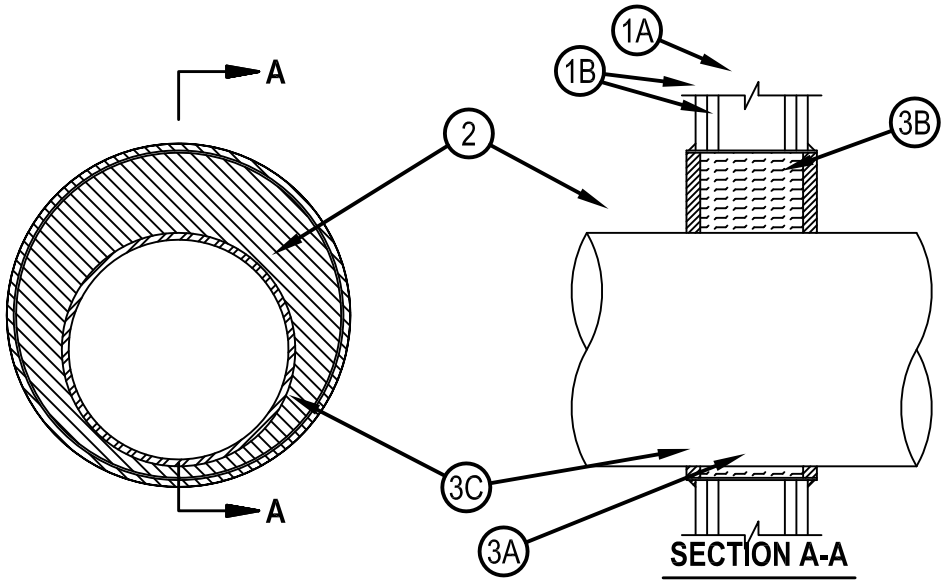
*Bearing the UL Classification Mark

Hilti Firestop Systems

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. W-L-1056

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Rating — 2 Hr
L Rating At 400 F - 4 CFM/sq ft	FTH Rating — 0 Hr
	L Rating At Ambient - Less Than 1 CFM/sq ft
	L Rating At 400 F - 4 CFM/sq ft



1. Wall Assembly — The fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Two layers of nom 5/8 in. (16 mm) thick gypsum wallboard, as specified in the individual Wall and Partition Design. Max diam of opening is 18-3/4 in. (476 mm).
2. Through Penetrants — One metallic pipe or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe or tubing to be rigidly supported on both sides of wall assembly. The annular space shall be min 3/4 in. (19 mm) to max 4-1/2 in. (114 mm). The following types and sizes of metallic pipes or tubing may be used:
   A. Steel Pipe — Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.
   C. Copper Tubing — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.
   D. Copper Pipe — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.
3. Firestop System — The firestop system shall consist of the following:
   A. Metallic Sleeve — Cylindrical sleeve fabricated from min 0.028 in. thick (24 gauge) galv sheet steel and having a min 1 in. (25 mm) lap along the longitudinal seam. Length of steel sleeve to be 1 in. (25 mm) more than the overall thickness of the wall such that, when installed in circular opening, the ends of the sleeves project 1/2 in. (13 mm) from each surface of the wall. The diam of the openings cut in the gypsum wallboard layers on each side of the wall assembly to be 1-1/2 to 6 in. (38 to 152 mm) larger than outside diam of pipe such that, when the sleeve is installed, a 3/4 to 4-1/2 in. (19 to 114 mm) annular space will be present between the steel sleeve and the pipe around the entire circumference of the pipe. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the openings and releasing the coil to let it uncoil against the circular cutouts in the gypsum wallboard layers.

B. Packing Material — Min 4 in. thickness of min 4.0 pcf (64 kg/m3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.

C. Fill, Void or Cavity Material* — Sealant — Min 3/4 in. (19 mm) thickness of tightly packed fill material applied within the annulus, flush with the ends of the steel sleeve. Additional fill material to be installed to the outer perimeter of the steel sleeve at its egress from the opening.

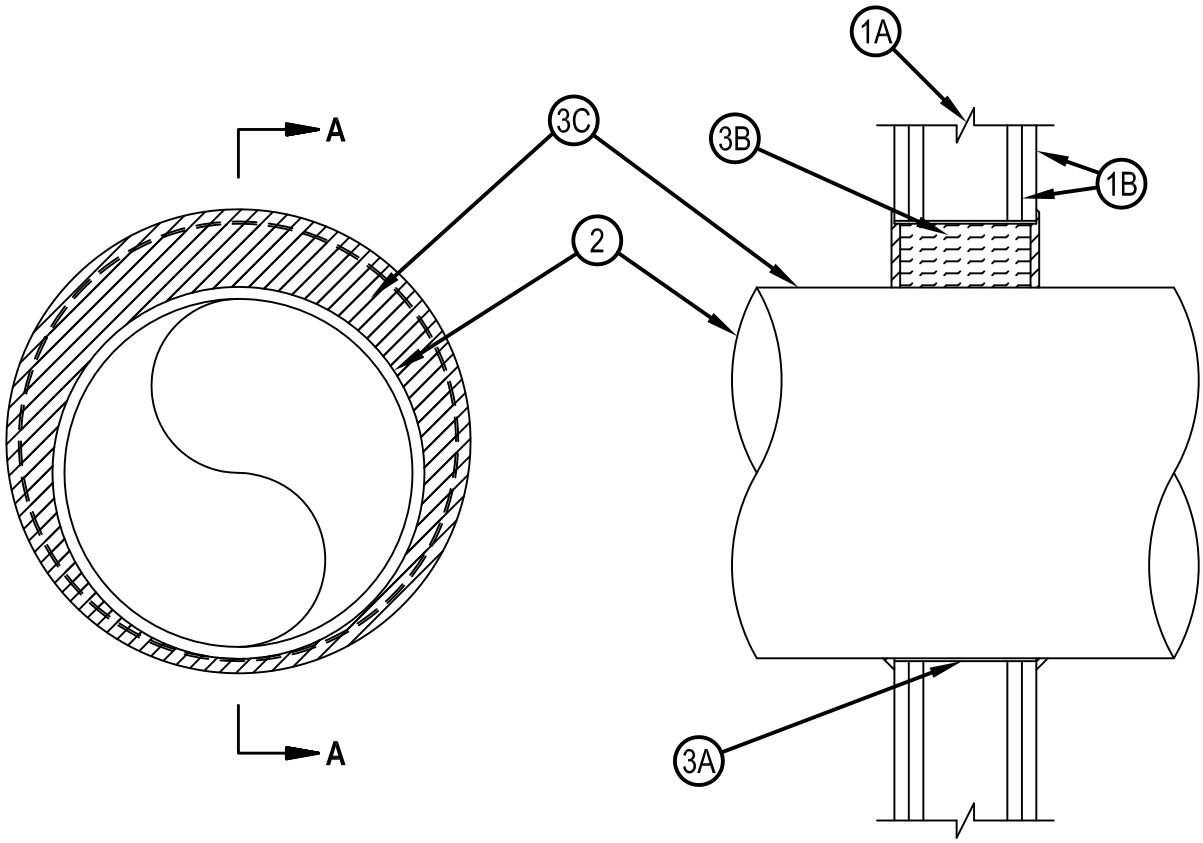
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

System No. W-L-1058

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Rating — 0 and 1/4 Hr (See Item 2)	FT Rating — 0 and 1/4 Hr (See Item 2)
	FH Rating — 2 Hr
	0 and 1/4 Hr (See Item 2)



SECTION A-A

1. Wall Assembly — The fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Two layers of nom 5/8 in. (16 mm) thick gypsum wallboard, as specified in the individual Wall and Partition Design. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls and 20 in. (508 mm) for steel stud walls. Diam of circular through opening to be min 3/8 in. (5 mm) to max 2-3/4 in. (70 mm) larger than diam of through penetrants (Item 2).
2. Through-Penetrants — One metallic pipe or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes or tubing may be used:
   A. Steel Pipe — 17-1/4 in. (438 mm) diam (or smaller) by 0.125 (3.2 mm) (or heavier) steel pipe. The annular space shall be min 0 to max 2-3/4 in. (70 mm). The T, FT and FTH Rating is 1/4 hr when steel pipe is used.
   B. Copper Tubing — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing. The annular space shall be min 0 to max 3 in. (76 mm). The T, FT and FTH rating is 0 hr when copper tubing is used.

C. Copper Pipe — Nom 4 in. (102 mm) diam (or smaller) regular (or heavier) copper pipe. The annular space shall be min. 0 to max 3 in. (76 mm). The T, FT and FTH rating is 0 hr when copper pipe is used.

3. Firestop System — The firestop system shall consist of the following:

A. Steel Wire Mesh — No. 8 steel wire mesh having a min 1 in. (25 mm) lap along the longitudinal seam. Length of steel wire mesh to be 4-3/4 in., (121 mm) centered and formed to fit periphery of through opening.

B. Packing Material — Min 4-1/2 in. (114 mm) thickness of flexible urethane sheet or mineral wool insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.

C. Fill, Void or Cavity Material* — Sealant — Min 1/4 in. (6 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point contact location between pipe and wall, a min 1/2 in. (13 mm) diam bead of caulk shall be applied at the wall/pipe interface on both surfaces of wall assembly.

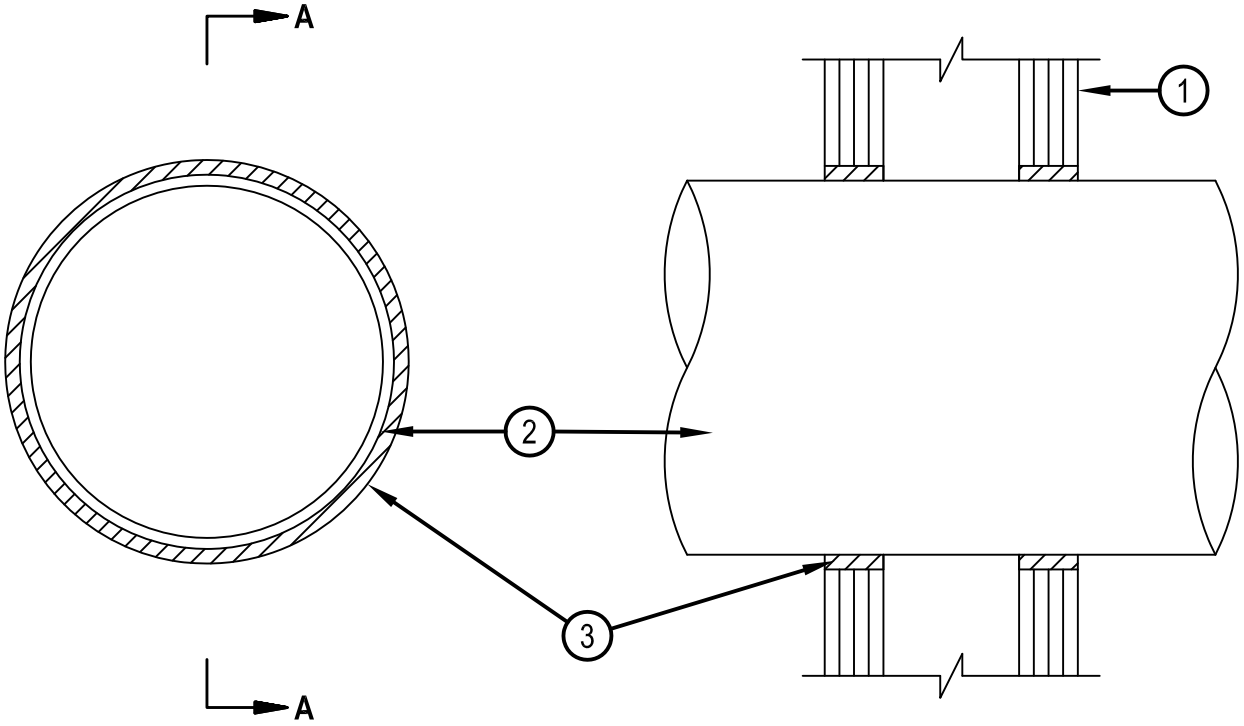
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. W-L-1111

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 4 Hr	F Rating — 4 Hr
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Rating — 4 Hr
	FTH Rating — 0 Hr



SECTION A-A

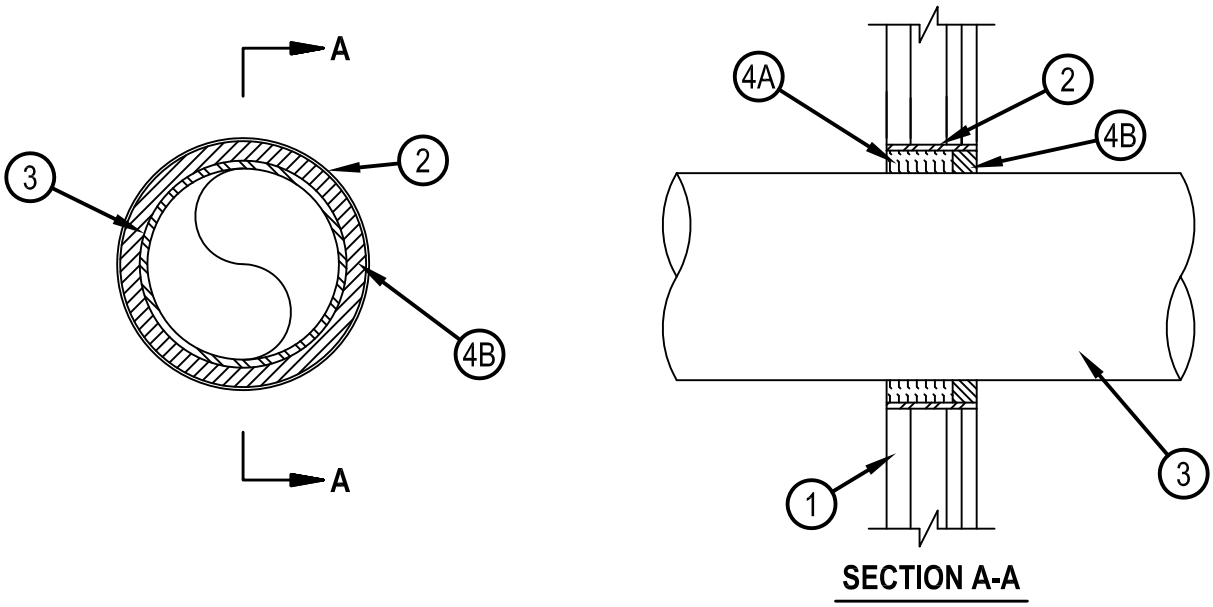
1. Wall Assembly — The fire-rated gypsum wallboard/stud wall assembly shall be constucted of the materials and in the manner specified in Design No. U435 in the Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing shall consist of channel shaped steel studs, min 3-5/8 in. (92 mm) wide, fabricated from min 25 MSG galv steel, spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Four layers of nom 1/2 in. thick gypsum wallboard as specified in Design No. U435. Max diam of opening is 13-5/8 in. (346 mm).
2. Through Penetrants — One metallic pipe, conduit or tubing to be installed concentrically within the firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of the wall assembly. The annular space between pipe, conduit or tubing and the periphery of the opening shall be minimum 3/8 in. to 1/2 in. (10 mm to 13 mm) maximum. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electric metallic tubing or 6 in. (152 mm) diam steel conduit.
   C. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   D. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* — Sealant — Min 2 in. (51 mm) thickness applied within annulus flush with both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. W-L-1205

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Items 1 and 4)	F Ratings — 1 and 2 Hr (See Items 1 and 4)
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Ratings — 1 and 2 Hr (See Items 1 and 4)
	FTH Rating — 0 Hr



SECTION A-A

1. Wall Assembly — The 1 or 2 Hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — "C-T" shaped studs 1-5/8 in. (41 mm) wide by 2-1/2 in. (64 mm) deep, fabricated from 25 MSG galv steel, spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — One layer of nom 1 in. (25 mm) thick, 24 in. (610 mm) wide gypsum liner and one or two layers of 5/8 in. (16 mm) thick, 4 ft (1.22 m) wide gypsum board with square or tapered edges. The gypsum board types, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 10-1/2 in. (267 mm).

1A. Wall Assembly — As an alternate to the above wall assembly, the 1 or 2 Hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC.
   B. Gypsum Board* — Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Design. Max diam of opening is 10-1/2 in. (267 mm).

The hourly F, FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. Metallic Sleeve — Max 10-1/2 in. (267 mm) diam cylindrical sleeve fabricated from min 0.016 in. (0.41 mm) thick galv sheet steel and having a min 1 in. (25 mm) lap along the longitudinal seam. Length of steel sleeve to be equal to thickness of wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil to let it uncoil against the circular cutouts in the gypsum board layers. Sleeve may also be formed of No. 8 steel wire mesh having a min 1 in. (25 mm) lap along the longitudinal seam.

3. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. An annular space of min 1/4 in. (6 mm) to max 1-5/8 in. (41 mm) is required within firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 8 in. (203 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 8 in. (203 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (203 mm) diam (or smaller) steel electrical metallic tubing (EMT) or 6 in. diam steel conduit.
   D. Copper Tubing — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.
   F. Flexible Steel Conduit+ — Nom 2 in. (51 mm) diam (or smaller) flexible steel conduit.

   See Flexible Metal Conduit (DXUZ) category in the Electrical Construction Equipment Directory for names of manufacturers.
4. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 2-1/8 in. (54 mm) or 2-3/4 in. (70 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into opening on the room side of the wall as permanent form for 1 and 2 hr fire rated walls, respectively. Packing material to be recessed from the room side of wall as required to accommodate the required thickness of fill material. In alternate wall assembly, packing material to be flush with either side of the wall and recessed from the other side of the wall to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material — Sealant* — Min 1 in. (25 mm) thickness of fill material applied within sleeve, flush with surface of wall.

   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

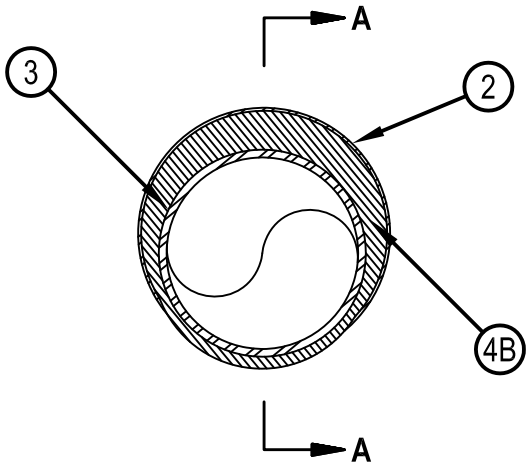
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

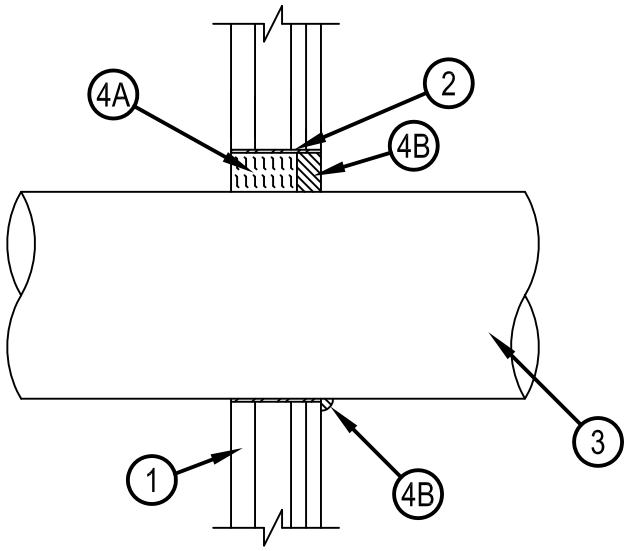
+Bearing the UL Listing Mark

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. W-L-1206

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 and 2 Hr (See Items 1 and 4)	F Rating — 1 and 2 Hr (See Items 1 and 4)
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Rating — 1 and 2 Hr (See Items 1 and 4)
	FTH Rating — 0 Hr





SECTION A-A

1. Wall Assembly — The fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — "C-T" shaped studs 1-5/8 in. (41 mm) wide by 2-1/2 in. (64 mm) deep, fabricated from 25 MSG galv steel, spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — One layer of nom 1 in. (25 mm) thick, 24 in. (610 mm) wide gypsum liner and one or two layers of nom 5/8 in. (16 mm) thick, 4 ft. (1.27 m) wide gypsum board with square or tapered edges. The gypsum board types, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 10-1/2 in. (267 mm).

1A. Wall Assembly — As an alternate to the above wall assembly, the 1 or 2 Hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC.
   B. Gypsum Board* — Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Design. Max diam of opening is 10-1/2 in. (267 mm).

   The hourly F, FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. Metallic Sleeve — Max 10-1/2 in. (267 mm) diam cylindrical sleeve fabricated from min 0.016 in. (0.41 mm) thick (28 gauge) galv sheet steel and having a min 1 in. (25 mm) lap along the longitudinal seam. Length of steel sleeve to be equal to thickness of wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil to let it uncoil against the circular cutouts in the gypsum board layers. Sleeve may also be formed of No. 8 steel wire mesh having a min 1 in. (25 mm) lap along the longitudinal seam.

System No. W-L-1206

3. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. An annular space of min 0 in. (0 mm, point contact) to max 1-7/8 in. (48 mm) is required within firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 8 in. (203 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 8 in. (203 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or 4 in. (102 mm) diam steel conduit.
   D. Copper Tubing — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.
   F. Flexible Steel Conduit+ — Nom 2 in. (51 mm) diam (or smaller) flexible steel conduit.
      See Flexible Metal Conduit (DXUZ) category in the Electrical Construction Equipment Directory for names of manufacturers.
4. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 1-5/8 or 2-1/4 in. (41 or 57 mm) thickness of min 4 pcf (64 kg/m³) mineral wool batt insulation firmly packed into sleeve on one side of the wall as permanent form for 1 and 2 Hr walls, respectively. Packing material to be recessed from the room side of wall to accommodate the required thickness of fill material. In alternate wall assembly, packing material to be flush with either side of the wall and recessed from the other side of the wall to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material — Sealant* — Min 1-1/2 in. (38 mm) thickness applied within sleeve, flush with the surface of wall. At the point contact location between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe/wall interface.
      HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

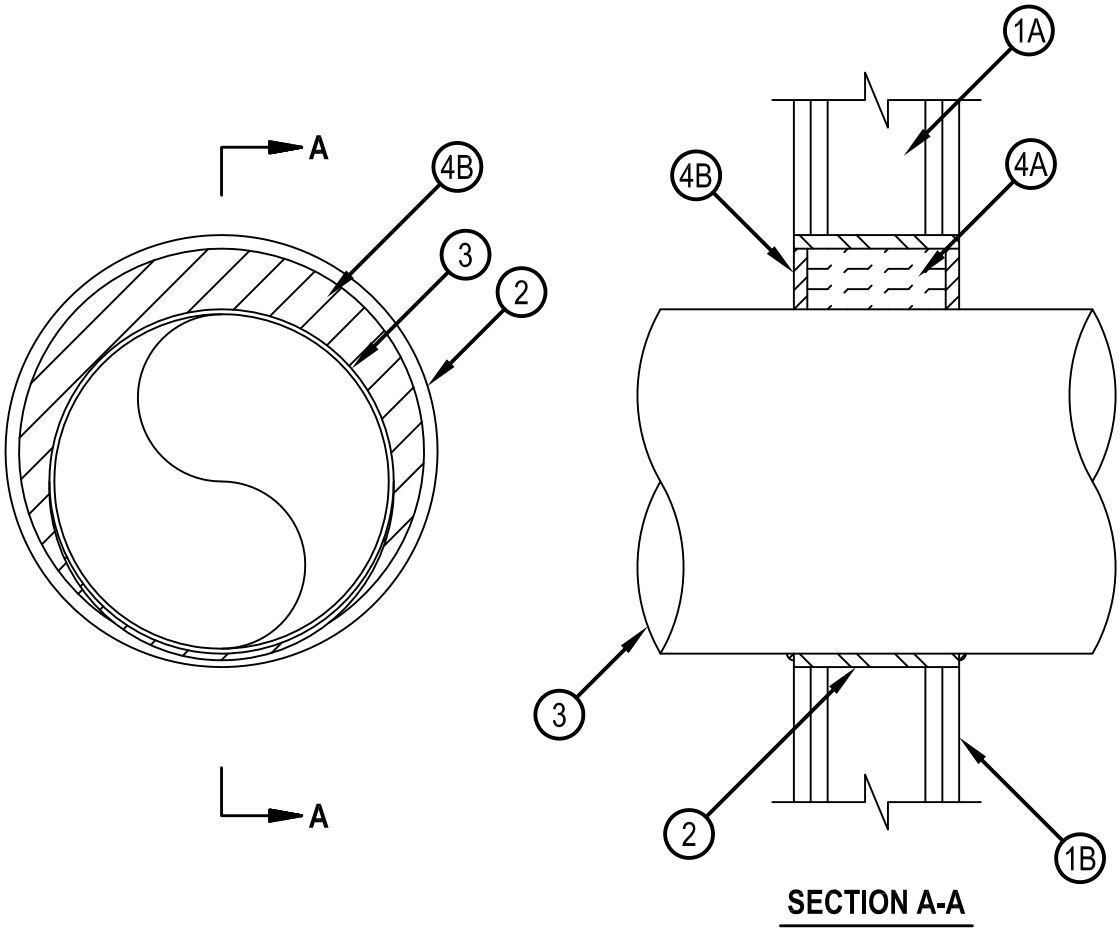
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

+Bearing the UL Listing Mark

System No. W-L-1392

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Ratings — 1 and 2 Hr (See Item 1)
L Rating At 400 F - 4 CFM/sq ft	FTH Rating — 0 Hr
	L Rating At Ambient - Less Than 1 CFM/sq ft
	L Rating At 400 F - 4 CFM/sq ft



SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing shall consist of min 3-5/8 in. (92 mm) wide steel studs spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Min 5/8 in. (16 mm), gypsum board. Max diam of opening shall is 16 in. (406 mm).
   The hourly F, FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. Steel Sleeve — Nom 16 in. (406 mm) diam (or smaller) Schedule 40 (or lighter) steel sleeve friction fitted into opening. Length of steel sleeve to be equal to the thickness of wall.

System No. W-L-1392

3. Through Penetrants — One metallic pipe, tubing or conduit to be installed concentrically or eccentrically within opening. The annular space between the pipes and conduits and the edges of the opening shall be min 0 in. (0 mm, point contact) to max 3-7/8 in. (98 mm). Through penetrant to be rigidly supported on both sides of wall assembly. The following types and sizes of through penetrants may be used:
   A. Steel Pipe — Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.
   C. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tube.
   D. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
   E. Conduit — Nom 6 in. (152 mm) diam (or smaller) electrical metallic tubing (EMT) or rigid steel conduit.
4. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — In 2 hr rated wall assemblies, min 5-1/8 in. (130 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into opening as a permanent form. In 1 hr rated wall assemblies, min 3-7/8 in. (130 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material.
   B. Fill Void or Cavity Materials* — Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of fill material applied to the through penetrant/steel sleeve interface at the point contact locations on both sides of the wall.

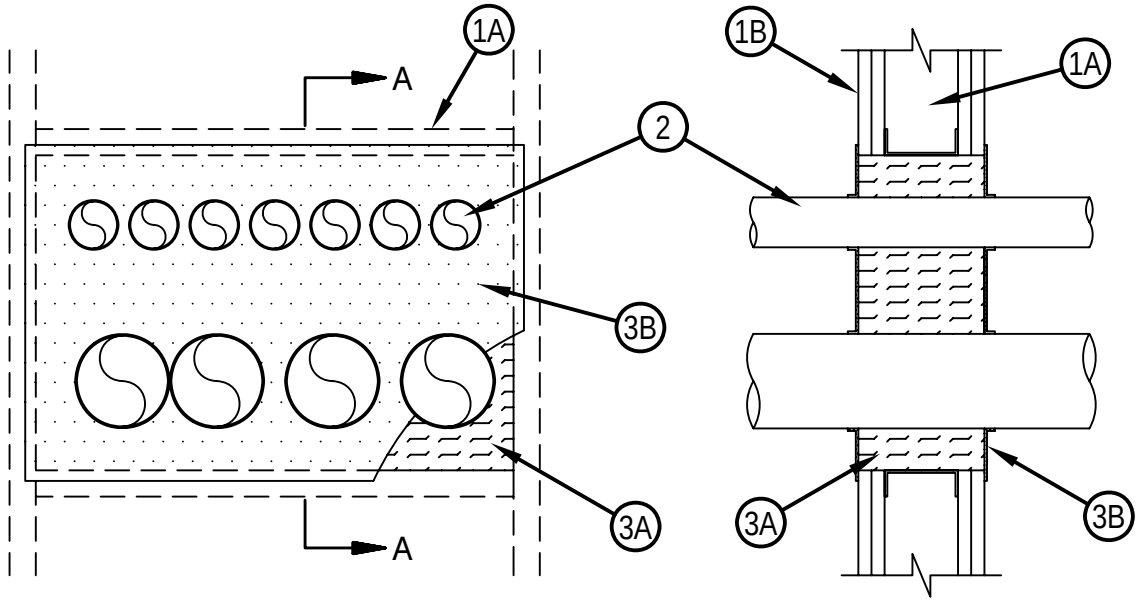
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant, FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. W-L-1402

F Ratings — 1 or 2 Hr (See Item 1)
T Rating — 1/4 Hr



SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated framed gypsum board wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing shall consist of steel channel studs. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. Additional steel studs installed to completely frame the opening.
   B. Gypsum Board — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max area of opening is 342 sq in. (2206 cm2) with a max dimension of 22-3/4 in. (578 mm).
   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrants — One or more metallic pipes or conduits to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipes or conduits shall be min 1/4 in. (6 mm) to max 5-1/2 in. (140 mm). The annular space between the pipes or conduits and the periphery of the opening shall be min 0 in. (point contact) to max 1-3/4 in. (44 mm). Pipes or conduits to be rigidly supported on both sides of the wall assembly. The following types and sizes of metallic pipes or conduits may be used:
   A. Steel Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. Iron Pipe — Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) rigid steel conduit, or electrical metallic tubing (EMT).
3. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 4 pcf (64 kg/m3) mineral wool batt insulation cut into strips equal in width to thickness of the wall and tightly-compressed to completely fill opening flush with both wall surfaces.
   B. Fill, Void, or Cavity Material*— Spray — Min 1/8 in. (3 mm) wet thickness applied to completely cover mineral wool batt packing material on both sides of wall. Spray material to overlap min 1/2 in. (13 mm) onto wall surfaces and onto pipes or conduits.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP672 Firestop Spray or CFS-SP WB Firestop Joint Spray

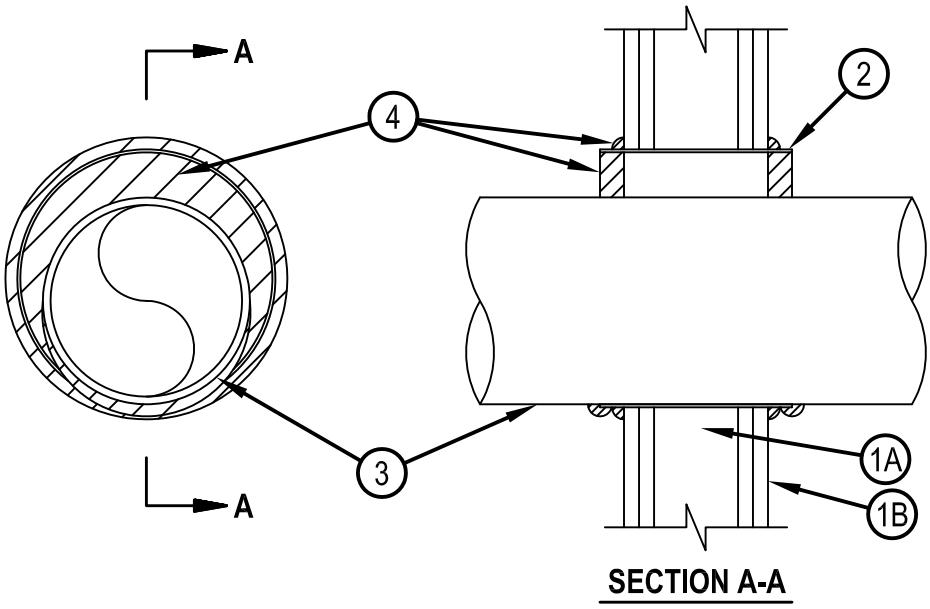
*Bearing the UL Classification Mark

Hilti Firestop Systems

Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

System No. W-L-1465

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 or 2 Hr (See Item 1)	F Ratings — 1 or 2 Hr (See Item 1)
T Rating — 0 and 1/4 Hr (See Item 1)	FT Rating — 0 and 1/4 Hr (See Item 1)
L Rating At Ambient — Less Than 1 CFM/Sq Ft	FH Rating — 1 or 2 Hr (See Item 1)
L Rating At 400 F — Less Than 1 CFM/Sq Ft	FTH Rating — 0 and 1/4 Hr (See Item 1)
	L Rating At Ambient — Less Than 1 CFM/Sq Ft
	L Rating At 400 F — Less Than 1 CFM/Sq Ft



SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Thickness, type, number of layers and orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 10 in. (254 mm).

   The hourly F, FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed. The T, FT, FTH Ratings are 0 and 1/4 hr for 1 and 2 hr rated wall assemblies, respectively.
2. Steel Sleeve — Cylindrical sleeve fabricated from min 0.016 in. (0.41 mm) thick galv sheet steel and having a min 1 in. (25 mm) lap along the longitudinal seam. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the openings and releasing the coil to let it uncoil against the circular cutouts in the gypsum board layers. The ends of the steel sleeve shall be flush with or extend max 1 in. (25 mm) beyond each surface of the wall.

3. Through Penetrants — One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of sleeve shall be min 0 in. (point contact) to max 1-7/8 in. (48 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. Steel Pipe — Nom 8 in. (203 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. Iron Pipe — Nom 8 in. (203 mm) diam (or smaller) cast or ductile iron pipe.

C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or nom 6 in. (152 mm) steel conduit.

D. Copper Tubing — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.

E. Copper Pipe — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.

Configuration A

4. Fill, Void or Cavity Material* — Sealant — Min 1 in. (25 mm) thickness of sealant applied within annulus, flush with both ends of sleeve. A min 1/4 in. (6 mm) diam bead of sealant to be applied at the tubing/sleeve interface at the point contact location and around the entire perimeter of the sleeve at the sleeve/gypsum board interface when the sleeve extends beyond the wall surface.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 606 Sealant, FS ONE Sealant or FS-ONE MAX Intumescent Sealant

Configuration B

4. Firestop System — The firestop system shall consist of the following items:

A. Packing Material — Min 5/8 in. (16 mm) thickness of min 4 pcf Mineral wool bat insulation compressed and tightly and packed in to each end of the sleeve. Packing material is to be recessed from each end of the sleeve to accommodate fill material.

A1. Packing Material* - Strips — (As an alternate to Config ,B Item 4A) - Nom 5/8 in. in. (16 mm) wide precut mineral wool strips. The strips are firmly packed into the gap between penetrant and the steel sleeve Item 2 on both sides of the wall. Packing material is to be recessed from each end of the sleeve to accommodate fill material.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 767 Speed Strips

B. Fill, Void or Cavity Material* — Sealant — Min 1/2 in. (13 mm) thickness of sealant applied within annulus, flush with both ends of sleeve. A min 1/4 in. (6 mm) diam bead of sealant to be applied at the tubing/sleeve interface at the point contact location and around the entire perimeter of the sleeve at the sleeve/gypsum board interface when the sleeve extends beyond the wall surface.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 606 Sealant or FS ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

High-performance intumescent firestop sealant FS-ONE MAX

Applications

- For effectively sealing most common through penetrations in a variety of base materials
- For use on concrete, masonry and drywall
- Mixed and multiple penetrations
- Metal pipe penetrations: copper, steel and EMT
- Insulated metal pipe penetrations: steel and copper
- Plastic pipe penetrations: closed or vented

Advantages

- US-produced: “Buy American” compliant
- One product for a variety of common through penetrations
- Cost-effective, easy-to-use solution
- Water-based and paintable
- Industry-leading VOC results
- Ethylene glycol-free

Chemical resistant

Mold and mildew resistant

FILL, VOID OR CAVITY MATERIAL FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS SEE UL FIRE RESISTANCE DIRECTORY 66Y7

Technical data	
Chemical basis	Water-based acrylic dispersion
Approx. Density	84.3 lb/ft³
Color	Red
Application temperature range	41 - 104 °F
Approx. cure time[1)]	4 mm/3 days
Temperature resistance range	-4 to 212 °F
Mold and mildew performance	Class 0 (ASTM G21-96)
Mold and mildew resistance	Yes
Surface burning characteristics UL 723 (ASTM E84)	Flame spread: 0 Smoke development: 10
Tested in accordance with	UL 1479, ASTM E814, ASTM E84, CAN/ ULC-S115, ASTM G21, ASTM E90
California State fire marshal approval	CSFM Listing 4485-1200:0108 for FS-ONE MAX Intumescent Firestop Sealant
Expansion ratio (unrestricted, up to)	1:5

[1)] at 75°F/24°C, 50% relative humidity

Order Designation	Package Content	Item number
FS-ONE MAX 20oz foil (3 case + disp)	1x Foil pack dispenser manual CS 270-P1, 75x Firestop sealant FS-ONE MAX 20 oz foil	**3530252**
FS-ONE MAX 10oz tube (1 case)	12x Firestop sealant FS-ONE MAX 10 oz cartridge	**3530249**
FS-ONE MAX 5 gallon (18 pails)	18x Firestop sealant FS-ONE MAX 5 gallon pail	**3530263**
FS-ONE MAX 20oz foil (1 case)	25x Firestop sealant FS-ONE MAX 20 oz foil	**3530250**
FS-ONE MAX 20oz foil (3 cases)	75x Firestop sealant FS-ONE MAX 20 oz foil	**3530251**
FS-ONE MAX 20oz Foil-Pallet	600x FSONE-MAX 20 oz foil, 290x Bulk Shipping Condition	**3534713**
FS-ONE MAX 10 oz cartridge		**2101531**
FS-ONE MAX 5 gallon pail		**2101533**

Date: June 22, 2015

Subject: **Buy American Certification**

Product: Firestop sealant FS-ONE MAX 10.1OZ Cartridge (Item #2101531)
Firestop sealant FS-ONE MAX 20.0OZ Foil (Item #2101532)
Firestop sealant FS-ONE MAX 5GAL Pail (Item #2101533)

To Whom it May Concern:

Hilti, Inc. certifies that the above referenced product(s) as described on the Purchase Order identified above, is (are) a domestic end product (as defined in FAR Subpart 25.1, "Buy American Act--Supplies"), or satisfies the preference for domestic construction material (as defined in FAR Subpart 25.2, "Buy American Act--Construction Materials").

Sincerely,

Thomas M. Horan, QA Manager

Buyamericanfsonemax.doc

Hilti, Inc.
5400 South 122nd East Avenue
Tulsa, OK 74121 USA

T (918) 872-3000 I F 800-879-7000
www.hilti.com

FS-ONE MAX; Hilti Firestop Filler Mastic CFS-FIL

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 12/17/2015 Revision date: 12/17/2015 Supersedes: 12/17/2015 Version: 1.2

SECTION 1: Identification

1.1. Identification

Product form	Mixture
Name	FS-ONE MAX; Hilti Firestop Filler Mastic CFS-FIL
Product code	BU Chemicals
Chemical structure	

1.2. Relevant identified uses of the substance or mixture and uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Hilti, Inc.
Legacy Tower, Suite 1000
75024 Plano - USA
T +1 9724035800
1-800-879-8000 toll free - F +1 918 254 0522

Supplier
Hilti, Inc.
Legacy Tower, Suite 1000
75024 Plano - USA
T +1 9724035800
1-800-879-8000 toll free - F +1 918 254 0522

Department issuing data specification sheet
Hilti AG
Feldkircherstraße 100
9494 Schaan - Liechtenstein
T +423 234 2111
chemicals.hse@hilti.com

1.4. Emergency telephone number

Emergency number

Chem-Trec
Tel.: 1 800 424 9300 (USA, PR, Virgin Islands, Canada)
Tel.: 703 527 3887 (Other countries)

+1 918 8723000
1-800-879-8000 toll free

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Not classified

2.2. Label elements

GHS-US labelling

No labelling applicable

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

FS-ONE MAX; Hilti Firestop Filler Mastic CFS-FIL

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	Product identifier	%	GHS-US classification
Quartz	(CAS No) 14808-60-7	2.5 - 5	Carc. 1A, H350

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation: Get medical advice/attention if you feel unwell.

First-aid measures after skin contact: Wash skin with plenty of water. If skin irritation occurs: Get medical advice/attention.

First-aid measures after eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

First-aid measures after ingestion: Get medical advice/attention if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

No additional information available

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: Water spray. Dry powder. Foam. Carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Reactivity: The product is non-reactive under normal conditions of use, storage and transport.

5.3. Advice for firefighters

Protection during firefighting: Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

Protective equipment: For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

No additional information available

6.3. Methods and material for containment and cleaning up

Methods for cleaning up: Recover mechanically the product.

6.4. Reference to other sections

For further information refer to section 13.

FS-ONE MAX; Hilti Firestop Filler Mastic CFS-FIL

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	Wear personal protective equipment.
Hygiene measures	Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	Keep cool. Store in a dry place.
Storage temperature	41 - 77 °F

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Quartz (14808-60-7)		
OSHA	Remark (OSHA)	(3) See Table Z-3.

8.2. Exposure controls

Personal protective equipment: Protective clothing. Safety glasses. Gloves.

Hand protection	Protective gloves. EN 374.
Eye protection	Safety glasses. EN 166. EN 170.
Skin and body protection	Wear suitable protective clothing.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Pasty.
Colour	red
Odour	characteristic
Odour threshold	Not determined
pH	≈ 7.85
Melting point	Not applicable
Freezing point	No data available
Boiling point	No data available
Flash point	Not applicable
Relative evaporation rate (butylacetate=1)	No data available
Flammability (solid, gas)	No data available
Explosive limits	No data available
Explosive properties	No data available
Oxidising properties	No data available
Vapour pressure	No data available
Relative density	No data available
Relative vapour density at 20 °C	No data available
Density	≈ 1.35 g/cm³
Molecular mass	Not determined

Solubility	No data available
Log Pow	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Viscosity, kinematic	No data available
Viscosity, dynamic	No data available

9.2. Other information

VOC content	9 g/l

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	Not classified
Skin corrosion/irritation	Not classified pH: ≈ 7.85
Serious eye damage/irritation	Not classified pH: ≈ 7.85
Respiratory or skin sensitisation	Not classified
Germ cell mutagenicity	Not classified
Carcinogenicity	Not classified

Quartz (14808-60-7)	
IARC group	1 - Carcinogenic to humans

Reproductive toxicity	Not classified
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified
Aspiration hazard	Not classified

FS-ONE MAX; Hilti Firestop Filler Mastic CFS-FIL

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming	No known ecological damage caused by this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods	Dispose of contents/container in accordance with licensed collector's sorting instructions.
Waste disposal recommendations	Dispose in a safe manner in accordance with local/national regulations.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number

Not regulated for transport

14.2. UN proper shipping name

Proper Shipping Name (ADR)	Not applicable
Proper Shipping Name (IMDG)	Not applicable
Proper Shipping Name (IATA)	Not applicable
Proper Shipping Name (ADN)	Not applicable
Proper Shipping Name (RID)	Not applicable

14.3. Transport hazard class(es)

ADR

Transport hazard class(es) (ADR)	Not applicable

IMDG

Transport hazard class(es) (IMDG)	Not applicable

IATA

Transport hazard class(es) (IATA)	Not applicable

ADN

Transport hazard class(es) (ADN)	Not applicable

RID

Transport hazard class(es) (RID)	Not applicable

14.4. Packing group

Packing group (ADR)	Not applicable
Packing group (IMDG)	Not applicable
Packing group (IATA)	Not applicable
Packing group (ADN)	Not applicable
Packing group (RID)	Not applicable

14.5. Environmental hazards

Dangerous for the environment	No
Marine pollutant	No
Other information	No supplementary information available

14.6. Special precautions for user

- Overland transport

- Transport by sea

No data available

- Air transport

No data available

- Inland waterway transport

Carriage prohibited (ADN)	No
Not subject to ADN	No

- Rail transport

Carriage prohibited (RID)	No

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information

15.1. US Federal regulations

This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Quartz (14808-60-7)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

FS-ONE MAX; Hilti Firestop Filler Mastic CFS-FIL	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria

EU-Regulations

No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

National regulations

Quartz (14808-60-7)
Listed on IARC (International Agency for Research on Cancer)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Revision date 12/17/2015

Full text of H-statements:

Carc. 1A	Carcinogenicity, Category 1A
H350	May cause cancer

HMIS III Rating

Health	0 Minimal Hazard - No significant risk to health
Flammability	0 Minimal Hazard - Materials that will not burn
Physical	0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.
Personal Protection	B
	B - Safety glasses, Gloves

SDS_US_Hilti

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

August 26, 2015

To Whom It May Concern:

Re: **Hilti FS-ONE Max Firestop – LEED Info**.

Item Numbers:

2101531
2101532
2101533

The Hilti FS-ONE MAX Firestop is manufactured in the United States

There is no post-consumer or post-industrial content in FS-ONE MAX and it cannot be recycled. The VOC content for FS-ONE MAX is 9 grams/liter.

FS-ONE MAX is not regulated as a hazardous waste by the Federal EPA Standards. The regulations for the disposal of non-regulated industrial waste can vary from state to state and even city to city. For this reason, you should consult your local and state regulatory agencies for direction on disposal.

Please feel free to contact me at (918) 872-3704 if you have questions.

Sincerely,

Jerry Metcalf MPH, CHMM
Sr. Manager, Safety/Environmental
Hilti Inc
(918) 872 3704
jerry.metcalf@hilti.com

Rev. Date: 7/31/15

The manufacturing plant location on this certificate has been provided for LEEDS reporting purposes only. It should never be used for Country of Origin certification or a representation of compliance/non-compliance with Buy American or Buy America requirements, as those requirements differ.

The manufacturing plant location(s) identified on the certificate represent standard Hilti catalog products only. “Specially” produced non-catalog Hilti products may have differing manufacturing plant locations.

Contact your Hilti representative in cases of “specially” produced products for a custom LEEDS certificates.

Hilti, Inc.
5400 South 122nd East Avenue
Tulsa, OK 74146

1-800-879-8000
www.hilti.com

Thermafiber® Safing™

- Exceptional performance in Perimeter Fire Containment Systems
- Provides life saving fire protection in rated assemblies
- Fire resistant to temperatures above 2,000°F (1,093°C)
- Easy to fabricate for through penetrations and firestopping
- Conserves energy, reduces greenhouse gas emissions
- Resists moisture
- Controls noise and sound

LEED® v2009 Green Building Credits

Minimum 70% Recycled Content[1]	Energy & Atmosphere	Materials & Resources	Indoor Environmental Quality	Innovation in Design
	1	2.1, 2.2 4.1, 4.2 5.1, 5.2	9	1

Thermafiber Safing and FireSpan® insulation provide the critical components of the perimeter fire containment system in the 111 South Wacker Building in Chicago, IL. Thermafiber insulation also contributed to the building's LEED® Gold Rating.

Thermafiber® Safing™ is compression fitted between FireSpan® insulation and the concrete slab edge to create a perimeter fire containment system.

Made in the USA

Thermafiber® Safing™ Insulation

Description:

THERMAFIBER Safing™ products are designed to provide life saving fire protection in perimeter fire containment systems, floor and wall penetrations, construction joints, and other firestopping applications. These products are noncombustible, moisture-resistant, noncorrosive, nondeteriorating, mildew-proof and vermin-proof. Thermafiber Safing provides thermal insulation, fire protection, and acoustical control in many different UL and Intertek (formerly OPL) listed fire containment assemblies of 1, 2, and 3-hr ratings.

Product Options:

- Safing 4.0 pcf, 2" or greater thickness, is available with or without a vapor retarding foil facing.
- Safing 6.0 pcf, 1.5" or greater thickness, is available with or without a vapor retarding foil facing.
- Recycled Content Options[1]:

  EPA Choice Fiber (US Government Buildings)..... Minimum 75%

  Standard Fiber..... 70%

  [1]Recycled content options other than Standard must be specified at time of order.

Installation:

All firestopping insulation should be installed per the architectural specification or system specific test description. All compressed Safing insulation should be installed per the listed assembly.

- Perimeter Installation: Safing™ insulation should be compression fitted between the slab edge and the FireSpan curtain wall insulation, leaving no voids.
- Penetration Application: Safing insulation should be cut slightly larger than the opening and compression fitted into the opening, leaving no voids.
- Construction Joint Application: Safing insulation should be compression fitted into the joint opening, leaving no voids.

Standard Sizes:

	Thickness*	Widths**	Lengths**
Safing 4.0 pcf	1"- 7"	16", 24", 36"	48", 60"
Safing 6.0 pcf	1"- 7"	16", 24", 36"	48", 60"
Tolerances	+1/4" - 1/8"	±1/8"	±1/2"

*Thicknesses are available in ½" increments. **Custom sizes are available upon request.

Technical Data:

		Tested to ASTM C 518		Tested to ASTM E 84			
				Unfaced		Foil Faced	
Product Designation	Actual Density	"k" @ 75° [24°C] BTU.in/hr.sq. ft. °F	"R" value per inch of thickness***	Flame Spread	Smoke Developed	Flame Spread	Smoke Developed
Safing	4.0 pcf	0.24	'R'= 4.2	0	0	25	0
Safing	6.0 pcf	0.24	'R'= 4.2	0	0	25	0

***R = thickness divided by 'k'

Fire-Containment Tests Per ASTM E 2307

Safing™ insulation is a critical component of any perimeter fire containment system. Thermafiber® has performed decades of testing in all of the containment systems listed below. For more complete test information, see SA707, THERMAFIBER Life-Safety Fire Containment Systems technical catalog or UL® and Intertek® (formerly OPL) Directories. For a full listing of containment systems visit www.thermafiber.com and click on Fire Rated Assemblies. UL Reference = TYPE SAF

- Aluminum Spandrel Curtain Wall Fire Containment
- Steel Stud-Framed/Gypsum Sheathing Curtain Wall Fire Containment
- Glass Spandrel Curtain Wall Fire Containment
- Granite Spandrel Curtain Wall Fire Containment
- Precast Concrete Spandrel

Standards Compliance:

Safing™ Insulation meets the following:

ASTM C 665	**Non-corrosive, Type I, III**
ASTM C 612	**Type IA, IB, II**
ASTM E 136	**Rated Non-combustible per NFPA Standard 220**
CAN/ULC S114	**Complies**
ASTM E 96	**Unfaced, 50 Perms as tested**
ASTM E 96	**Foil Faced, 0.02 Perms as tested**
ASTM C 1104	**Absorbs less than 1% by volume**
CAN/ULC S102	**Flame Spread 0, Smoke Developed 0**
ASTM E 814 or UL 1479	**Safing Insulation used in conjunction with an approved fill, void, or cavity material sealant or other approved material in through – penetration firestop systems - Complies**
UL 2079	**Safing Insulation used in conjunction with an approved fill, void or cavity material in construction joint systems - Complies**
CAN/ULC S115	**Complies**

Safing products are approved by: **New York City Board of Standards & Appeals** – (under BSA 39-74-SM & accepted by MEA-209-82-M, Vol. 4).

Thermafiber® Insolutions®:

Thermafiber offers industry leading technical and engineering assistance to architects, specifiers, and contractors. These services include CAD drawings, engineering judgments, LEED® Credit Information, product recommendations, and customized products. Contact our technical services department at 1-888-834-2371, or email technicalservice@owenscorning.com

For Further Information:

For additional information about these or other Thermafiber products contact us at 1-888-834-2371 or visit our website www.thermafiber.com.

Notice:

THERMAFIBER, Inc. shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. THERMAFIBER liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing within thirty (30) days from date it was or reasonably should have been discovered.

Submittal Approvals:

Job Name	
Contractor	Date

3711 Mill Street | Wabash, IN 46992 | 888-TFIBER1 [834-2371] | [260] 563-2111 | www.thermafiber.com

Underwriters Laboratories Inc.®

Northbrook Division
333 Pfingsten Road
Northbrook, IL 60062-2096 USA
www.ul.com
tel: 1 847 272 8800

CERTIFICATE OF COMPLIANCE

CERTIFICATE NUMBER: 20040809-R10905

ISSUE DATE: August 9, 2004 **Page 1 of 1**

Issued to: Thermafiber Inc.
3711 W Mill St Ext
Wabash, IN 46992

Report Reference: **R10905**

This is to Certify that representative samples of: Forming Material, designated as Type SAF mineral wool batts.

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

Standard(s) for Safety: ANSI/UL 1479, Fire Tests of Through-Penetration Firestops. ANSI/UL 2079, Test for Fires Resistance of Building Joint Systems. ASTM E2307-04, Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediae-Scale, Multi-story Test Apparatus

Additional Information: Type SAF mineral wool batts for use as a forming material for use in various Through-Penetration FireStop Systems, Joint Systems and Perimeter Fire Barrier Systems as Specified in UL's Fire Resistance Directory Volume 2.

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:
Mona Couloute
Underwriters Laboratories Inc.

Review Engineer:
Chris Johnson
Underwriters Laboratories Inc.

September 24, 2015

To Whom It May Concern:

Re: **Hilti Mineral Wool-LEED Information**

Item Number:

236993

The Hilti Mineral Wool is manufactured in Wabash, Indiana.

The post-consumer recycled content in the Hilti Mineral Wool is 0%. The pre-consumer recycled content in the Hilti Mineral Wool is 90%. There is no detectable VOC content in this product.

Hilti Mineral Wool is not regulated as a hazardous waste by the Federal EPA Standards. The regulations for the disposal of non-regulated industrial waste can vary from state to state and even city to city. For this reason, you should consult your local and state regulatory agencies for direction on disposal.

Please feel free to contact me at (918) 872-3704 if you have questions.

Sincerely,

Jerry Metcalf MPH, CHMM
Sr. Manager, Safety/Environmental
Hilti Inc.
918 872 3704
jerry.metcalf@hilti.com

Rev. Date: 9/24/15

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Hilti, Inc.
5400 South 122nd East Avenue
Tulsa, OK 74146

1-800-879-8000
www.hilti.com

High-performance intumescent firestop sealant FS-ONE MAX

Applications

- For effectively sealing most common through penetrations in a variety of base materials
- For use on concrete, masonry and drywall
- Mixed and multiple penetrations
- Metal pipe penetrations: copper, steel and EMT
- Insulated metal pipe penetrations: steel and copper
- Plastic pipe penetrations: closed or vented

Advantages

- US-produced: “Buy American” compliant
- One product for a variety of common through penetrations
- Cost-effective, easy-to-use solution
- Water-based and paintable
- Industry-leading VOC results
- Ethylene glycol-free

Chemical resistant

Mold and mildew resistant

FILL, VOID OR CAVITY MATERIAL FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS SEE UL FIRE RESISTANCE DIRECTORY 66Y7

Technical data	
Chemical basis	Water-based acrylic dispersion
Approx. Density	84.3 lb/ft³
Color	Red
Application temperature range	41 - 104 °F
Approx. cure time[1)]	4 mm/3 days
Temperature resistance range	-4 to 212 °F
Mold and mildew performance	Class 0 (ASTM G21-96)
Mold and mildew resistance	Yes
Surface burning characteristics UL 723 (ASTM E84)	Flame spread: 0 Smoke development: 10
Tested in accordance with	UL 1479, ASTM E814, ASTM E84, CAN/ ULC-S115, ASTM G21, ASTM E90
California State fire marshal approval	CSFM Listing 4485-1200:0108 for FS-ONE MAX Intumescent Firestop Sealant
Expansion ratio (unrestricted, up to)	1:5

[1)] at 75°F/24°C, 50% relative humidity

Order Designation	Package Content	Item number
FS-ONE MAX 20oz foil (3 case + disp)	1x Foil pack dispenser manual CS 270-P1, 75x Firestop sealant FS-ONE MAX 20 oz foil	**3530252**
FS-ONE MAX 10oz tube (1 case)	12x Firestop sealant FS-ONE MAX 10 oz cartridge	**3530249**
FS-ONE MAX 5 gallon (18 pails)	18x Firestop sealant FS-ONE MAX 5 gallon pail	**3530263**
FS-ONE MAX 20oz foil (1 case)	25x Firestop sealant FS-ONE MAX 20 oz foil	**3530250**
FS-ONE MAX 20oz foil (3 cases)	75x Firestop sealant FS-ONE MAX 20 oz foil	**3530251**
FS-ONE MAX 20oz Foil-Pallet	600x FSONE-MAX 20 oz foil, 290x Bulk Shipping Condition	**3534713**
FS-ONE MAX 10 oz cartridge		**2101531**
FS-ONE MAX 5 gallon pail		**2101533**

12/16 DBS

HILTI

FS 0659249

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 5-17-17

Brian Turgeon

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

66602

SIGNATURE OF AUTHORIZED INSTRUCTOR — INSTRUCTOR CARD NUMBER

I have been apprised of all general instructions and precautions customarily provided by HILTI to entities involved in the proper use of HILTI Firestop Products/Systems.

Signature of Seminar Participant B Turgeon

HILTI

FS 0659255

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 5-17-17

Jason Laroie

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

66602

SIGNATURE OF AUTHORIZED INSTRUCTOR — INSTRUCTOR CARD NUMBER

I have been apprised of all general instructions and precautions customarily provided by HILTI to entities involved in the proper use of HILTI Firestop Products/Systems.

Signature of Seminar Participant J L

HILTI

FS 0659252

Firestop Systems
Saving Lives through Innovation and Education

Date Issued 5.17.17

Bill Begonay

has attended a training seminar covering the basic fundamentals of firestopping and proper selection of HILTI tested firestop systems.

66602

SIGNATURE OF AUTHORIZED INSTRUCTOR — INSTRUCTOR CARD NUMBER

I have been apprised of all general instructions and precautions customarily provided by HILTI to entities involved in the proper use of HILTI Firestop Products/Systems.

Signature of Seminar Participant Bill Begonay

Firestop Submittal Package

Project: 62 India Street

Portland, ME

Date: June 2, 2017

Submitted by: Mark Morin

Nason Mechanical Systems

194 Merrow Road

Auburn, ME

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.

Hilti. Outperform. Outlast.

Hilti Firestop
Saving lives
through innovation
and education

Table Of Contents

CP 648-S (Single)

CP 653

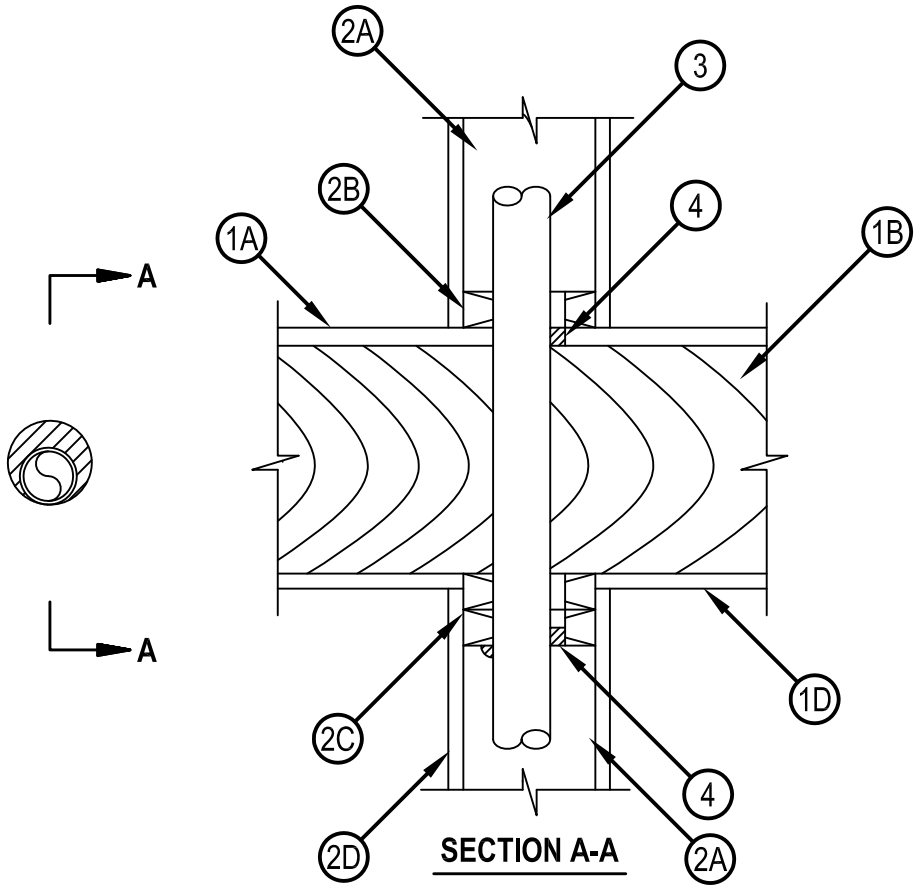
CP 653 BA

FS-ONE MAX

Classified by
Underwriters Laboratories, Inc.
to UL 1479

System No. F-C-2142

F Rating — 1 Hr
T Rating — 0 Hr



1. Floor-Ceiling Assembly — The fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction details of the floor-ceiling assembly are summarized below:
   A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Diam of opening shall be 1 in. (25 mm) larger than the nom diam of through-penetrant (Item 3).
   B. Wood Joists — Nom 2 by 10 in. (51 by 254 mm) lumber joists spaced 16 in. (406 mm) OC with nom 1 by 3 in. (25 by 76 mm) lumber bridging and with ends firestopped. As an alternate to lumber joists, nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required with ends firestopped.
   C. Furring Channels — (Not shown) — Resilient galv steel furring installed perpendicular to wood joists (Item 1B) between wallboard (Item 1D) and wood joists as required in the individual Floor-Ceiling Design.
   D. Gypsum Board* — Nom 4 ft (1.2 m) wide by 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. Diam of opening shall be 1 in. (25 mm) larger than the nom diam of through-penetrant (Item 3).
2. Chase Wall — (Optional) - The through penetrant (Item 3) may be routed through a 1 hr fire-rated single, double or staggered wood stud/gypsum wallboard chase wall constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Nom 2 by 4 in. (51 by 102 mm) lumber studs.
   B. Sole Plate — Nom 2 by 4 in. (51 by 102 mm) lumber plates. Diam of opening shall be 1 in. (25 mm) larger than the nom diam of through-penetrant (Item 3).
   C. Top Plate — The double top plate shall consist of two nom 2 by 4 in. (51 by 102 mm) lumber plates. Diam of opening shall be 1 in. (25 mm) larger than the nom diam of through-penetrant (Item 3).
   D. Gypsum Board* — Thickness, type, number of layers and fasteners shall be as specified in individual Wall and Partition Design.

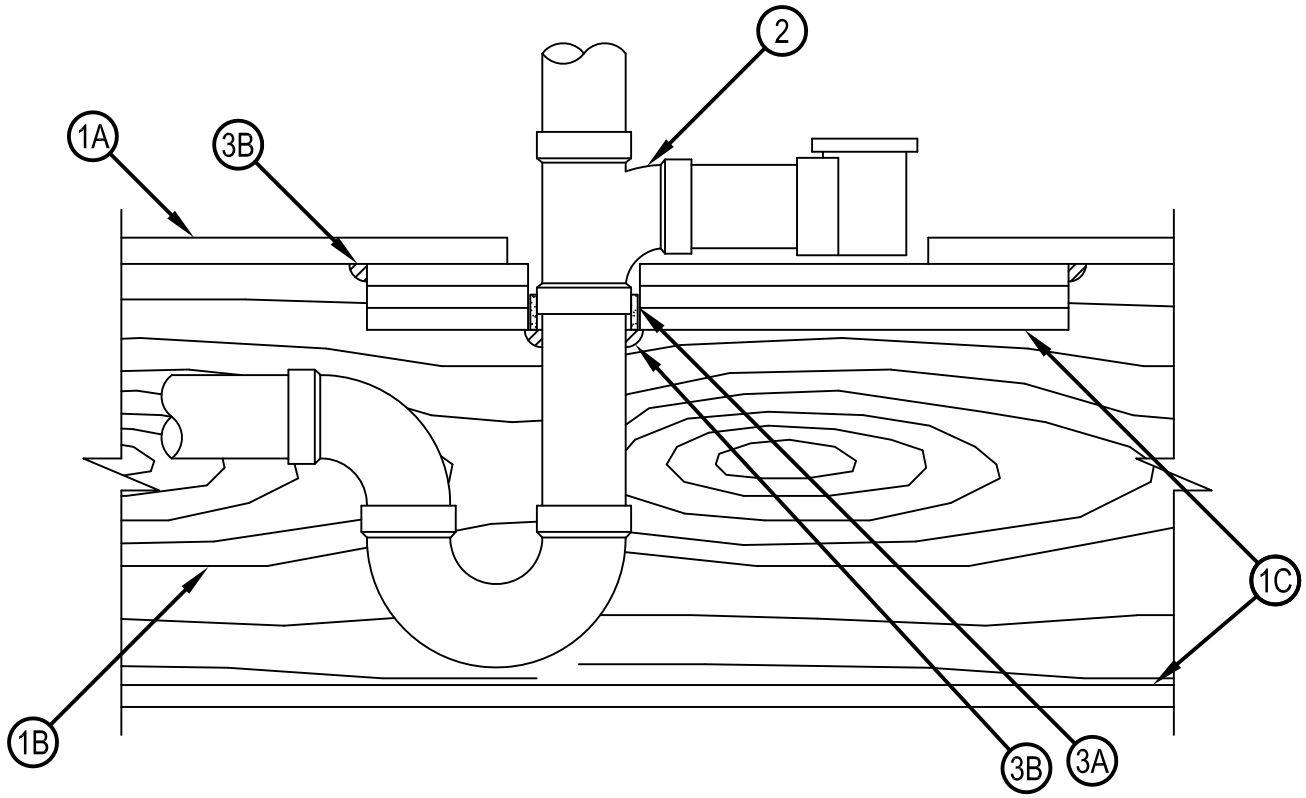
3. Through — Penetrants — One nonmetallic pipe to be installed either eccentrically or concentrically within the firestop system. The annular space between the through penetrant and the periphery of the opening shall be a min 0 in. (point contact) to a max of 5/8 in. (16 mm). Pipe to be rigidly supported on both sides of the floor-ceiling assembly. The following types and sizes of nonmetallic pipes may be used.
   A. Polyvinyl Chloride (PVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste, or vent) piping systems.
   B. Acrylonitrile Butadine Styrene (ABS) Pipe — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   C. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
4. Fill, Void or Cavity Material* — Sealant — Min 3/4 in. (19 mm) thickness of fill material applied within the annulus, flush with top surface of floor or sole plate. Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with and flush with bottom surface of ceiling or of lower top plate.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to UL 1479

System No. F-C-2189

F Rating - 1 Hr
T Rating - 1 Hr



1. Floor-Ceiling Assembly — The fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction details of the floor-ceiling assembly are summarized below:

   A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Rectangular cutout in flooring to accommodate the bathtub drain piping (Item 2) to be max 8 by 12 in. (203 by 305 mm).

   B. Wood Joists — Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.

   C. Gypsum Board* — Nom 4 ft (122 cm) wide by 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. Gypsum board secured to joists as specified in the individual Floor-Ceiling Design. Three pieces of gypsum board, each min 4 in. longer and wider than the cutout in the flooring, screw attached to bottom of flooring concentric with cutout. In addition, min 1/2 in. (13 mm) diam by 2 in. (51 mm) high wavy bead of FS-One Sealant to be applied to the top perimeter of each piece of gypsum board prior to its installation. Diam of opening hole-sawed through both layers of the gypsum board patch to be 1/2 in. (13 mm) larger than outside diam of bathtub drain piping (Item 2).

System No. F-C-2189

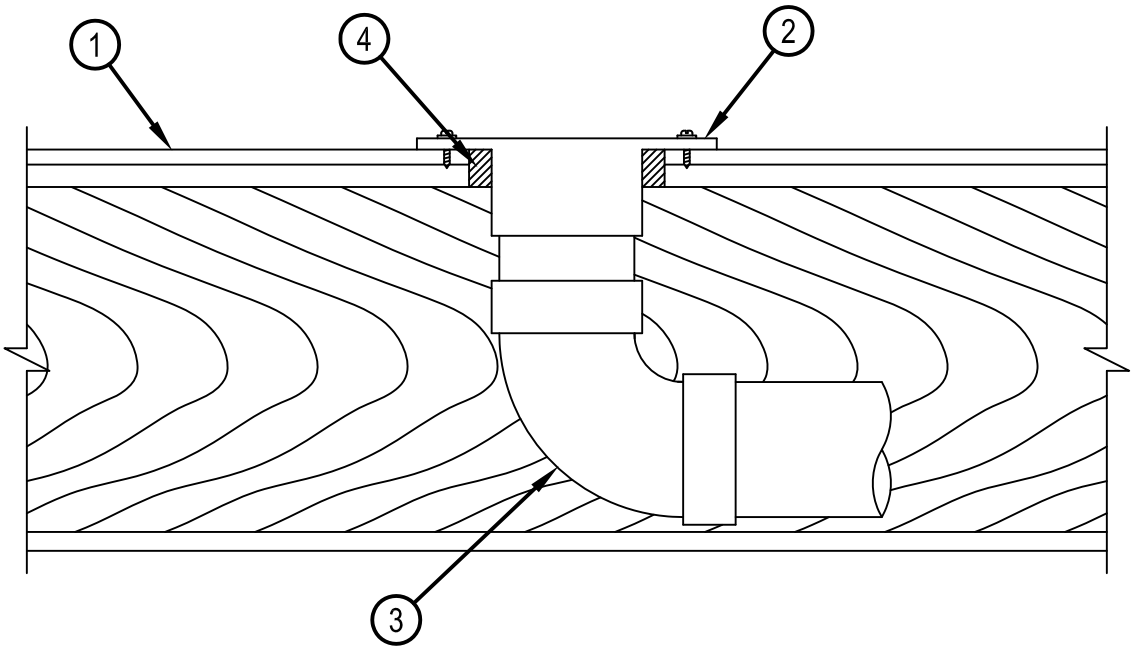
2. Drain Piping — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 cellular or solid core PVC or ABS pipe and drain fittings cemented together and provided with PVC or ABS bathtub waste/overflow fitting.
3. Firestop System — The firestop system shall consist of the following:
   A. Fill, Void or Cavity Material* — Wrap Strip — Nom 3/16 in. (5 mm) thick by 1 in. (25 mm) wide intumescent wrap strip. One wrap strip is continuously wrapped around the outer circumference of the drain pipe within joist cavity and held in place with pieces of tape. Wrap strip slid into annular space of cut-out in gypsum board such that the bottom surface of the wrap strip is flush with the bottom surface of the gypsum board.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP648-E W25/1" Wrap Strip
   A1. Fill, Void or Cavity Material* — Wrap Strip — (As an alternate to the wrap strip in Item 3A on nom 1-1/2" and 2" (38 and 51 mm) diam pipes only) - Nom 3/16 in. (5 mm) thick by 1-1/2 or 2 in. (38 or 51 mm) wide intumescent wrap strip. One layer of intumescent wrap strip is tightly wrapped around the pipe with ends butted and held in place with integrated tape. Wrap strip slid into annular space of cut-out in gypsum board such that the bottom surface of the wrap strip is flush with the bottom surface of the gypsum board.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP648-S-1.5" US, CP648-S-2" US
   B. Fill, Void or Cavity Material* — Caulk — Min 1/2 in. (13 mm) diam bead of Sealant to be applied around the perimeter of the gypsum board at its interface with the wood floor. Additional 1/2 in. (13 mm) diam bead to be applied to the bottom of the wrap strip at its interface with the drain pipe.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to UL 1479

System No. F-C-2203

F Rating — 1 Hr
T Rating — 1 Hr



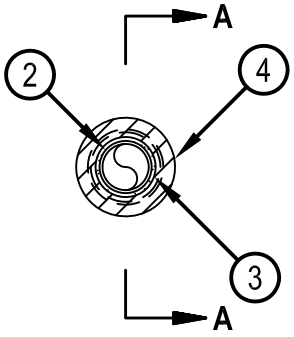
1. Floor-Ceiling Assembly — The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction features of the floor-ceiling assembly are summarized below:
   A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max diam of opening shall be 5 in. (127 mm).
   B. Wood Joist* — Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.
   C. Gypsum Board* — Nom 5/8 in. (16 mm) thick, 4 ft (1.2 m) wide as specified in the individual Floor-Ceiling Design.
2. Closet Flange — Acrylonitrile butadiene styrene (ABS) or polyvinyl chloride (PVC) closet stub sized to accommodate drain pipe. Closet flange installed over drain piping within floor opening with flange secured to plywood floor with steel screws. Diam of circular opening through flooring (Item 1A) to be max 1/2 in. (13 mm) larger than outside diam of closet flange.
3. Drain Piping — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 acrylonitrile butadiene styrene (ABS) or polyvinyl chloride (PVC) drain pipe and 90 degree elbow for use in vented (drain, waste or vent) piping systems. Pipe installed concentrically within firestop system.
4. Fill, Void or Cavity Materials*—Sealant — Min 3/4 in. (19 mm) thickness of fill material applied within the annulus, flush with the bottom surface of floor.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant
5. Water Closet — (Not Shown)—Floor mounted vitreous china water closet.

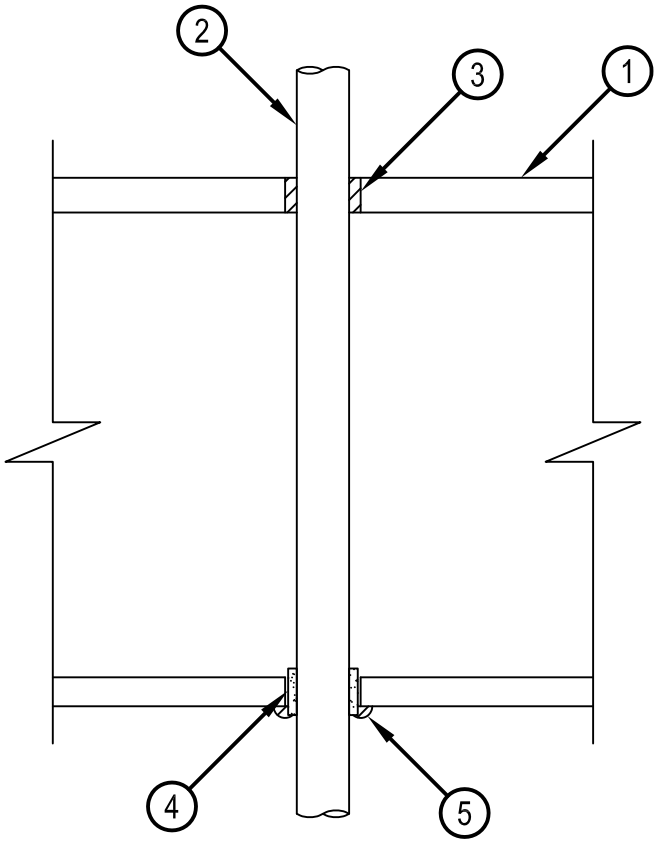
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to UL 1479

System No. F-C-2230

F Rating - 1 Hr
T Rating - 1/4 Hr





SECTION A-A

1. Floor-Ceiling Assembly — The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction features of the floor-ceiling assembly are summarized below:
   A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max diam of opening shall be 1-5/8 in. (41 mm).
   B. Wood Joists* — Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.
   C. Gypsum Board* — Nom 5/8 in. (16 mm) thick, 4 ft (122 cm) wide as specified in the individual Floor-Ceiling Design.

System No. F-C-2230

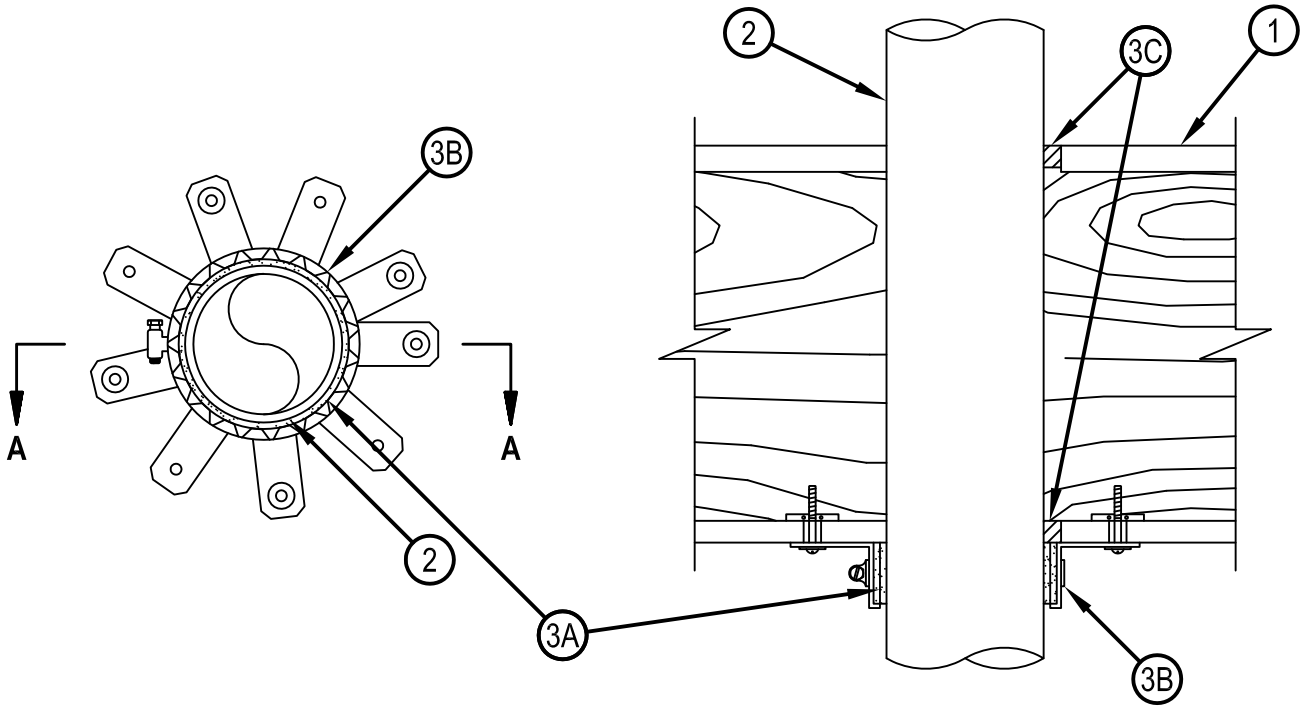
2. Through Penetrants — One non-metallic tube to be installed concentrically within the firestop system. Annular space between tube and periphery of opening shall be 1/4 in. (6 mm). Tube to be rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of non-meyallic tubes or pipes may be used:
   Crosslinked Polyethylene (PEX) Tubing — Nom 1 in. (25 mm) diam (or smaller) SDR9 PEX tubing for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
3. Fill, Void or Cavity Materials* - Wrap Strip — Nom 3/16 in. (5 mm) thick by 1 in. (25 mm) wide intumescentwrap strip. One layer of wrap strip tightly wrapped around tube and held in place with tape. Wrap strip centered in annular space extending from both sides of gypsum board.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP648-E W25/1" Wrap Strip
4. Fill, Void or Cavity Materials* - Sealant — Min 3/4 in. (19 mm) depth of fill material applied within the annulus, flush with the top surface of floor. A 1/4 in. (6 mm) diam bead of fill material shall also be applied at the wrap strip/gypsum board interface.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — Sealant - FS-ONE Sealant or FS-ONE-MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to UL 1479

System No. F-C-2232

F Rating — 1 Hr
T Rating — 3/4 and 1 Hr (See Item 3)



SECTION A-A

1. Floor-Ceiling Assembly — The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction features of the floor-ceiling assembly are summarized below:
   A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max diam of opening shall be 5 in. (127 mm).
   B. Wood Joists* — Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.
   C. Gypsum Board* — Nom 5/8 in. (16 mm) thick, 4 ft (122 cm) wide as specified in the individual Floor-Ceiling Design. Max diam of opening shall be 5 in. (127 mm).
2. Through Penetrants — One nonmetallic pipe or conduit to be installed concentrically or eccentrically within the firestop system. Annular space between pipe or conduit and edge of opening to be min 0 in. (point contact) and max 1/2 in. (13 mm). Pipe or conduit to be rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of nonmetallic pipes or conduits may be used:
   A. Polyvinyl Chloride (PVC) Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 4 in. (102 mm) diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping systems.
   C. Acrylonitrile Butadiene Styrene (ABS) Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 solid or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

System No. F-C-2232

3. Nonmetallic Pipe Coupling — (Optional) Nom 4 in. (102 mm) diam (or smaller) Schedule 40 PVC, Schedule 40 ABS or SDR13.5 CPVC coupling corresponding to pipe type installed such that the top of the coupling is flush with the bottom surface of the ceiling and extending downward.
4. Firestop System — The firestop system shall consist of the following:

A. Fill, Void or Cavity Material* - Wrap Strip — Nom 3/16 in. (5 mm) thick by 1-3/4 in. (44 mm) wide intumescent wrap strip. Layers of wrap strip continuously wrapped around the pipe and held in place with tape. Wrap strip butted tightly against surface of ceiling.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP648-E W45/1-3/4" Wrap Strip

Nom Diam of Pipe, in. (mm)	Number of Wrap Strips	Min/Max Annular Space, in. (mm)	T-Rating - Hr.
2 (51)	1	0-1/4 (0-6)	1
3 (76)	2	0-1/2 (0-13)	3/4
4 (102)	2	0-1/2 (0-13)	3/4

B. Steel Collar — Collar fabricated from coils of precut min 0.017 in. (0.43 mm) thick (No. 28 MSG) galv steel available from the sealant manufacturer. Collar shall be nom 1-3/4 in. (44 mm) deep with 1 in. (25 mm) wide by 2 in. (51 mm) long anchors tabs on 2 in. (51 mm) centers for securement to floor/ceiling assembly. The opposite side incorporates retainer tabs, 1/2 in. (13 mm) wide by 3/16 in. (5 mm) long, prebent toward the pipe surface. Collar shall be tightly wrapped over the wrap strip, overlapping min. 1 in at seam. A nom 1/2 in. (13 mm) wide stainless steel hose clamp shall be secured to the collar at its mid-height. Every other anchor tab of collar secured to gypsum ceiling with 1/4 in. (6 mm) diam by 1-1/2 in. (38 mm) long steel toggle bolts in conjunction with 1/4 in. by 3/4 in. (6 by 19 mm) diameter steel washers.

C. Fill, Void or Cavity Materials*-Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with the bottom surface of the gypsum board ceiling. Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with the top surface of the floor. When ABS pipe is installed at point contact, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe/floor interface on top surface of floor.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX SEALANT

4A. Firestop System — (Optional, Not shown) As an option to Item 4, the firestop system shall consist of the following:

A. Firestop Device* — Galv steel collar lined with an intumescent material sized to fit the specific diam of pipe shall be installed in accordance with the accompanying installation instructions. Collar to be installed and latched around the pipe and secured to the gypsum board ceiling with 1/4 in. diam by 1-1/2 in. (38 mm) long steel toggle bolts with 3/4 in. (19 mm) diam steel washers through hanger tabs provided.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 643 50/1.5"N, CP 643 63/2"N, CP 643 90/3"N or CP 643 110/4"N Firestop Collar.

B. Fill, Void or Cavity Materials*-Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with the bottom surface of the gypsum board ceiling. Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with the top surface of the floor. When ABS pipe is installed at point contact, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe/floor interface, flush with top surface of floor.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE-MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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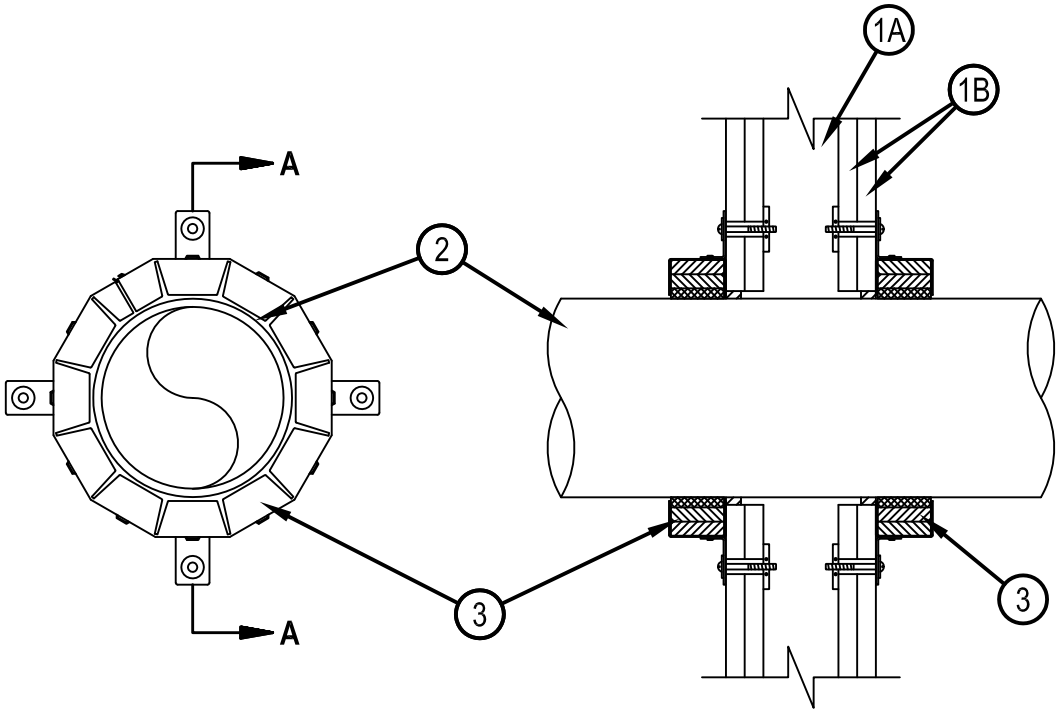
to UL 1479

System No. W-L-2078

F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 0, 1 and 2 Hr (See Items 2 and 3)
L Rating At Ambient — 3 CFM/sq ft
L Rating At 400 F — Less Than 1 CFM/sq ft



SECTION A-A

1. Wall Assembly — The fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL fire Resistance Directory and shall include the construction features noted below:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Nom 5/8 in. (16 mm) thick gypsum board, as specified in the individual Wall and Partition Design. Max diam of opening is 11-1/2 in. (292 mm).

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through-Penetrants — One nonmetallic pipe, conduit or tubing to be installed within the firestop system. The annular space between pipe and periphery of opening shall be min 0 in. (point contact) to max 1/2 in. (13 mm). Pipe or conduit to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes may be used:
   A. Polyvinyl Chloride (PVC) Pipe — Nom 10 in. (254 mm) diam (or smaller) Schedule 40 solid-core or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
   B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 10 in. (254 mm) diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping systems.
   C. Acrylonitrile Butadiene Styrene (ABS) Pipe — Nom 6 in. (152 mm) diam (or smaller) Schedule 40 solid-core or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems
   D. Flame Retardant Polypropylene (FRPP) Pipe — Nom 6 in. (152 mm) diam (or smaller) Schedule 40 FRPP pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
   E. Polyvinylidene Fluoride (PVDF) Pipe — Nom 4 in. (102 mm) diam (or smaller) PVDF pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.

   When max 6 in. diam pipe is used, T Rating is equal to the hourly fire rating of the wall. When nom 8 in. or 10 in. (203 or 254 mm) diam pipe is used, T Rating is 0 hr.

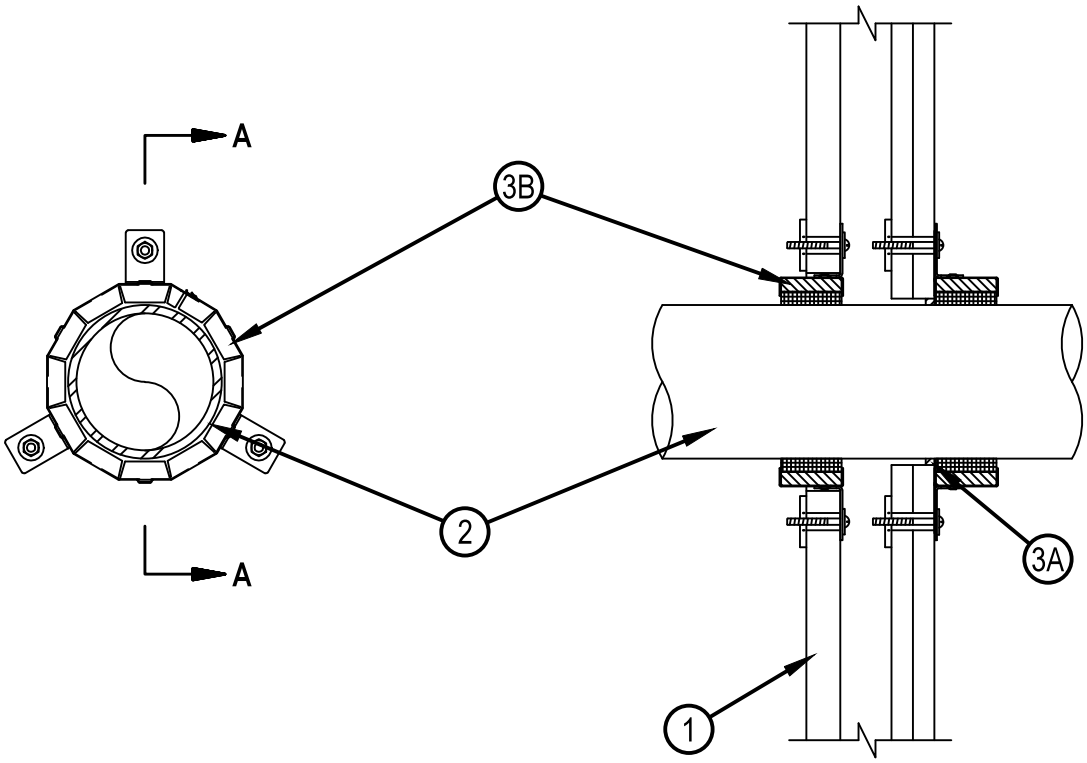
3. Firestop Device* — Firestop Collar — Firestop collar shall be installed in accordance with the accompanying installation instructions. Collar to be installed and latched around the pipe and secured to both sides of the wall using the anchor hooks provided with the collar. (Minimum two anchor hooks for 1-1/2 and 2 in. (38 and 51 mm) diam pipes, three anchor hooks for 3 and 4 in. (76 and 102 mm) diam pipes, four anchor hooks for 6 in. (152 mm) diam pipes, ten anchor hooks for 8 in. (203 mm) diam pipes and twelve anchor hooks for 10 in. (254 mm) diam pipes. The anchor hooks are to be secured to the surface of wall with 3/16 in. (4.8 mm) diam by 2-1/2 in. (64 mm) long steel toggle bolts along with washers. As an alternate for pipe sizes of nom 4 in. diam or less, min No. 10 by 1-1/2 in. (254 by 38 mm) long drywall or laminate screws with min 3/4 in. (19 mm) steel washers may be used. When the drywall or laminate screw is used, T Rating shall not exceed 1 hr.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 643 50/1.5"N, CP 643 63/2"N, CP 643 90/3"N, CP 643 110/4"N, CP 643 160/6"N, CP 644 200/8" andCP 644 250/10" Firestop Collars
4. Fill, Void or Cavity Material* — Sealant - (Not Shown) — Min 1/2 in. (13 mm) thickness of sealant applied within the annular space for nom 8 in. and 10 in. (203 and 254 mm) diam pipes, flush with each side of wall. Sealant in annular space is optional for max 6 in. (152 mm) diam pipes. A min 1/4 in. (6 mm) thickness of sealant is required within the annular space, flush with each side of wall, to attain the L Ratings for max 6 in. (152 mm) diam pipes.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Underwriters Laboratories, Inc.
to UL 1479

System No. W-L-2217

F Rating — 2 Hr
T Rating — 0 Hr



SECTION A-A

1. Wall Assembly — The fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — "C-T" shaped studs 1-5/8 in. (16 mm) wide by 2-1/2 in. (64 mm) deep, fabricated from 25 MSG galv steel, spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — One layer of nom 1 in. (25 mm) thick, 24 in. (610 mm) wide gypsum liner and two layers of 5/8 in. (16 mm) thick, 4 ft. (122 cm) wide gypsum board with square or tapered edges as specified in the individual Wall and Partition Design. Max diam of opening in liner panel shall be sized to accept the outside diam of the firestop device. Max diam of opening in room side gypsum board is 5 in. (127 mm).

1A. Wall Assembly — As an alternate to the above wall assembly, the 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC.
   B. Gypsum Board* — Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Design. Max diam of opening in one side of wall (either side) shall be sized to accept the outside diam of the firestop device. Max diam of opening on the other side of wall is 5 in. (127 mm).

2. Through-Penetrants — One nonmetallic pipe to be centered within the firestop system. The annular space between the pipe and the periphery of the opening on the room side of the wall shall be nom 1/4 in. (6 mm). Pipe to be rigidly supported on both sides of wall assembly. The following types and sizes of nonmetallic pipes may be used:
   A. Polyvinyl Chloride (PVC) Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 solid or cellular core pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 4 in. (102 mm) diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping systems.
3. Firestop System — The firestop system shall consist of the following:
   A. Fill, Void or Cavity Material — Sealant* — Min 1/4 in. (6 mm) thickness of fill material applied within annulus of 5/8 in. (16 mm) thick gypsum board, flush with surface of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant
   B. Firestop Device — Firestop Collar — Firestop collar shall be friction fit from the interior of the wall into a max 6 in. (152 mm) diam opening in the 1 in. (25 mm) thick gypsum liner panel. Diam of opening to reflect outside diam of collar. The collar shall be secured to the liner with anchor hooks provided with the collar. (Min 2 anchor hooks for 1-1/2 and 2 in. (38 and 51 mm) diam pipes and 3 anchor hooks for 3 and 4 in. (76 and 102 mm) diam pipes). The anchor hooks are to be secured to the firestop collar with No. 7 by 7/16 in. (11 mm) long screws. The collar shall be fastened to the liner panel with 3/16 in. (5 mm) by 2-1/2 in. (64 mm) toggle bolts with min 3/4 in. (19 mm) diam steel washers. The external firestop collar shall be installed in accordance with the accompanying installation instructions. The collar shall be installed and latched around the pipe and secured to the 5/8 in. (16 mm) thick gypsum board with the anchor hooks provided with the collar. (Min 2 anchor hooks for 1-1/2 and 2 in. (38 and 51 mm) diam pipes and 3 anchor hooks for 3 and 4 in. (76 and 102 mm) diam pipes). The anchor hooks are to be secured to the wall with 3/16 in. (5 mm) by 2-1/2 in. (64 mm) toggle bolts along with min 3/4 in. (19 mm) diam steel washers. When alternate wall assembly is used, the one-sided installation of the collars may be from either side of the wall assembly.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP643 50/1.5"N, CP643 63/2"N, CP643 90/3"N or CP643 110/4"N Firestop Collar

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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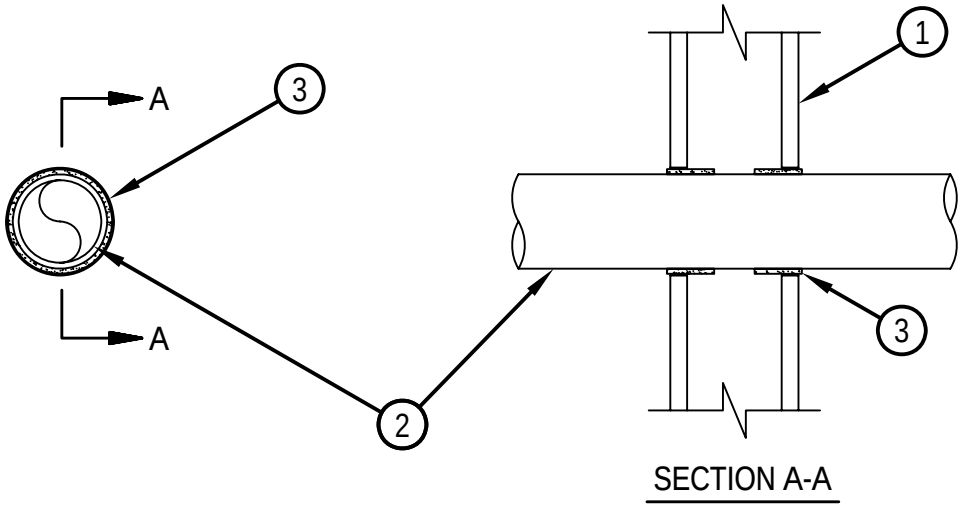
to UL 1479

System No. W-L-2284

F Rating - 1 Hr
T Rating - 1 Hr



SECTION A-A

1. Wall Assembly -- The 1 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs -- Wall framing shall consist of wood studs or steel channel studs. Wood studs to consist of 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 3-1/2 in. wide and spaced max 24 in. OC.
   B. Gypsum Board* -- Min 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers and orientation shall be as specified in the individual U300 or U400 Wall and Partition Design. Max diam of opening is 4 in.
2. Through Penetrants -- One nonmetallic pipe to be centered within the firestop system. An annular space of 3/16 to 1/4 in. is required within the firestop system. Pipe to be rigidly supported on both sides of wall assembly. The following types and sizes of nonmetallic pipes may be used:
   A. Polyvinyl Chloride (PVC) Pipe -- Nom 3 in. diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   B. Chlorinated Polyvinyl Chloride (CPVC) Pipe -- Nom 3 in. diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
3. Fill, Void or Cavity Material* -- Wrap Strip - Layers of intumescent wrap strip are continuously wrapped around the pipe with ends held in place with tape. Wrap strip installed such that ends protrude nom. 1/8 in. beyond both surfaces of wall. Size of wrap strip and number of layers are shown in table below.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- CP648-E W25/1" or CP648-E W45/1-3/4" Firestop Wrap Strip

ProductDesignation	Pipe Diameter (in.)	Number of Layers	Nom. Wrap Strip Width (in.)
CP648-E-W25/1"	1-1/2 and 2	1	1
CP648-E-W45/1-3/4"	1-1/2, 2 and 3	1	1-3/4

   A. Fill, Void or Cavity Material* - Wrap Strip -- (As an alternate to the wrap strip in Item 3) - One layer of intumescent wrap strip is tightly wrapped around the pipe with ends butted and held in place with integrated tape. Wrap strip installed such that ends protrude nom. 1/8 in. beyond both surfaces of wall.

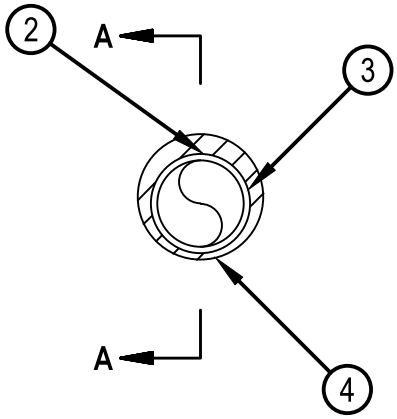
   HILTI CONSTRUCTION CHEMICALS, DIV OF
   HILTI INC -- CP648-S-1.5" US, CP648-S-2" US, CP648-S-3" US

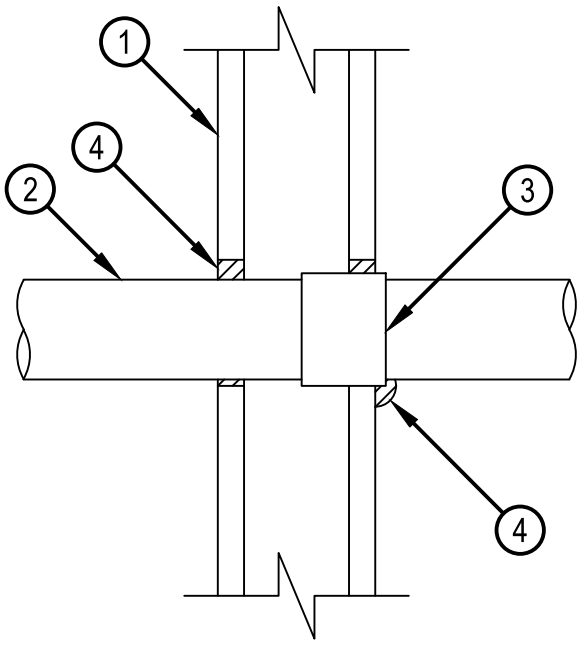
*Bearing the UL Classification Mark

Classified by
Underwriters Laboratories, Inc.
to UL 1479

System No. W-L-2482

F Rating — 1 Hr
T Rating — 0 Hr
L Rating At Ambient — Less Than 1 CFM/Sq Ft
L Rating at 400 F — 4 CFM/Sq Ft





SECTION A-A

1. Wall Assembly — The 1 hour fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL fire Resistance Directory and shall include the construction features noted below:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Nom 5/8 in. (16 mm) thick gypsum board, as specified in the individual Wall and Partition Design. Diam of opening shall be 1 in (25 mm) larger than nom pipe diameter.
2. Through Penetrants — One nonmetallic pipe to be installed either concentrically or eccentrically within the firestop system. The annular space between pipe and the periphery of the opening shall be min 0 in. (point contact) to a max 5/8 in. (16 mm). The following types and sizes of nonmetallic pipes may be used:
   A. Polyvinyl Chloride (PVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) cellular or solid core Schedule 40 (or heavier) pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
3. Nonmetallic Pipe Coupling — (Optional) - Pipe coupling to be the same size and type of pipe and installed such that one end of coupling is flush with either side of wall assembly and extending outward. As an alternate, the coupling may be recessed into annular space within the opening on either side of the wall.
4. Fill, Void or Cavity Material* - Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall. At point contact location, a min 1/2 in. (13 mm) diam bead of fill material shall be applied to the wall/penetrant interface on both surfaces of the wall. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

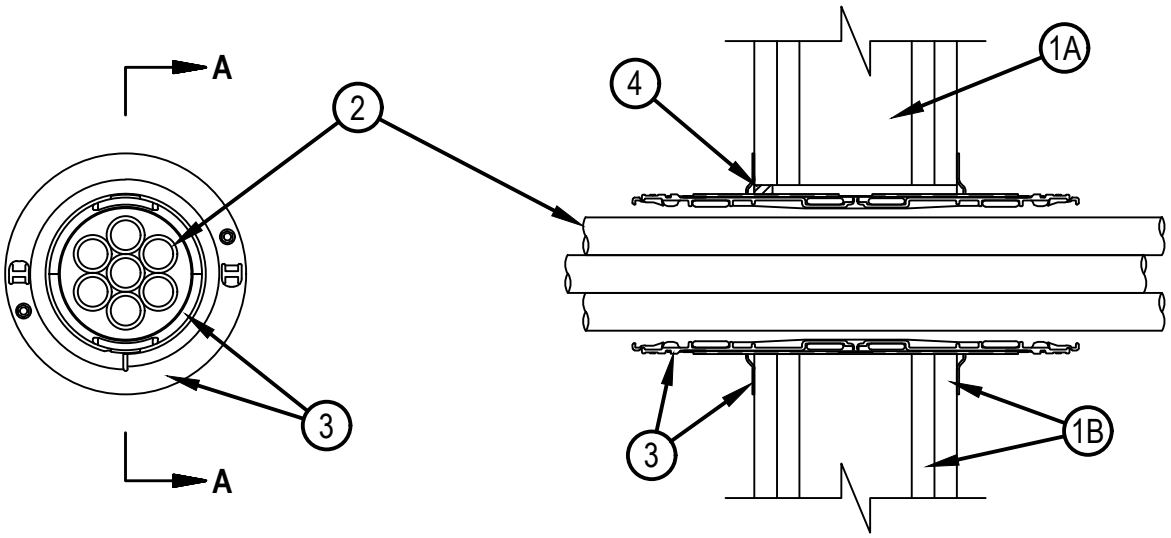
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

\+ Bearing the UL Listing Mark

Classified by
Underwriters Laboratories, Inc.
to UL 1479

System No. W-L-2537

F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 0 and 1/4 Hr (See Item 1)



SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described within the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:
   A. Studs — Wall framing shall consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Nom 5/8 in. (16 mm) thick gypsum board as specified in the individual Wall and Partition Design. Opening in gypsum board to be 2-1/2 in. (64 mm) diam for nominal 2 in. (51 mm) firestop device and 4 1/2 in. (114 mm) diam for nominal 4 in. (102 mm) firestop device.

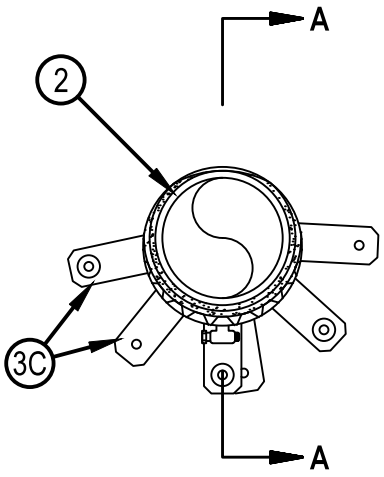
   The hourly F Rating of the firestop system is dependent upon the hourly rating of the wall in which it is installed. The hourly T Rating of the firestop system is 0 hr in 1 hr fire rated walls and 1/4 hr in 2 hr fire rated walls.
2. Cross Linked Polyethylene (PEX) Tubing — Nom 1 in. diam (or smaller) SDR9 PEX tubing for use in closed (process or supply) or vented (drain, waste or vent) piping systems. Within the loading area for each firestop device, the PEX tubes may represent a 0 to 100 percent visual fill. Tubing to be tightly bundled within the device and rigidly supported on both sides of wall assembly.
3. Firestop Device* — Firestop device consists of a corrugated steel tube with an inner plastic housing, intumescent material rings, tightly twisted inner fabric smoke seal, flanges and gasketing material (not shown). Firestop device to be installed in accordance with the accompanying installation instructions. Device slid into wall such that ends project an equal distance from the approximate centerline of the wall assembly. The annular space between the device and the periphery of the opening shall be min 0 in. (point contact). Device provided with flanges that are spun clockwise onto device threads, over gasketing material butting tightly to both sides of wall. As an alternate to gasket material, sealant (Item 4) may be used.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 653 and CP 653 BA 2" Speed Sleeve, CP 653 and CP 653 BA 4" Speed Sleeve
4. Fill, Void or Cavity Material* - Sealant — As an alternate to gasket material (see Item 3), min 1/2 in. (13 mm) thickness of fill material applied within the annulus between firestop device and wall, flush with both surfaces of wall. An additional 1/4 in. (6 mm) bead shall be applied around periphery of device on each side of wall prior to securing device flanges.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 606 or FS-ONE Sealant, FS-ONE MAX Intumescent Sealant

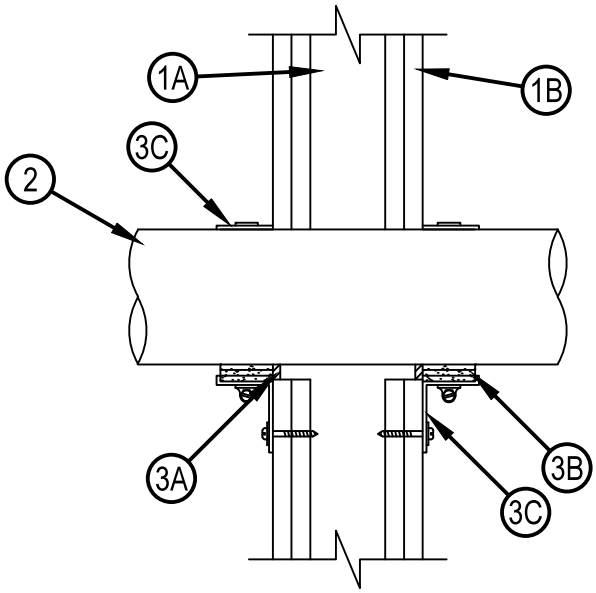
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Classified by
Underwriters Laboratories, Inc.
to UL 1479

System No. W-L-2546

F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1 and 2 Hr (See Item 2)





SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — The gypsum wallboard type, thickness, number of layers and orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 5 in. (127 mm).

   The hourly F and T Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrants — One nonmetallic pipe or conduit to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipe or conduit and the periphery of the opening shall be min 0 in. (point contact) to a max 1/2 in. (13 mm). Pipe or conduit to be rigidly supported on both sides of wall. The following types and sizes of pipes or conduits may be used:
   A. Polyvinyl Chloride (PVC) Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste, or vent) piping systems.
   B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 4 in. (102 mm) diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
   C. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) FLOWGUARD GOLD® SDR11 CPVC pipe for use in closed (process or supply) piping systems.
   D. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) BLAZEMASTER® SDR13.5 CPVC pipe for use in closed (process or supply) piping systems.
   E. Acrylonitrile Butadiene Styrene (ABS) Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 cellular core or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
   F. Rigid Nonmetallic Conduit+ — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with the National Electrical Code (NFPA No. 70).

3. Firestop System — The firestop system shall consist of the following:

A. Fill, Void or Cavity Material* — Sealant — Min 1/4 in. (6 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

B. Fill, Void or Cavity Material* — Wrap Strip — Nom 3/16 in. (5 mm) thick by 1-3/4 in. (44 mm) wide intumescent wrap strip. For nom 2 in. (51 mm) diam (or smaller) pipes/conduits, a min of two layers of wrap strip are required. For nom 2-1/2 in. (64 mm) to 4 in. (102 mm) diam pipes/conduits, a min of three layers of wrap strip are required. The layers of wrap strip are individually wrapped around the pipe to the fullest extent possible while allowing the penetrant to remain at point contact within the opening and in the collar. Wrap strip butted tightly against both surfaces of wall.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP648-E W45/1-3/4" Firestop Wrap Strip

C. Steel Collar — Steel collar fabricated from coils of precut min 0.016 in. (0.4 mm) thick (No. 28 gauge) galv steel available from fill material manufacturer. Collar shall be nom 1 3/4 in. (44 mm) deep with 1 in. (25 mm) wide by 2 in. (51 mm) long anchor tabs on 1-3/4 in. (44 mm) centers for attachment to both surfaces of wall. In addition, collars contain retainer tabs 1/2 in. (13 mm) wide by 3/16 in. (5 mm) long, located opposite the anchor tabs. Collar shall be tightly wrapped over the wrap strip, overlapping min 1 in. (25 mm) at seam and compressed with a min 0.028 in. (0.7 mm) thick stainless steel band at collar midheight. Optional securement of the collar may be accomplished with two sheet metal screws screwed though the overlapping portion of the collar. The retainer tabs are folded 90 deg towards the pipe to maintain the annular space around the pipe and to retain the wrap strip. Collar secured to both surfaces of wall with min 1-1/2 in. (38 mm) long drywall or laminate screws with min 3/4 in. (19 mm) steel washers Collar fastened to wall at every other tab. No anchor tab is required at point contact location of collar to penetrant.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

+Bearing the UL Listing Mark

Flexible Firestop Sealant (CP 606)

Product description

- An acrylic based firestop sealant that provides movement capability in fire rated joints and seals through-penetrations applications

Product features

- Silicone free
- Halogen, asbestos and solvent free
- Paintable
- Tested up to 33% movement with 500 cycles in accordance to UL 2079 and ASTM 1966
- Smoke and fume resistant
- Easy clean up with water
- 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

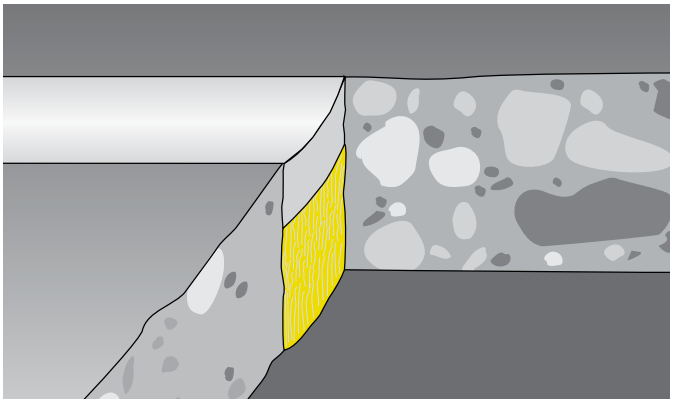
- Sealing construction/expansion joints
- Top-of-wall joints
- Metal pipes
- Cable bundles
- HVAC penetrations

For use with

- Various base materials such as masonry, concrete, gypsum, etc.
- Wall and floor assemblies rated up to 3 hours

Examples

- Where a gypsum wall assembly meets the underside of a metal or concrete deck
- Sealing expansion joints to impede the passage of fire, smoke and toxic fumes
- Sealing around HVAC penetrations through fire-rated assemblies



Technical Data*	CP 606
Chemical basis	Acrylic based firestop sealant
Color	Available in red, white and gray
Application temperature	40°F to 104°F (5°C to 40°C)
Skin-forming time	Approx. 15 min
Curing time	Approx. 3 mm / 3 days
Average volume shrinkage (ASTM C1241)	22.2%
Movement capability	Approx. 10%
Temperature resistance	–22°F to 176°F (–30°C to 80°C)
Surface burning characteristics (ASTM E 84-96)	Flame Spread: 10 Smoke Development: 0
Sound transmission classification (ASTM E 90-99)	56 (Relates to specific construction)
Tested in accordance with	• UL 2079 • ASTM E 814 • ASTM E 1966 • ASTM E 84 • UL 1479 • ASTM G21

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

CLASSIFIED C UL US
FILL, VOID OR CAVITY MATERIAL
FOR USE IN THROUGH-PENETRATION
FIRESTOP SYSTEMS AND
JOINT SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
66Y7

FM APPROVED

Installation instructions for CP 606

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
- The use of backing material is recommended to control the sealant depth and help ensure assembly seal is complete

Opening

1. Clean the opening. Surfaces to which CP 606 will be applied should be cleaned of loose debris, dirt, oil, wax and grease. The surface should be moisture and frost free.

Application of firestop

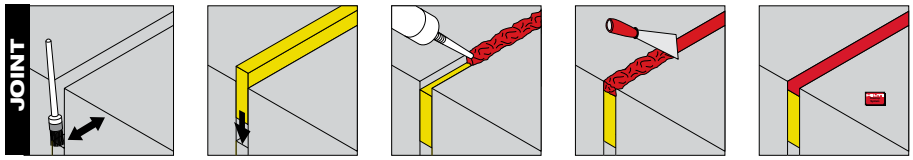
2. Insert fill of mineral wool or backer (as required).
3. Apply firestop over backer.
4. Smooth firestop sealant with a trowel before the skin forms. Once cured, CP 606 can only be removed mechanically.
5. For maintenance reasons, a penetration seal can be permanently marked with an identification plate and fastened in a visible position next to the seal.

Not for use

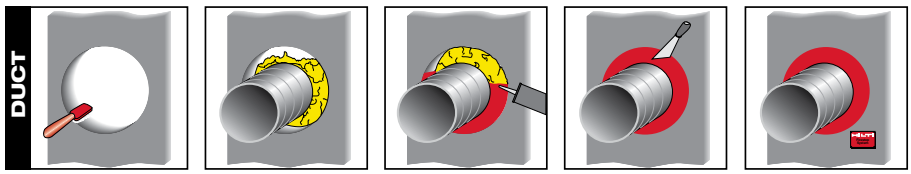
- On areas immersed in water

Storage

- Store only in the original packaging in a location protected from moisture at a temperature of 40°F to 77°F (5°C to 25°C)
- Observe expiration date on package



1. Clean opening | 2. Insert backing material compressed per UL System | 3. Apply CP 606 | 4. Smooth CP 606 | 5. Fasten identification plate (if required)



1. Clean opening | 2. Insert backing material | 3. Apply CP 606 | 4. Smooth CP 606 | 5. Fasten identification plate (if required)

CERTIFICATE OF COMPLIANCE

Certificate Number	20160930-R13240
Report Reference	R13240
Issue Date	2016-September-30
Issued to:	Hilti Construction Chemicals, Div of Hilti Inc. 5400 S 122nd East Ave Tulsa, OK 74146
This is to certify that representative samples of	Fill, Void or Cavity Materials Fill, Void or Cavity Materials Certified for Canada CP 606 Sealant for use in Through-Penetration Firestop, Joint in wall and partition Systems as currently decribed in the UL Fire Resistance Directory and in the Products Certified for Canada Directory. Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	ANSI/UL 1479, "Fire Tests of Through-Penetration Firestops," ANSI/UL 2079, "Tests for Fire Resistance of Building Joint Systems," CAN/ULC-S115, "Standard Method of Fire Tests of Firestop Systems."
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

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

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

Hilti Firestop Acrylic Sealant CFS-S ACR; CP 606

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 01/07/2016 Revision date: 01/07/2016 Supersedes: 01/07/2016 Version: 4.2

SECTION 1: Identification

1.1. Identification

Product form	Mixture
Name	Hilti Firestop Acrylic Sealant CFS-S ACR; CP 606
Product code	BU Chemicals
Chemical structure	

1.2. Relevant identified uses of the substance or mixture and uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Hilti, Inc.
Legacy Tower, Suite 1000
75024 Plano - USA
T +1 9724035800
1-800-879-8000 toll free - F +1 918 254 0522

Supplier
Hilti, Inc.
Legacy Tower, Suite 1000
75024 Plano - USA
T +1 9724035800
1-800-879-8000 toll free - F +1 918 254 0522

Department issuing data specification sheet
Hilti AG
Feldkircherstraße 100
9494 Schaan - Liechtenstein
T +423 234 2111
chemicals.hse@hilti.com

1.4. Emergency telephone number

Emergency number

Chem-Trec
Tel.: 1 800 424 9300 (USA, PR, Virgin Islands, Canada)
Tel.: 703 527 3887 (Other countries)

+1 918 8723000
1-800-879-8000 toll free

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Not classified

2.2. Label elements

GHS-US labelling

No labelling applicable

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

Hilti Firestop Acrylic Sealant CFS-S ACR; CP 606

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation	Get medical advice/attention if you feel unwell.
First-aid measures after skin contact	Wash skin with plenty of water. If skin irritation occurs: Get medical advice/attention.
First-aid measures after eye contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
First-aid measures after ingestion	Get medical advice/attention if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

No additional information available

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Water spray. Dry powder. Foam. Carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Reactivity	The product is non-reactive under normal conditions of use, storage and transport.

5.3. Advice for firefighters

Protection during firefighting	Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

Protective equipment	For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

No additional information available

6.3. Methods and material for containment and cleaning up

Methods for cleaning up	Recover mechanically the product.

6.4. Reference to other sections

For further information refer to section 13.

Hilti Firestop Acrylic Sealant CFS-S ACR; CP 606

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	Wear personal protective equipment.
Hygiene measures	Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	Keep cool. Store in a dry place.
Storage temperature	41 - 77 °F

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

Personal protective equipment: Protective clothing. Safety glasses. Gloves.

Hand protection	Protective gloves. EN 374.
Eye protection	Safety glasses. EN 166. EN 170.
Skin and body protection	Wear suitable protective clothing.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Pasty.
Colour	red white Grey
Odour	characteristic
Odour threshold	Not determined
pH	≈ 9 Not applicable
Melting point	Not applicable
Freezing point	No data available
Boiling point	No data available
Flash point	Not applicable
Relative evaporation rate (butylacetate=1)	No data available
Flammability (solid, gas)	No data available
Explosive limits	No data available
Explosive properties	No data available
Oxidising properties	No data available
Vapour pressure	No data available
Relative density	No data available
Relative vapour density at 20 °C	No data available
Density	1.6 g/cm³
Molecular mass	Not determined
Solubility	No data available

Log Pow	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Viscosity, kinematic	No data available
Viscosity, dynamic	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	Not classified
Skin corrosion/irritation	Not classified pH: ≈ 9 Not applicable
Serious eye damage/irritation	Not classified pH: ≈ 9 Not applicable
Respiratory or skin sensitisation	Not classified
Germ cell mutagenicity	Not classified
Carcinogenicity	Not classified
Reproductive toxicity	Not classified
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified
Aspiration hazard	Not classified

Hilti Firestop Acrylic Sealant CFS-S ACR; CP 606

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming	No known ecological damage caused by this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods	Dispose of contents/container in accordance with licensed collector's sorting instructions.
Waste disposal recommendations	Dispose in a safe manner in accordance with local/national regulations.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number

Not regulated for transport

14.2. UN proper shipping name

Proper Shipping Name (ADR)	Not applicable
Proper Shipping Name (IMDG)	Not applicable
Proper Shipping Name (IATA)	Not applicable
Proper Shipping Name (ADN)	Not applicable
Proper Shipping Name (RID)	Not applicable

14.3. Transport hazard class(es)

ADR

Transport hazard class(es) (ADR)	Not applicable

IMDG

Transport hazard class(es) (IMDG)	Not applicable

IATA

Transport hazard class(es) (IATA)	Not applicable

ADN

Transport hazard class(es) (ADN)	Not applicable

RID

Transport hazard class(es) (RID)	Not applicable

14.4. Packing group

Packing group (ADR)	Not applicable
Packing group (IMDG)	Not applicable
Packing group (IATA)	Not applicable
Packing group (ADN)	Not applicable
Packing group (RID)	Not applicable

14.5. Environmental hazards

Dangerous for the environment	No
Marine pollutant	No
Other information	No supplementary information available

14.6. Special precautions for user

- Overland transport

- Transport by sea

No data available

- Air transport

No data available

- Inland waterway transport

Carriage prohibited (ADN)	No
Not subject to ADN	No

- Rail transport

Carriage prohibited (RID)	No

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information

15.1. US Federal regulations

This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

15.2. International regulations

CANADA

Hilti Firestop Acrylic Sealant CFS-S ACR; CP 606	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria

EU-Regulations

No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

National regulations

No additional information available

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Revision date	01/07/2016
HMIS III Rating	
Health	0 Minimal Hazard - No significant risk to health
Flammability	0 Minimal Hazard - Materials that will not burn
Physical	0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.
Personal Protection	B
	B - Safety glasses, Gloves

SDS_US_Hilti

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

February 26, 2010

To Whom It May Concern:

Re: Hilti CP 606 Flexible Firestop – LEEDs Info.

The Hilti CP 606 Flexible Firestop Sealant is manufactured in Germany.

The CP 606 pail is made of polyethylene and can be completely recycled. There is no post-consumer or post-industrial content in CP 606 and it cannot be recycled. The CP 606 does not contain any Rapidly Renewable Materials. The VOC content for CP 606 is 71.0 grams/liter.

CP 606 is not regulated as a hazardous waste by the Federal EPA Standards. The regulations for the disposal of non-regulated industrial waste can vary from state to state and even city to city. For this reason, you should consult your local and state regulatory agencies for direction on disposal.

Please feel free to contact me at (918) 872-3704 if you have questions.

Sincerely,

Jerry Metcalf MPH, CHMM
Safety/Environmental Manager
Hilti Inc.
918 872 3704
jerry.metcalf@hilti.com

Rev. Date: 2/26/10

Hilti, Inc.
5400 South 122nd East Avenue
Tulsa, OK 74146

1-800-879-8000
www.hilti.com

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

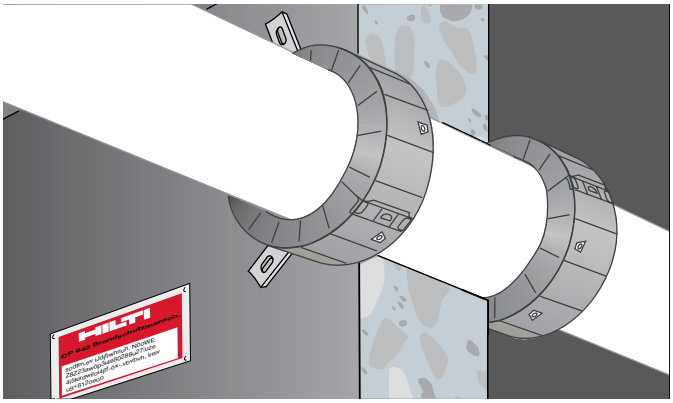
Product features
- Ready-to-use collar
- No construction required
- Fast installation time
- Adjustable mounting tabs
- Low profile for tight installations

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

FIRESTOP DEVICE
FOR USE IN THROUGH-PENETRATION
FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
5N76

FM APPROVED

FBC SYSTEM COMPATIBLE
Visit fbcsystemcompatible.com.
FBC™ is a trademark of the Lubrizol Corporation.

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.

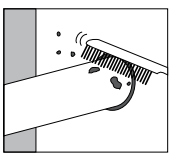
b. Drill holes with a Hilti rotary hammer drill (i.e. TE 4-A18) or, depending on base material, fasten using Hilti powder-actuated tool.

c. To secure the CP 643N Firestop Collar, use Hilti anchors/fasteners.

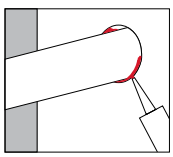
d. For maintenance reasons, a penetration can be permanently marked with an identification plate and fastened in a visible position next to the seal.

Not for use
- With metal pipes
- In highly corrosive surroundings
- With unapproved anchors/fasteners

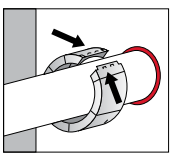
Storage
- Store only in the original packaging in a location protected from moisture



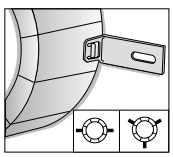
1. Clean plastic pipe.



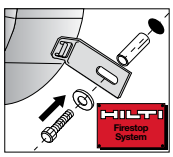
2. Close remaining gap to provide smoke and gas resistant seal.



3. Close collar.



4. Attach fastening hooks.



5. Fasten collar and identification plate (if required).

Hilti Firestop
Saving lives through innovation and education

Hilti. Outperform. Outlast.

CERTIFICATE OF COMPLIANCE

Certificate Number	20160125-R15431
Report Reference	R15431-19980323
Issue Date	2016-JANUARY-25

Issued to:	HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC 5400 S 122ND EAST AVE TULSA OK 74146
This is to certify that representative samples of	FIRESTOP DEVICES Firestop devices designated CP 643 50/1.5” N, CP 643 63/2” N, CP 643 75/2.5” N, CP 643 90/3” N, CP 643 110/4” N, CP 643 125/5” N, CP 643 160/6” N, CP 644 200/8” and CP 644 250/10” for use in specific through-penetration firestop systems. The various suffixes for the designations of the firestop devices indicates the nominal outside diameter of the pipe (mm/in.) on which the device is intended to be installed. Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	UL 1479 STANDARD FOR FIRE TESTS OF PENETRATION FIRESTOPS. CAN/ULC S115 STANDARD METHOD OF FIRE TESTS OF FIRESTOP SYSTEMS
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

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

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

Safety Data Sheet
acc. to ISO 11014

Printing date 05/18/2015 Version number 3 Reviewed on 08/18/2014

*
1 Identification

· **Product identifier**

· **Trade name:**
Hilti Firestop Collar CFS-C
Hilti Firestop Collar Plus CFS-C P
Hilti Firestop Bandage CFS-B
Hilti Firestop Wrap Strip Endless CFS-W EL
Hilti Firestop Wrap Strip Single CFS-W SG
Hilti Firestop Collar Endless CFS-C EL
Hilti Firestop Back Pan Strip CFS-BPS
CP 643
CP 644
CP 646
CP 648
· **Relevant identified uses of the substance or mixture and uses advised against** No further relevant information available.
· **Application of the substance / the mixture** Construction chemicals

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Hilti, Inc.
5400 South 122nd East Ave.
US-Tulsa, OK 74146
Phone: (800) 879-8000
Fax: (800) 879-7000
Español: (800) 879-5000

· **Information department:**
see section 16
chemicals.hse@hilti.com
· **Emergency telephone number:**
Tox Info Suisse - 24 h Service
Tel.: 0041 / 44 251 51 51 (international)
.
Chem-Trec
Tel.: 1 800 424 9300

2 Hazard(s) identification

· **Classification of the substance or mixture** The product is not classified according to the Globally Harmonized System (GHS).

· **Classification according to Directive 67/548/EEC or Directive 1999/45/EC** not applicable
· **Information concerning particular hazards for human and environment:**
The product does not have to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
· **Classification system:**
The classification was made according to the latest editions of the EU-lists, and expanded upon from company and literature data.

· **Label elements**
· **GHS label elements** Void
· **Hazard pictograms** Void
· **Signal word** Void
· **Hazard statements** Void
· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

*
3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Polymer-bonded intumescent material (in the metal or plastic housing)

· **Dangerous components:** Void

4 First-aid measures

· **Description of first aid measures**
· **General information** No special measures required.
· **After inhalation** Not applicable
· **After skin contact** Not applicable
· **After eye contact** Not applicable
· **After swallowing** Not applicable
· **Information for doctor**
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed** No further relevant information available.

(Contd. on page 2)

Safety Data Sheet
acc. to ISO 11014

Printing date 05/18/2015 **Version number 3** **Reviewed on 08/18/2014**

(Contd. of page 1)

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents** CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· **Special hazards arising from the substance or mixture** No further relevant information available.
· **Advice for firefighters**
· **Protective equipment:** No special measures required.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures** Not required.
· **Environmental precautions:** No special measures required.
· **Methods and material for containment and cleaning up:** Pick up mechanically.
· **Reference to other sections**
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Handling**
· **Precautions for safe handling** No special measures required.
· **Information about protection against explosions and fires:** No special measures required.

· **Conditions for safe storage, including any incompatibilities**
· **Storage**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** None.

· **Storage class** 13
· **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment**
· **Breathing equipment:** Not required.
· **Protection of hands:**

Protective gloves.

To avoid skin problems reduce the wearing of gloves to the required minimum.
· **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
· **Penetration time of glove material** Not required.
· **Body protection:**

Protective work clothing.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Solid.
Color:	Various colors
· **Odor:**	Odorless
· **pH-value:**	Not determined.
· **Change in condition**	
Melting point/Melting range:	Not determined.

(Contd. on page 3)

(Contd. of page 2)

Boiling point/Boiling range:	undetermined
· **Flash point:**	Not applicable
· **Flammability (solid, gaseous)**	Product is not flammable.
· **Ignition temperature:**	
Decomposition temperature:	Not determined.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Vapor pressure:**	Not applicable.
· **Density at 20 °C (68 °F):**	1.3-1.4 g/cm³ (10.849-11.68 lbs/gal)
· **Evaporation rate**	Not applicable.
· **Solubility in / Miscibility with Water:**	Insoluble
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
dynamic:	Not applicable.
kinematic:	Not applicable.
· **Solvent content:**	
Solids content:	100 %
· **Other information**	CP 643, CP 644 - VOC Content: 7.6 g/l (EPA Method 24) CP 648, CFS-BPS - VOC Content: 3.1 g/l (EPA Method 24)

10 Stability and reactivity

· **Reactivity**
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** No dangerous decomposition products known

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** No irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **IARC (International Agency for Research on Cancer)**
None of the ingredients is listed.

· **NTP (National Toxicology Program)**
None of the ingredients is listed

· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Ecotoxical effects:** Not determined
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

(Contd. on page 4)

Safety Data Sheet
acc. to ISO 11014

Printing date 05/18/2015 **Version number 3** **Reviewed on 08/18/2014**

(Contd. of page 3)

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation** Smaller quantities can be disposed of with household waste.

· **European waste catalogue:**	
17 02 03	plastic
17 04 05	iron and steel

· **Uncleaned packagings:**
· **Recommendation:**
Disposal must be made according to official regulations.
Dispose of packaging according to regulations on the disposal of packagings.
Empty packs: May be disposed via the local Green Dot collecting system or EAK waste material code 150102 (plastic packaging materials)

14 Transport information

· **UN-Number** · **DOT, ADR, ADN, IMDG, IATA**	Void
· **UN proper shipping name** · **DOT, ADR, ADN, IMDG, IATA**	Void
· **Transport hazard class(es)** · **DOT, ADR, ADN, IMDG, IATA** · **Class**	Void
· **Packing group** · **DOT, ADR, IMDG, IATA**	Void
· **Environmental hazards:** · **Marine pollutant:**	No
· **Special precautions for user**	Not applicable
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	Not dangerous according to the above specifications.
· **UN "Model Regulation":**	-

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **Section 355 (Extremely hazardous substances):**
None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**
None of the ingredients are listed.

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed.

· **Proposition 65:**

· **Chemicals known to cause cancer:**
None of the ingredients are listed.

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients is listed.

· **TLV (Threshold Limit Value established by ACGIH)**
None of the ingredients is listed.

· **MAK (German Maximum Workplace Concentration)**
None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients is listed.

· **Chemical safety assessment:** not required.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:**
Hilti Corporation
Business Unit Chemicals
Quality/Safety/Environment

(Contd. on page 5)

Safety Data Sheet
acc. to ISO 11014

(Contd. of page 4)

FL-9494 Schaan / Liechtenstein

chemicals.hse@hilti.com
Tel.: +423 234 3004
FAX.: +423 234 3462

· **Date of preparation / last revision** 05/18/2015 / 2

· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)

· *** Data compared to the previous version altered.**

August 26, 2015

To Whom It May Concern:

Re: **CP 643N/644 Firestop Collars – LEED Information**

Item Numbers:

304325	304331
304326	304341
304328	304344
304329	

The Hilti CP 643N/644 Firestop Collars are manufactured in Germany.

The Hilti CP 643N/644 Firestop Collars have a VOC content of 7.6 grams/liter.

The amount of post-consumer or post-industrial content in CP 643N/644 Firestop Collars is not known. The metal portions of the collars are recyclable. The CP 643N/644 Firestop Collars do not contain any Rapidly Renewable Materials.

The CP 643N/644 Firestop Collars are not regulated as a hazardous waste by the Federal EPA Standards. The regulations for the disposal of non-regulated industrial waste can vary from state to state and even city to city. For this reason, you should consult your local and state regulatory agencies for direction on disposal.

Please feel free to contact me at (918) 872-3704 if you have questions.

Sincerely,

Jerry Metcalf MPH, CHMM
Sr. Manager, Safety/Environmental
Hilti Inc.
(918) 872 3704
jerry.metcalf@hilti.com

Rev. Date: 8/14/15

The manufacturing plant location on this certificate has been provided for LEEDS reporting purposes only. It should never be used for Country of Origin certification or a representation of compliance/non-compliance with Buy American or Buy America requirements, as those requirements differ.

The manufacturing plant location(s) identified on the certificate represent standard Hilti catalog products only. “Specially” produced non-catalog Hilti products may have differing manufacturing plant locations.

Contact your Hilti representative in cases of “specially” produced products for a custom LEEDS certificates.

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

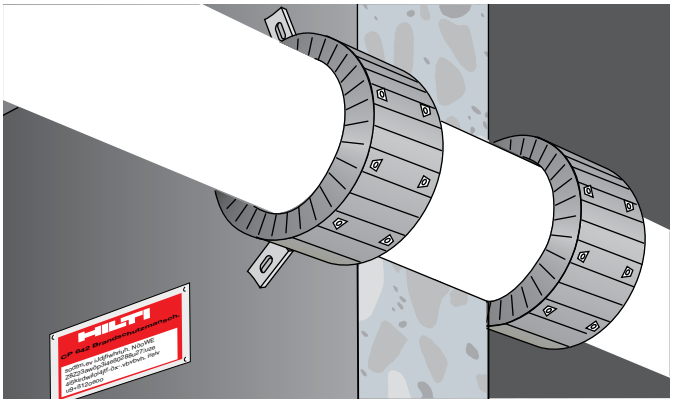
- Concrete, masonry, and gypsum walls
- Wall and floor assemblies rated up to 2 hours

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	CP 644		
Description	Pipe outside dia (in.)	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				

FIRESTOP DEVICE
FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY 5N76

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

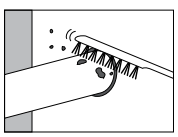
Opening

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.

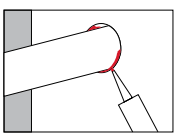
Application of firestop system

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.

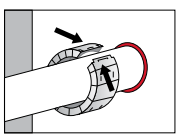
   The hooks must be positioned as symmetrically as possible. The required number of fastening hooks is indicated on the packaging.
5. Fastening the CP 644 Firestop Collar. Only when fastened properly can CP 644 offer protection against fire passing through.
   a. Mark the fastening points.
   b. Drill 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.



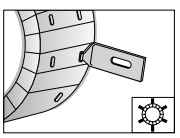
1. Clean plastic pipe



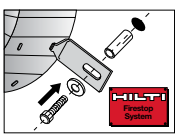
2. Close remaining gap to provide smoke and gas resistant seal



3. Close collar



4. Attach fastening hooks



5. Fasten collar and identification plate. (If required)

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

Hilti Firestop
Saving lives
through innovation
and education

Hilti. Outperform. Outlast.

CERTIFICATE OF COMPLIANCE

Certificate Number	20160125-R15431
Report Reference	R15431-19980323
Issue Date	2016-JANUARY-25

Issued to: HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC
5400 S 122ND EAST AVE
TULSA OK 74146

This is to certify that representative samples of FIRESTOP DEVICES

Firestop devices designated CP 643 50/1.5" N, CP 643 63/2" N, CP 643 75/2.5" N, CP 643 90/3" N, CP 643 110/4" N, CP 643 125/5" N, CP 643 160/6" N, CP 644 200/8" and CP 644 250/10" for use in specific through-penetration firestop systems. The various suffixes for the designations of the firestop devices indicates the nominal outside diameter of the pipe (mm/in.) on which the device is intended to be installed.

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

Standard(s) for Safety: UL 1479 STANDARD FOR FIRE TESTS OF PENETRATION FIRESTOPS.
CAN/ULC S115 STANDARD METHOD OF FIRE TESTS OF FIRESTOP SYSTEMS

Additional Information: See the UL Online Certifications Directory at www.ul.com/database for additional information

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

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

Safety Data Sheet
acc. to ISO 11014

Printing date 05/18/2015 Version number 3 Reviewed on 08/18/2014

*
1 Identification

· **Product identifier**

· **Trade name:**
Hilti Firestop Collar CFS-C
Hilti Firestop Collar Plus CFS-C P
Hilti Firestop Bandage CFS-B
Hilti Firestop Wrap Strip Endless CFS-W EL
Hilti Firestop Wrap Strip Single CFS-W SG
Hilti Firestop Collar Endless CFS-C EL
Hilti Firestop Back Pan Strip CFS-BPS
CP 643
CP 644
CP 646
CP 648
· **Relevant identified uses of the substance or mixture and uses advised against** No further relevant information available.
· **Application of the substance / the mixture** Construction chemicals

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Hilti, Inc.
5400 South 122nd East Ave.
US-Tulsa, OK 74146
Phone: (800) 879-8000
Fax: (800) 879-7000
Español: (800) 879-5000

· **Information department:**
see section 16
chemicals.hse@hilti.com
· **Emergency telephone number:**
Tox Info Suisse - 24 h Service
Tel.: 0041 / 44 251 51 51 (international)
.
Chem-Trec
Tel.: 1 800 424 9300

2 Hazard(s) identification

· **Classification of the substance or mixture** The product is not classified according to the Globally Harmonized System (GHS).

· **Classification according to Directive 67/548/EEC or Directive 1999/45/EC** not applicable
· **Information concerning particular hazards for human and environment:**
The product does not have to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
· **Classification system:**
The classification was made according to the latest editions of the EU-lists, and expanded upon from company and literature data.

· **Label elements**
· **GHS label elements** Void
· **Hazard pictograms** Void
· **Signal word** Void
· **Hazard statements** Void
· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

*
3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Polymer-bonded intumescent material (in the metal or plastic housing)

· **Dangerous components:** Void

4 First-aid measures

· **Description of first aid measures**
· **General information** No special measures required.
· **After inhalation** Not applicable
· **After skin contact** Not applicable
· **After eye contact** Not applicable
· **After swallowing** Not applicable
· **Information for doctor**
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed** No further relevant information available.

(Contd. on page 2)

Safety Data Sheet
acc. to ISO 11014

Printing date 05/18/2015 **Version number 3** **Reviewed on 08/18/2014**

(Contd. of page 1)

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents** CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· **Special hazards arising from the substance or mixture** No further relevant information available.
· **Advice for firefighters**
· **Protective equipment:** No special measures required.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures** Not required.
· **Environmental precautions:** No special measures required.
· **Methods and material for containment and cleaning up:** Pick up mechanically.
· **Reference to other sections**
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Handling**
· **Precautions for safe handling** No special measures required.
· **Information about protection against explosions and fires:** No special measures required.

· **Conditions for safe storage, including any incompatibilities**
· **Storage**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** None.

· **Storage class** 13
· **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment**
· **Breathing equipment:** Not required.
· **Protection of hands:**

Protective gloves.

To avoid skin problems reduce the wearing of gloves to the required minimum.
· **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
· **Penetration time of glove material** Not required.
· **Body protection:**

Protective work clothing.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Solid.
Color:	Various colors
· **Odor:**	Odorless
· **pH-value:**	Not determined.
· **Change in condition**	
Melting point/Melting range:	Not determined.

(Contd. on page 3)

(Contd. of page 2)

Boiling point/Boiling range:	undetermined
· **Flash point:**	Not applicable
· **Flammability (solid, gaseous)**	Product is not flammable.
· **Ignition temperature:**	
Decomposition temperature:	Not determined.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Vapor pressure:**	Not applicable.
· **Density at 20 °C (68 °F):**	1.3-1.4 g/cm³ (10.849-11.68 lbs/gal)
· **Evaporation rate**	Not applicable.
· **Solubility in / Miscibility with Water:**	Insoluble
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
dynamic:	Not applicable.
kinematic:	Not applicable.
· **Solvent content:**	
Solids content:	100 %
· **Other information**	CP 643, CP 644 - VOC Content: 7.6 g/l (EPA Method 24) CP 648, CFS-BPS - VOC Content: 3.1 g/l (EPA Method 24)

10 Stability and reactivity

· **Reactivity**
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** No dangerous decomposition products known

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** No irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **IARC (International Agency for Research on Cancer)**
None of the ingredients is listed.

· **NTP (National Toxicology Program)**
None of the ingredients is listed

· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Ecotoxical effects:** Not determined
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

(Contd. on page 4)

Safety Data Sheet
acc. to ISO 11014

Printing date 05/18/2015 **Version number 3** **Reviewed on 08/18/2014**

(Contd. of page 3)

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation** Smaller quantities can be disposed of with household waste.

· **European waste catalogue:**	
17 02 03	plastic
17 04 05	iron and steel

· **Uncleaned packagings:**
· **Recommendation:**
Disposal must be made according to official regulations.
Dispose of packaging according to regulations on the disposal of packagings.
Empty packs: May be disposed via the local Green Dot collecting system or EAK waste material code 150102 (plastic packaging materials)

14 Transport information

· **UN-Number** · **DOT, ADR, ADN, IMDG, IATA**	Void
· **UN proper shipping name** · **DOT, ADR, ADN, IMDG, IATA**	Void
· **Transport hazard class(es)** · **DOT, ADR, ADN, IMDG, IATA** · **Class**	Void
· **Packing group** · **DOT, ADR, IMDG, IATA**	Void
· **Environmental hazards:** · **Marine pollutant:**	No
· **Special precautions for user**	Not applicable
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	Not dangerous according to the above specifications.
· **UN "Model Regulation":**	-

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **Section 355 (Extremely hazardous substances):**
None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**
None of the ingredients are listed.

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed.

· **Proposition 65:**

· **Chemicals known to cause cancer:**
None of the ingredients are listed.

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients is listed.

· **TLV (Threshold Limit Value established by ACGIH)**
None of the ingredients is listed.

· **MAK (German Maximum Workplace Concentration)**
None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients is listed.

· **Chemical safety assessment:** not required.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:**
Hilti Corporation
Business Unit Chemicals
Quality/Safety/Environment

(Contd. on page 5)

Safety Data Sheet
acc. to ISO 11014

(Contd. of page 4)

FL-9494 Schaan / Liechtenstein

chemicals.hse@hilti.com
Tel.: +423 234 3004
FAX.: +423 234 3462

· **Date of preparation / last revision** 05/18/2015 / 2

· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)

· *** Data compared to the previous version altered.**

August 26, 2015

To Whom It May Concern:

Re: **CP 643N/644 Firestop Collars – LEED Information**

Item Numbers:

304325	304331
304326	304341
304328	304344
304329	

The Hilti CP 643N/644 Firestop Collars are manufactured in Germany.

The Hilti CP 643N/644 Firestop Collars have a VOC content of 7.6 grams/liter.

The amount of post-consumer or post-industrial content in CP 643N/644 Firestop Collars is not known. The metal portions of the collars are recyclable. The CP 643N/644 Firestop Collars do not contain any Rapidly Renewable Materials.

The CP 643N/644 Firestop Collars are not regulated as a hazardous waste by the Federal EPA Standards. The regulations for the disposal of non-regulated industrial waste can vary from state to state and even city to city. For this reason, you should consult your local and state regulatory agencies for direction on disposal.

Please feel free to contact me at (918) 872-3704 if you have questions.

Sincerely,

Jerry Metcalf MPH, CHMM
Sr. Manager, Safety/Environmental
Hilti Inc.
(918) 872 3704
jerry.metcalf@hilti.com

Rev. Date: 8/14/15

The manufacturing plant location on this certificate has been provided for LEEDS reporting purposes only. It should never be used for Country of Origin certification or a representation of compliance/non-compliance with Buy American or Buy America requirements, as those requirements differ.

The manufacturing plant location(s) identified on the certificate represent standard Hilti catalog products only. “Specially” produced non-catalog Hilti products may have differing manufacturing plant locations.

Contact your Hilti representative in cases of “specially” produced products for a custom LEEDS certificates.

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

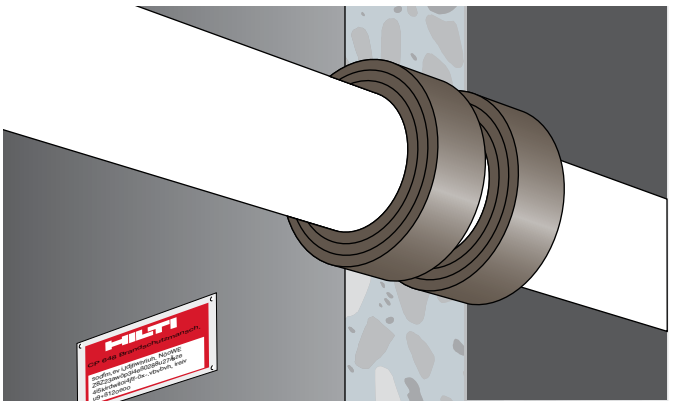
- Firestopping combustible pipe penetrations
- Difficult applications where space is limited
- Penetrations through concrete over metal deck
- Plastic and insulated penetrations using PVC, CPVC, ABS, FRPP and PEX

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/cm³
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

CLASSIFIED C UL US
FILL, VOID OR CAVITY MATERIAL
FOR USE IN THROUGH-PENETRATION
FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
66Y7

FM APPROVED

FBC SYSTEM COMPATIBLE
Visit fbcsystemcompatible.com.
FBC™ is a trademark of
the Lubrizol Corporation.

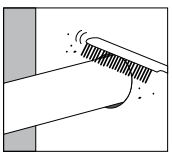
Installation instructions for CP 648-E

Notice

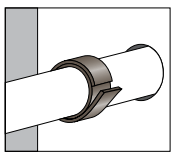
- Before handling, read Material Safety Data Sheet and product label for safe usage and health information.
- Instructions below are general guidelines — always refer to the applicable drawing in the UL Fire Resistance Directory or Hilti Firestop Systems Guide for complete installation information

Opening

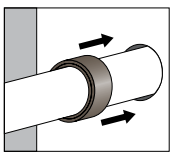
1. Clean the plastic or insulated pipe penetration. Expansion of the intumescent material during a fire closes the plastic or insulated pipe penetration. Very dirty pipes (ie: with remains of mortar) may lead to a delay in this closing action. Soiled plastic pipes or insulated pipe penetrations should,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



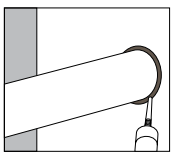
1. Clean penetration



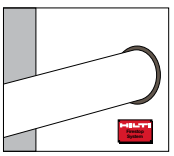
2. Wrap strips around pipe the specified number of times



3. Push Wrap Strips into hole



4. Seal penetration against smoke with FS-ONE



5. Fasten installation plate (If required)

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).

Hilti Firestop
Saving lives
through innovation
and education

Hilti. Outperform. Outlast.

CERTIFICATE OF COMPLIANCE

Certificate Number	20160829-R13240
Report Reference	R13240
Issue Date	2016-August-29

Issued to:	Hilti Construction Chemicals, Div of Hilti Inc. 5400 S 122nd East Ave Tulsa, OK 74146
This is to certify that representative samples of	Fill, Void or Cavity Materials Fill, Void or Cavity Materials Certified for Canada CP 648E and CP 648S (Product number may be suffixed to denote size) Wrap Strip for use in Through-Penetration Firestop Firestop Systems as currently decribed in the UL Fire Resistance Directory and in the Products Certified for Canada Directory.
	Have been investigated by 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, "Standard Method of Fire Tests of Firestop Systems."
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

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

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

Safety Data Sheet
acc. to ISO 11014

Printing date 05/18/2015 Version number 3 Reviewed on 08/18/2014

*
1 Identification

· **Product identifier**

· **Trade name:**
Hilti Firestop Collar CFS-C
Hilti Firestop Collar Plus CFS-C P
Hilti Firestop Bandage CFS-B
Hilti Firestop Wrap Strip Endless CFS-W EL
Hilti Firestop Wrap Strip Single CFS-W SG
Hilti Firestop Collar Endless CFS-C EL
Hilti Firestop Back Pan Strip CFS-BPS
CP 643
CP 644
CP 646
CP 648
· **Relevant identified uses of the substance or mixture and uses advised against** No further relevant information available.
· **Application of the substance / the mixture** Construction chemicals

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Hilti, Inc.
5400 South 122nd East Ave.
US-Tulsa, OK 74146
Phone: (800) 879-8000
Fax: (800) 879-7000
Español: (800) 879-5000

· **Information department:**
see section 16
chemicals.hse@hilti.com
· **Emergency telephone number:**
Tox Info Suisse - 24 h Service
Tel.: 0041 / 44 251 51 51 (international)
.
Chem-Trec
Tel.: 1 800 424 9300

2 Hazard(s) identification

· **Classification of the substance or mixture** The product is not classified according to the Globally Harmonized System (GHS).

· **Classification according to Directive 67/548/EEC or Directive 1999/45/EC** not applicable
· **Information concerning particular hazards for human and environment:**
The product does not have to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
· **Classification system:**
The classification was made according to the latest editions of the EU-lists, and expanded upon from company and literature data.

· **Label elements**
· **GHS label elements** Void
· **Hazard pictograms** Void
· **Signal word** Void
· **Hazard statements** Void
· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

*
3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Polymer-bonded intumescent material (in the metal or plastic housing)

· **Dangerous components:** Void

4 First-aid measures

· **Description of first aid measures**
· **General information** No special measures required.
· **After inhalation** Not applicable
· **After skin contact** Not applicable
· **After eye contact** Not applicable
· **After swallowing** Not applicable
· **Information for doctor**
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed** No further relevant information available.

(Contd. on page 2)

(Contd. of page 1)

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents** CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· **Special hazards arising from the substance or mixture** No further relevant information available.
· **Advice for firefighters**
· **Protective equipment:** No special measures required.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures** Not required.
· **Environmental precautions:** No special measures required.
· **Methods and material for containment and cleaning up:** Pick up mechanically.
· **Reference to other sections**
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Handling**
· **Precautions for safe handling** No special measures required.
· **Information about protection against explosions and fires:** No special measures required.

· **Conditions for safe storage, including any incompatibilities**
· **Storage**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** None.

· **Storage class** 13
· **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment**
· **Breathing equipment:** Not required.
· **Protection of hands:**

Protective gloves.

To avoid skin problems reduce the wearing of gloves to the required minimum.
· **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
· **Penetration time of glove material** Not required.
· **Body protection:**

Protective work clothing.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Solid.
Color:	Various colors
· **Odor:**	Odorless
· **pH-value:**	Not determined.
· **Change in condition**	
Melting point/Melting range:	Not determined.

(Contd. on page 3)

(Contd. of page 2)

Boiling point/Boiling range:	undetermined
· **Flash point:**	Not applicable
· **Flammability (solid, gaseous)**	Product is not flammable.
· **Ignition temperature:**	
Decomposition temperature:	Not determined.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Vapor pressure:**	Not applicable.
· **Density at 20 °C (68 °F):**	1.3-1.4 g/cm³ (10.849-11.68 lbs/gal)
· **Evaporation rate**	Not applicable.
· **Solubility in / Miscibility with Water:**	Insoluble
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
dynamic:	Not applicable.
kinematic:	Not applicable.
· **Solvent content:**	
Solids content:	100 %
· **Other information**	CP 643, CP 644 - VOC Content: 7.6 g/l (EPA Method 24) CP 648, CFS-BPS - VOC Content: 3.1 g/l (EPA Method 24)

10 Stability and reactivity

· **Reactivity**
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** No dangerous decomposition products known

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** No irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **IARC (International Agency for Research on Cancer)**
None of the ingredients is listed.

· **NTP (National Toxicology Program)**
None of the ingredients is listed

· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Ecotoxical effects:** Not determined
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

(Contd. on page 4)

Safety Data Sheet
acc. to ISO 11014

Printing date 05/18/2015 **Version number 3** **Reviewed on 08/18/2014**

(Contd. of page 3)

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation** Smaller quantities can be disposed of with household waste.

· **European waste catalogue:**	
17 02 03	plastic
17 04 05	iron and steel

· **Uncleaned packagings:**
· **Recommendation:**
Disposal must be made according to official regulations.
Dispose of packaging according to regulations on the disposal of packagings.
Empty packs: May be disposed via the local Green Dot collecting system or EAK waste material code 150102 (plastic packaging materials)

14 Transport information

· **UN-Number** · **DOT, ADR, ADN, IMDG, IATA**	Void
· **UN proper shipping name** · **DOT, ADR, ADN, IMDG, IATA**	Void
· **Transport hazard class(es)** · **DOT, ADR, ADN, IMDG, IATA** · **Class**	Void
· **Packing group** · **DOT, ADR, IMDG, IATA**	Void
· **Environmental hazards:** · **Marine pollutant:**	No
· **Special precautions for user**	Not applicable
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	Not dangerous according to the above specifications.
· **UN "Model Regulation":**	-

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **Section 355 (Extremely hazardous substances):**
None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**
None of the ingredients are listed.

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed.

· **Proposition 65:**

· **Chemicals known to cause cancer:**
None of the ingredients are listed.

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients is listed.

· **TLV (Threshold Limit Value established by ACGIH)**
None of the ingredients is listed.

· **MAK (German Maximum Workplace Concentration)**
None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients is listed.

· **Chemical safety assessment:** not required.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:**
Hilti Corporation
Business Unit Chemicals
Quality/Safety/Environment

(Contd. on page 5)

Safety Data Sheet
acc. to ISO 11014

(Contd. of page 4)

FL-9494 Schaan / Liechtenstein

chemicals.hse@hilti.com
Tel.: +423 234 3004
FAX.: +423 234 3462

· **Date of preparation / last revision** 05/18/2015 / 2

· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)

· *** Data compared to the previous version altered.**

September 24, 2015

To Whom It May Concern:

Re: **CP 648 E&S Firestop Wrap Strips – LEED Information**

Item Numbers:

304303	304307
304304	304308
304305	304309
304306	

The Hilti CP 648 E & S Firestop Wrap Strips are manufactured in Germany.

The Hilti CP 648 E & S Firestop Wrap Strips have a VOC content of 3.1 grams/liter.

The amount of post-consumer or post-industrial content in CP 648 E & S Firestop Wrap Strips is not known. The packaging is recyclable. The CP 648 E & S Firestop Wrap Strips do not contain any Rapidly Renewable Materials.

The CP 648 E & S Firestop Wrap Strips are not regulated as a hazardous waste by the Federal EPA Standards. The regulations for the disposal of non-regulated industrial waste can vary from state to state and even city to city. For this reason, you should consult your local and state regulatory agencies for direction on disposal.

Please feel free to contact me at (918) 872-3704 if you have questions.

Sincerely,

Jerry Metcalf MPH, CHMM
Sr. Manager, Safety/Environmental
Hilti Inc.
(918) 872 3704
jerry.metcalf@hilti.com

Rev. Date: 8/14/15

The manufacturing plant location on this certificate has been provided for LEEDS reporting purposes only. It should never be used for Country of Origin certification or a representation of compliance/non-compliance with Buy American or Buy America requirements, as those requirements differ.

The manufacturing plant location(s) identified on the certificate represent standard Hilti catalog products only. “Specially” produced non-catalog Hilti products may have differing manufacturing plant locations.

Contact your Hilti representative in cases of “specially” produced products for a custom LEEDS certificates.

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

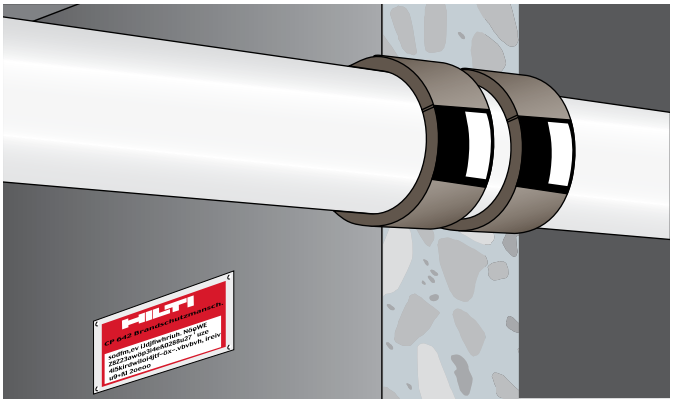
- Firestopping combustible pipe penetrations
- Difficult applications where space is limited
- Penetrations through concrete over metal deck
- Suitable for the following plastic pipe materials: PVC, CPVC, ABS, FRPP

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/cm³
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

CLASSIFIED C UL US
FILL, VOID OR CAVITY MATERIAL
FOR USE IN THROUGH-PENETRATION
FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
66Y7

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FBC SYSTEM COMPATIBLE
Visit fbcsystemcompatible.com.
FBC™ is a trademark of
the Lubrizol Corporation.

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.

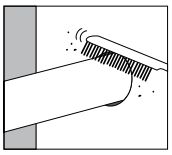
   Push the CP 648-S Firestop Wrap Strip into the annular space in accordance with the UL listing.
3. Seal against smoke and gas. Seal the remaining gap with Hilti FS-ONE sealant.
4. For maintenance reasons, a penetration seal can be permanently marked with an identification plate and fastened in a visible position next to the seal.

Not for use

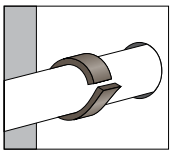
- In highly corrosive surroundings
- Outdoors

Storage

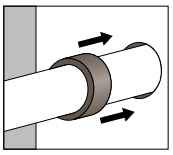
- Store only in the original packaging in a location protected from moisture at temperatures between 23°F and 86°F (–5°C and 30°C).



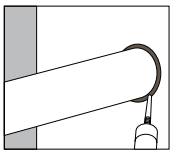
1. Clean penetration



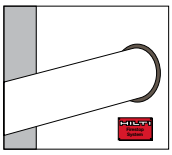
2A. Wrap the CP 648-S Wrap Strip around the pipe and fasten it tightly with the adhesive strip.



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	20160829-R13240
Report Reference	R13240
Issue Date	2016-August-29
Issued to:	Hilti Construction Chemicals, Div of Hilti Inc. 5400 S 122nd East Ave Tulsa, OK 74146
This is to certify that representative samples of	Fill, Void or Cavity Materials Fill, Void or Cavity Materials Certified for Canada CP 648E and CP 648S (Product number may be suffixed to denote size) Wrap Strip for use in Through-Penetration Firestop Firestop Systems as currently decribed in the UL Fire Resistance Directory and in the Products Certified for Canada Directory.
	Have been investigated by 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, "Standard Method of Fire Tests of Firestop Systems."
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

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

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

Safety Data Sheet
acc. to ISO 11014

Printing date 05/18/2015 Version number 3 Reviewed on 08/18/2014

*
1 Identification

· **Product identifier**

· **Trade name:**
Hilti Firestop Collar CFS-C
Hilti Firestop Collar Plus CFS-C P
Hilti Firestop Bandage CFS-B
Hilti Firestop Wrap Strip Endless CFS-W EL
Hilti Firestop Wrap Strip Single CFS-W SG
Hilti Firestop Collar Endless CFS-C EL
Hilti Firestop Back Pan Strip CFS-BPS
CP 643
CP 644
CP 646
CP 648
· **Relevant identified uses of the substance or mixture and uses advised against** No further relevant information available.
· **Application of the substance / the mixture** Construction chemicals

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Hilti, Inc.
5400 South 122nd East Ave.
US-Tulsa, OK 74146
Phone: (800) 879-8000
Fax: (800) 879-7000
Español: (800) 879-5000

· **Information department:**
see section 16
chemicals.hse@hilti.com
· **Emergency telephone number:**
Tox Info Suisse - 24 h Service
Tel.: 0041 / 44 251 51 51 (international)
.
Chem-Trec
Tel.: 1 800 424 9300

2 Hazard(s) identification

· **Classification of the substance or mixture** The product is not classified according to the Globally Harmonized System (GHS).

· **Classification according to Directive 67/548/EEC or Directive 1999/45/EC** not applicable
· **Information concerning particular hazards for human and environment:**
The product does not have to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
· **Classification system:**
The classification was made according to the latest editions of the EU-lists, and expanded upon from company and literature data.

· **Label elements**
· **GHS label elements** Void
· **Hazard pictograms** Void
· **Signal word** Void
· **Hazard statements** Void
· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

*
3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Polymer-bonded intumescent material (in the metal or plastic housing)

· **Dangerous components:** Void

4 First-aid measures

· **Description of first aid measures**
· **General information** No special measures required.
· **After inhalation** Not applicable
· **After skin contact** Not applicable
· **After eye contact** Not applicable
· **After swallowing** Not applicable
· **Information for doctor**
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed** No further relevant information available.

(Contd. on page 2)

Safety Data Sheet
acc. to ISO 11014

Printing date 05/18/2015 **Version number 3** **Reviewed on 08/18/2014**

(Contd. of page 1)

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents** CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· **Special hazards arising from the substance or mixture** No further relevant information available.
· **Advice for firefighters**
· **Protective equipment:** No special measures required.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures** Not required.
· **Environmental precautions:** No special measures required.
· **Methods and material for containment and cleaning up:** Pick up mechanically.
· **Reference to other sections**
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Handling**
· **Precautions for safe handling** No special measures required.
· **Information about protection against explosions and fires:** No special measures required.

· **Conditions for safe storage, including any incompatibilities**
· **Storage**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** None.

· **Storage class** 13
· **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment**
· **Breathing equipment:** Not required.
· **Protection of hands:**

Protective gloves.

To avoid skin problems reduce the wearing of gloves to the required minimum.
· **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
· **Penetration time of glove material** Not required.
· **Body protection:**

Protective work clothing.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Solid.
Color:	Various colors
· **Odor:**	Odorless
· **pH-value:**	Not determined.
· **Change in condition**	
Melting point/Melting range:	Not determined.

(Contd. on page 3)

(Contd. of page 2)

Boiling point/Boiling range:	undetermined
· **Flash point:**	Not applicable
· **Flammability (solid, gaseous)**	Product is not flammable.
· **Ignition temperature:**	
Decomposition temperature:	Not determined.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Vapor pressure:**	Not applicable.
· **Density at 20 °C (68 °F):**	1.3-1.4 g/cm³ (10.849-11.68 lbs/gal)
· **Evaporation rate**	Not applicable.
· **Solubility in / Miscibility with Water:**	Insoluble
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
dynamic:	Not applicable.
kinematic:	Not applicable.
· **Solvent content:**	
Solids content:	100 %
· **Other information**	CP 643, CP 644 - VOC Content: 7.6 g/l (EPA Method 24) CP 648, CFS-BPS - VOC Content: 3.1 g/l (EPA Method 24)

10 Stability and reactivity

· **Reactivity**
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** No dangerous decomposition products known

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** No irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **IARC (International Agency for Research on Cancer)**
None of the ingredients is listed.

· **NTP (National Toxicology Program)**
None of the ingredients is listed

· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Ecotoxical effects:** Not determined
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

(Contd. on page 4)

Safety Data Sheet
acc. to ISO 11014

Printing date 05/18/2015 **Version number 3** **Reviewed on 08/18/2014**

(Contd. of page 3)

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation** Smaller quantities can be disposed of with household waste.

· **European waste catalogue:**	
17 02 03	plastic
17 04 05	iron and steel

· **Uncleaned packagings:**
· **Recommendation:**
Disposal must be made according to official regulations.
Dispose of packaging according to regulations on the disposal of packagings.
Empty packs: May be disposed via the local Green Dot collecting system or EAK waste material code 150102 (plastic packaging materials)

14 Transport information

· **UN-Number** · **DOT, ADR, ADN, IMDG, IATA**	Void
· **UN proper shipping name** · **DOT, ADR, ADN, IMDG, IATA**	Void
· **Transport hazard class(es)** · **DOT, ADR, ADN, IMDG, IATA** · **Class**	Void
· **Packing group** · **DOT, ADR, IMDG, IATA**	Void
· **Environmental hazards:** · **Marine pollutant:**	No
· **Special precautions for user**	Not applicable
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	Not dangerous according to the above specifications.
· **UN "Model Regulation":**	-

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **Section 355 (Extremely hazardous substances):**
None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**
None of the ingredients are listed.

· **TSCA (Toxic Substances Control Act):**
All ingredients are listed.

· **Proposition 65:**

· **Chemicals known to cause cancer:**
None of the ingredients are listed.

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients is listed.

· **TLV (Threshold Limit Value established by ACGIH)**
None of the ingredients is listed.

· **MAK (German Maximum Workplace Concentration)**
None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients is listed.

· **Chemical safety assessment:** not required.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:**
Hilti Corporation
Business Unit Chemicals
Quality/Safety/Environment

(Contd. on page 5)

Safety Data Sheet
acc. to ISO 11014

(Contd. of page 4)

FL-9494 Schaan / Liechtenstein

chemicals.hse@hilti.com
Tel.: +423 234 3004
FAX.: +423 234 3462

· **Date of preparation / last revision** 05/18/2015 / 2

· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)

· *** Data compared to the previous version altered.**

September 24, 2015

To Whom It May Concern:

Re: **CP 648 E&S Firestop Wrap Strips – LEED Information**

Item Numbers:

304303	304307
304304	304308
304305	304309
304306	

The Hilti CP 648 E & S Firestop Wrap Strips are manufactured in Germany.

The Hilti CP 648 E & S Firestop Wrap Strips have a VOC content of 3.1 grams/liter.

The amount of post-consumer or post-industrial content in CP 648 E & S Firestop Wrap Strips is not known. The packaging is recyclable. The CP 648 E & S Firestop Wrap Strips do not contain any Rapidly Renewable Materials.

The CP 648 E & S Firestop Wrap Strips are not regulated as a hazardous waste by the Federal EPA Standards. The regulations for the disposal of non-regulated industrial waste can vary from state to state and even city to city. For this reason, you should consult your local and state regulatory agencies for direction on disposal.

Please feel free to contact me at (918) 872-3704 if you have questions.

Sincerely,

Jerry Metcalf MPH, CHMM
Sr. Manager, Safety/Environmental
Hilti Inc.
(918) 872 3704
jerry.metcalf@hilti.com

Rev. Date: 8/14/15

The manufacturing plant location on this certificate has been provided for LEEDS reporting purposes only. It should never be used for Country of Origin certification or a representation of compliance/non-compliance with Buy American or Buy America requirements, as those requirements differ.

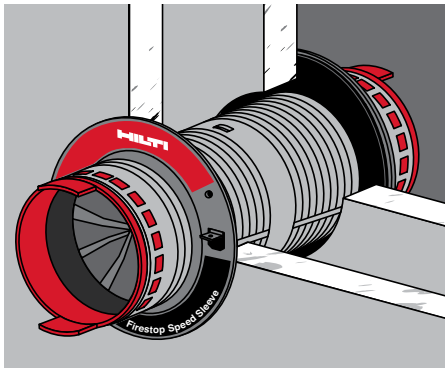
The manufacturing plant location(s) identified on the certificate represent standard Hilti catalog products only. “Specially” produced non-catalog Hilti products may have differing manufacturing plant locations.

Contact your Hilti representative in cases of “specially” produced products for a custom LEEDS certificates.

Hilti, Inc.
5400 South 122nd East Avenue
Tulsa, OK 74146

1-800-879-8000
www.hilti.com

SPEED SLEEVE CP 653



Product description

- Re-penetrable cable management device for electrical and telecom professionals

Product features

- Fast installation
- Easy penetration and re-penetration
- industry's best "Air Movement" ratings
- Low L-ratings
- Withstands the rigors of usage and time
- Can be installed in wall and floor applications
- Buy American Compliant
- May be "ganged" together

Areas of application

- Cable and cable bundles

For use with

- Concrete floor rated up to 3 hours
- Gypsum walls rated up to 4 hours

Examples

- Electrical wiring
- Premise wiring
- Low voltage and datacom

Installation instructions

- See Hilti Literature or third-party listings for complete application and installation details

Technical Data

	2" (50 mm)	4" (102 mm)
OD (device only)	2.3" (60 mm)	4.3" (110 mm)
OD (flange)	4.7" (120 mm)	6.7" (170 mm)
ID	1.7" (48 mm)	3.6" (92 mm)
Total length	12.4" (315 mm)	12.4" (315 mm)
Weight (device and flanges)	1.5 lbs	2.6 lbs
Temperature resistance	-22° F to 212° F (-6° C to 100° C)	
Intumescent activation	Approx. 320° F (160° C)	
Expansion ratio (unrestricted)	1:40	
Metal	Steel with zinc coating	
Plastic	ABS	
Fabric	Glass-fiber	
Tested in accordance with	UL 1479 , ASTM E 814, CAN/ULC-S115	

CLASSIFIED C UL US

FIRESTOP DEVICE
FOR USE IN THROUGH-PENETRATION
FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY 5N76

FM APPROVED

Hilti Firestop
Saving lives
through innovation
and education

Certificate of Compliance

Certificate Number 20071018-R15431
Report Reference 2007 October 18
Issue Date 2007 October 18

Underwriters Laboratories Inc.®

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

This is to certify that representative samples of Firestop Devices & Firestop Certified for Canada

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 - Third Edition, CAN/ULC-S115-05

Additional Information: CP 653 Speed Sleeves 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 Coulombe
Underwriters Laboratories Inc.

Reviewed by:
Steve Hoffman
Underwriters Laboratories Inc.

1 Identification of the substance/mixture and of the company/undertaking

· **Product identifier**
· **Trade name:**

Hilti Firestop Block CFS-BL / CFS-BL P
Hilti Firestop Plug CFS-PL
Hilti Firestop Cable Collar CFS-CC / CFS-RCC / CFS-RCC EXT
Hilti Firestop Module Box CFS-MB
Hilti Firestop Cushion CFS-CU
Hilti Firestop Board CP 675
Hilti Firestop Speed Sleeve CFS-SL
Hilti Firestop Retrofit Sleeve CFS-SL RK
Hilti Firestop Sleeve Kit CFS-SL SK
Hilti Firestop Gangplate CFS-SL GP
Hilti Firestop Cable Module CFS-T
Hilti Firestop Filler Module CFS-T FB
Hilti Firestop Plug Seal CFS-T RR
Hilti Firestop Plug Seal CFS-T RRS
Hilti Firestop Wedge Seal CFS-T WD120
Hilti Firestop Cast-In Device CFS-CID
Hilti Firestop Drop-In Device CFS-DID
Hilti Foil Tapes CS-FT all
Hilti Multifunctional Tapes CS-MFT all
Hilti Joint Sealing Tapes CS-JST all
Hilti Firestop Top Track Seal CFS-TTS
CP 651N
CP 653
CP 657
CP 658
CP 680
CP 681

· **Application of the substance / the preparation:** Construction chemicals

Refer to Hilti product literature, technical data sheets, 3rd party published listings and national approvals for specific application information. For more details please contact your local Hilti organization through http://www.hilti.com.

· **Manufacturer/Supplier:**

Hilti AG
Feldkircherstr. 100
Postfach 333
FL-9494 Schaan
Liechtenstein

Customer Service
Phone +423 (0)844 84 84 85
Fax +423 (0)844 84 84 86

2 Other information

A Material Safety Data Sheet is not required due to the classification of these products as “articles” according to Regulation (EC) No. 1907/2006 of 18 December 2006 / 29CFR 1910.1200 (U.S.A.). Consequently, these products are exempted from CLP / OSHA Labeling and MSDS requirements.

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Informing department:**

chemicals.hse@hilti.com
Tel.: +423 234 3004
FAX.: +423 234 3462

August 26, 2015

To Whom It May Concern:

Re: **Hilti CP 653 Speed Sleeve – LEED Information**.

Item Numbers:

2097882 2097883

The Hilti CP 653 Speed Sleeves 2" and 4" are manufactured in the United States.

The Hilti CP 653 Speed Sleeve contains an intumescent firestop material which has a VOC content of 7.6 grams/liter.

The amount of post-consumer or post-industrial content in the CP 653 Speed Sleeve is not known. The metal and plastic portions of the Speed Sleeve are recyclable. The CP 653 Speed Sleeve does not contain any Rapidly Renewable Materials.

The CP 653 Speed Sleeve is not regulated as a hazardous waste by the Federal EPA Standards. The regulations for the disposal of non-regulated industrial waste can vary from state to state and even city to city. For this reason, you should consult your local and state regulatory agencies for direction on disposal.

Please feel free to contact me at (918) 872-3704 if you have questions.

Sincerely,

Jerry Metcalf MPH, CHMM
Sr. Manager, Safety/Environmental
Hilti Inc.
(918) 872 3704
jerry.metcalf@hilti.com

Rev. Date: 8/14/15

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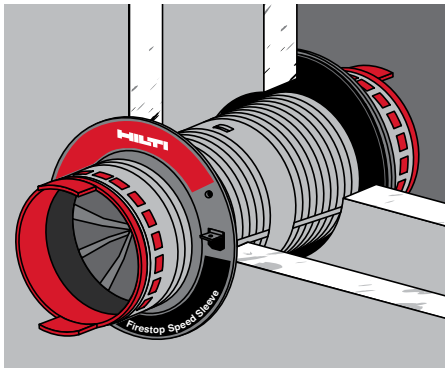
SPEED SLEEVE CP 653



Product description

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Areas of application

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For use with

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- Gypsum walls rated up to 4 hours

Examples

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- Premise wiring
- Low voltage and datacom

Installation instructions

- See Hilti Literature or third-party listings for complete application and installation details

Technical Data

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Total length	12.4" (315 mm)	12.4" (315 mm)
Weight (device and flanges)	1.5 lbs	2.6 lbs
Temperature resistance	-22° F to 212° F (-6° C to 100° C)	
Intumescent activation	Approx. 320° F (160° C)	
Expansion ratio (unrestricted)	1:40	
Metal	Steel with zinc coating	
Plastic	ABS	
Fabric	Glass-fiber	
Tested in accordance with	UL 1479 , ASTM E 814, CAN/ULC-S115	

CLASSIFIED C UL US

FIRESTOP DEVICE
FOR USE IN THROUGH-PENETRATION
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SEE UL FIRE RESISTANCE DIRECTORY 5N76

FM APPROVED

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Certificate of Compliance

Certificate Number 20071018-R15431
Report Reference 2007 October 18
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Underwriters Laboratories Inc.®

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

This is to certify that representative samples of Firestop Devices & Firestop Certified for Canada

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 - Third Edition, CAN/ULC-S115-05

Additional Information: CP 653 Speed Sleeves 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 Coulombe
Underwriters Laboratories Inc.

Reviewed by:
Steve Hoffman
Underwriters Laboratories Inc.

August 26, 2015

To Whom It May Concern:

Re: **Hilti CP 653 Speed Sleeve – LEED Information**.

Item Numbers:

2097882 2097883

The Hilti CP 653 Speed Sleeves 2" and 4" are manufactured in the United States.

The Hilti CP 653 Speed Sleeve contains an intumescent firestop material which has a VOC content of 7.6 grams/liter.

The amount of post-consumer or post-industrial content in the CP 653 Speed Sleeve is not known. The metal and plastic portions of the Speed Sleeve are recyclable. The CP 653 Speed Sleeve does not contain any Rapidly Renewable Materials.

The CP 653 Speed Sleeve is not regulated as a hazardous waste by the Federal EPA Standards. The regulations for the disposal of non-regulated industrial waste can vary from state to state and even city to city. For this reason, you should consult your local and state regulatory agencies for direction on disposal.

Please feel free to contact me at (918) 872-3704 if you have questions.

Sincerely,

Jerry Metcalf MPH, CHMM
Sr. Manager, Safety/Environmental
Hilti Inc.
(918) 872 3704
jerry.metcalf@hilti.com

Rev. Date: 8/14/15

The manufacturing plant location on this certificate has been provided for LEEDS reporting purposes only. It should never be used for Country of Origin certification or a representation of compliance/non-compliance with Buy American or Buy America requirements, as those requirements differ.

The manufacturing plant location(s) identified on the certificate represent standard Hilti catalog products only. "Specially" produced non-catalog Hilti products may have differing manufacturing plant locations.

Contact your Hilti representative in cases of "specially" produced products for a custom LEEDS certificates.

High-performance intumescent firestop sealant FS-ONE MAX

Applications

- For effectively sealing most common through penetrations in a variety of base materials
- For use on concrete, masonry and drywall
- Mixed and multiple penetrations
- Metal pipe penetrations: copper, steel and EMT
- Insulated metal pipe penetrations: steel and copper
- Plastic pipe penetrations: closed or vented

Advantages

- US-produced: “Buy American” compliant
- One product for a variety of common through penetrations
- Cost-effective, easy-to-use solution
- Water-based and paintable
- Industry-leading VOC results
- Ethylene glycol-free

Chemical resistant

Mold and mildew resistant

FILL, VOID OR CAVITY MATERIAL FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS SEE UL FIRE RESISTANCE DIRECTORY 66Y7

Technical data	
Chemical basis	Water-based acrylic dispersion
Approx. Density	84.3 lb/ft³
Color	Red
Application temperature range	41 - 104 °F
Approx. cure time[1)]	4 mm/3 days
Temperature resistance range	-4 to 212 °F
Mold and mildew performance	Class 0 (ASTM G21-96)
Mold and mildew resistance	Yes
Surface burning characteristics UL 723 (ASTM E84)	Flame spread: 0 Smoke development: 10
Tested in accordance with	UL 1479, ASTM E814, ASTM E84, CAN/ ULC-S115, ASTM G21, ASTM E90
California State fire marshal approval	CSFM Listing 4485-1200:0108 for FS-ONE MAX Intumescent Firestop Sealant
Expansion ratio (unrestricted, up to)	1:5

[1)] at 75°F/24°C, 50% relative humidity

Order Designation	Package Content	Item number
FS-ONE MAX 20oz foil (3 case + disp)	1x Foil pack dispenser manual CS 270-P1, 75x Firestop sealant FS-ONE MAX 20 oz foil	**3530252**
FS-ONE MAX 10oz tube (1 case)	12x Firestop sealant FS-ONE MAX 10 oz cartridge	**3530249**
FS-ONE MAX 5 gallon (18 pails)	18x Firestop sealant FS-ONE MAX 5 gallon pail	**3530263**
FS-ONE MAX 20oz foil (1 case)	25x Firestop sealant FS-ONE MAX 20 oz foil	**3530250**
FS-ONE MAX 20oz foil (3 cases)	75x Firestop sealant FS-ONE MAX 20 oz foil	**3530251**
FS-ONE MAX 20oz Foil-Pallet	600x FSONE-MAX 20 oz foil, 290x Bulk Shipping Condition	**3534713**
FS-ONE MAX 10 oz cartridge		**2101531**
FS-ONE MAX 5 gallon pail		**2101533**

12/16 DBS

Date: June 22, 2015

Subject: **Buy American Certification**

Product: Firestop sealant FS-ONE MAX 10.1OZ Cartridge (Item #2101531)
Firestop sealant FS-ONE MAX 20.0OZ Foil (Item #2101532)
Firestop sealant FS-ONE MAX 5GAL Pail (Item #2101533)

To Whom it May Concern:

Hilti, Inc. certifies that the above referenced product(s) as described on the Purchase Order identified above, is (are) a domestic end product (as defined in FAR Subpart 25.1, "Buy American Act--Supplies"), or satisfies the preference for domestic construction material (as defined in FAR Subpart 25.2, "Buy American Act--Construction Materials").

Sincerely,

Thomas M. Horan, QA Manager

Buyamericanfsonemax.doc

Hilti, Inc.
5400 South 122nd East Avenue
Tulsa, OK 74121 USA

T (918) 872-3000 I F 800-879-7000
www.hilti.com

FS-ONE MAX; Hilti Firestop Filler Mastic CFS-FIL

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 12/17/2015 Revision date: 12/17/2015 Supersedes: 12/17/2015 Version: 1.2

SECTION 1: Identification

1.1. Identification

Product form	Mixture
Name	FS-ONE MAX; Hilti Firestop Filler Mastic CFS-FIL
Product code	BU Chemicals
Chemical structure	

1.2. Relevant identified uses of the substance or mixture and uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Hilti, Inc.
Legacy Tower, Suite 1000
75024 Plano - USA
T +1 9724035800
1-800-879-8000 toll free - F +1 918 254 0522

Supplier
Hilti, Inc.
Legacy Tower, Suite 1000
75024 Plano - USA
T +1 9724035800
1-800-879-8000 toll free - F +1 918 254 0522

Department issuing data specification sheet
Hilti AG
Feldkircherstraße 100
9494 Schaan - Liechtenstein
T +423 234 2111
chemicals.hse@hilti.com

1.4. Emergency telephone number

Emergency number

Chem-Trec
Tel.: 1 800 424 9300 (USA, PR, Virgin Islands, Canada)
Tel.: 703 527 3887 (Other countries)

+1 918 8723000
1-800-879-8000 toll free

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Not classified

2.2. Label elements

GHS-US labelling

No labelling applicable

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

FS-ONE MAX; Hilti Firestop Filler Mastic CFS-FIL

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	Product identifier	%	GHS-US classification
Quartz	(CAS No) 14808-60-7	2.5 - 5	Carc. 1A, H350

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation: Get medical advice/attention if you feel unwell.

First-aid measures after skin contact: Wash skin with plenty of water. If skin irritation occurs: Get medical advice/attention.

First-aid measures after eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

First-aid measures after ingestion: Get medical advice/attention if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

No additional information available

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: Water spray. Dry powder. Foam. Carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Reactivity: The product is non-reactive under normal conditions of use, storage and transport.

5.3. Advice for firefighters

Protection during firefighting: Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

Protective equipment: For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

No additional information available

6.3. Methods and material for containment and cleaning up

Methods for cleaning up: Recover mechanically the product.

6.4. Reference to other sections

For further information refer to section 13.

FS-ONE MAX; Hilti Firestop Filler Mastic CFS-FIL

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	Wear personal protective equipment.
Hygiene measures	Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	Keep cool. Store in a dry place.
Storage temperature	41 - 77 °F

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Quartz (14808-60-7)		
OSHA	Remark (OSHA)	(3) See Table Z-3.

8.2. Exposure controls

Personal protective equipment: Protective clothing. Safety glasses. Gloves.

Hand protection	Protective gloves. EN 374.
Eye protection	Safety glasses. EN 166. EN 170.
Skin and body protection	Wear suitable protective clothing.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Pasty.
Colour	red
Odour	characteristic
Odour threshold	Not determined
pH	≈ 7.85
Melting point	Not applicable
Freezing point	No data available
Boiling point	No data available
Flash point	Not applicable
Relative evaporation rate (butylacetate=1)	No data available
Flammability (solid, gas)	No data available
Explosive limits	No data available
Explosive properties	No data available
Oxidising properties	No data available
Vapour pressure	No data available
Relative density	No data available
Relative vapour density at 20 °C	No data available
Density	≈ 1.35 g/cm³
Molecular mass	Not determined

Solubility	No data available
Log Pow	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Viscosity, kinematic	No data available
Viscosity, dynamic	No data available

9.2. Other information

VOC content	9 g/l

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	Not classified
Skin corrosion/irritation	Not classified pH: ≈ 7.85
Serious eye damage/irritation	Not classified pH: ≈ 7.85
Respiratory or skin sensitisation	Not classified
Germ cell mutagenicity	Not classified
Carcinogenicity	Not classified

Quartz (14808-60-7)	
IARC group	1 - Carcinogenic to humans

Reproductive toxicity	Not classified
Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified
Aspiration hazard	Not classified

FS-ONE MAX; Hilti Firestop Filler Mastic CFS-FIL

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming	No known ecological damage caused by this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods	Dispose of contents/container in accordance with licensed collector's sorting instructions.
Waste disposal recommendations	Dispose in a safe manner in accordance with local/national regulations.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number

Not regulated for transport

14.2. UN proper shipping name

Proper Shipping Name (ADR)	Not applicable
Proper Shipping Name (IMDG)	Not applicable
Proper Shipping Name (IATA)	Not applicable
Proper Shipping Name (ADN)	Not applicable
Proper Shipping Name (RID)	Not applicable

14.3. Transport hazard class(es)

ADR

Transport hazard class(es) (ADR)	Not applicable

IMDG

Transport hazard class(es) (IMDG)	Not applicable

IATA

Transport hazard class(es) (IATA)	Not applicable

ADN

Transport hazard class(es) (ADN)	Not applicable

RID

Transport hazard class(es) (RID)	Not applicable

14.4. Packing group

Packing group (ADR)	Not applicable
Packing group (IMDG)	Not applicable
Packing group (IATA)	Not applicable
Packing group (ADN)	Not applicable
Packing group (RID)	Not applicable

14.5. Environmental hazards

Dangerous for the environment	No
Marine pollutant	No
Other information	No supplementary information available

14.6. Special precautions for user

- Overland transport

- Transport by sea

No data available

- Air transport

No data available

- Inland waterway transport

Carriage prohibited (ADN)	No
Not subject to ADN	No

- Rail transport

Carriage prohibited (RID)	No

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information

15.1. US Federal regulations

This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Quartz (14808-60-7)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

FS-ONE MAX; Hilti Firestop Filler Mastic CFS-FIL	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria

EU-Regulations

No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

National regulations

Quartz (14808-60-7)
Listed on IARC (International Agency for Research on Cancer)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Revision date 12/17/2015

Full text of H-statements:

Carc. 1A	Carcinogenicity, Category 1A
H350	May cause cancer

HMIS III Rating

Health	0 Minimal Hazard - No significant risk to health
Flammability	0 Minimal Hazard - Materials that will not burn
Physical	0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.
Personal Protection	B
	B - Safety glasses, Gloves

SDS_US_Hilti

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

August 26, 2015

To Whom It May Concern:

Re: **Hilti FS-ONE Max Firestop – LEED Info**.

Item Numbers:

2101531
2101532
2101533

The Hilti FS-ONE MAX Firestop is manufactured in the United States

There is no post-consumer or post-industrial content in FS-ONE MAX and it cannot be recycled. The VOC content for FS-ONE MAX is 9 grams/liter.

FS-ONE MAX is not regulated as a hazardous waste by the Federal EPA Standards. The regulations for the disposal of non-regulated industrial waste can vary from state to state and even city to city. For this reason, you should consult your local and state regulatory agencies for direction on disposal.

Please feel free to contact me at (918) 872-3704 if you have questions.

Sincerely,

Jerry Metcalf MPH, CHMM
Sr. Manager, Safety/Environmental
Hilti Inc
(918) 872 3704
jerry.metcalf@hilti.com

Rev. Date: 7/31/15

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3M
Fire Protection Products

Trained Installer

Name: Lee Nadeau Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

☐ Construction Joints ☒ Penetration Seal
☐ Flexible Wrap ☐ Telecom
☐ Woodframe Construction

5/13/2016
Date Training Completed

Training must be renewed every three years. See reverse side for important information.

Timothy J. Lennon
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Steven Morey Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Alan Cornwall Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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Timothy J. Lennon
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Darren Weymouth Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Donald Crowell Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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Instructor Signature

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Fire Protection Products

Trained Installer

Name: Brian Marston Company: DeBlois Electric, Inc
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Instructor Signature

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Fire Protection Products

Trained Installer

Name: Brian Crane Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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Instructor Signature

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Fire Protection Products

Trained Installer

Name: Aaron Harvey Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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Timothy J. Lennon
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Frank Whittier Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

- ☐ Construction Joints
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- ☐ Telecom
- ☐ Woodframe Construction

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Timothy J. Lennen
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Matthew Reny Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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- ☐ Telecom
- ☐ Woodframe Construction

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Instructor Signature

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Fire Protection Products

Trained Installer

Name: Nolan Rioux Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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- ☐ Telecom
- ☐ Woodframe Construction

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Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Merle Keough Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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- ☒ Penetration Seal
- ☐ Telecom
- ☐ Woodframe Construction

5/13/2016
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Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Roland Gendreau Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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Instructor Signature

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Fire Protection Products

Trained Installer

Name: Andrew Gatchell Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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Instructor Signature

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Fire Protection Products

Trained Installer

Name: Mark Powell Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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- ☒ Penetration Seal
- ☐ Telecom
- ☐ Woodframe Construction

5/13/2016
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Timothy J. Lennen
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Jay Peacock Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

- ☐ Construction Joints
- ☐ Flexible Wrap
- ☒ Penetration Seal
- ☐ Telecom
- ☐ Woodframe Construction

5/13/2016
Date Training Completed

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Timothy J. Lennen
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Eddie Morissette Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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- ☐ Flexible Wrap
- ☒ Penetration Seal
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- ☐ Woodframe Construction

5/13/2016
Date Training Completed

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See reverse side for important information.

Timothy J. Lennon
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: James Caron Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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- ☒ Penetration Seal
- ☐ Telecom
- ☐ Woodframe Construction

5/13/2016
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Timothy J. Lennon
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Benjamin Wolcott Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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- ☐ Flexible Wrap
- ☒ Penetration Seal
- ☐ Telecom
- ☐ Woodframe Construction

5/13/2016
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Timothy J. Lennon
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Melissa Lebel Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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- ☒ Penetration Seal
- ☐ Telecom
- ☐ Woodframe Construction

5/13/2016
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Timothy J. Lennon
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Christopher Bryant Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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3M
Fire Protection Products

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Name: Brian Levesque Company: DeBlois Electric, Inc
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Timothy J. Lennon
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Colton Godwin Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

- ☐ Construction Joints
- ☐ Flexible Wrap
- ☒ Penetration Seal
- ☐ Telecom
- ☐ Woodframe Construction

5/13/2016
Date Training Completed

Training must be renewed every three years.
See reverse side for important information.

Timothy J. Lennon
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Ryan Kelly Company: DeBlois Electric, Inc
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

- ☐ Construction Joints
- ☐ Flexible Wrap
- ☒ Penetration Seal
- ☐ Telecom
- ☐ Woodframe Construction

5/13/2016
Date Training Completed

Training must be renewed every three years.
See reverse side for important information.

Timothy J. Lennon
Instructor Signature

3M Fire Protection Products

Subject: GENERAL CERTIFICATE OF CONFORMANCE
3M FIRE PROTECTION PRODUCTS

Product Category: Through Penetration Firestop Products

3M™ Aluminum Foil Tape 425
3M™ Expantrol™ Flexible Intumescent Strip E-FIS
3M™ Fire Barrier 2" Plug PLG2
3M™ Fire Barrier 4" Plug PLG4
3M™ Fire Barrier Block B258
3M™ Fire Barrier Cast-In Devices & Accessories
3M™ Fire Barrier Composite Sheet CS-195+
3M™ Fire Barrier Sealant CP 25WB+
3M™ Fire Barrier Moldable Putty+ Pads (MPP+)
3M™ Fire Barrier Moldable Putty+ Sticks (MP+)
3M™ Fire Barrier Mortar
3M™ Fire Barrier Packing Material PM4
3M™ Fire Barrier Pass-Through Devices
3M™ Fire Barrier Pillows
3M™ Fire Barrier Plank PK39
3M™ Fire Barrier Plastic Pipe Device (PPD)
3M™ Fire Barrier Putty Sleeve Kits
3M™ Fire Barrier Rated Foam FIP 1-Step
3M™ Aluminum Foil Tape 425
3M™ Fire Barrier RC-1 Restricting Collar
3M™ Fire Barrier Sealant FD 150+
3M™ Fire Barrier Sealant IC 15WB+
3M™ Fire Barrier Self-Locking Pillows
3M™ Fire Barrier Silicone Sealant 2000+
3M™ Fire Barrier Tuck-In Wrap Strips
3M™ Fire Barrier Ultra Plastic Pipe Device (UPPD)
3M™ Fire Barrier Water Tight Sealant 1000 NS
3M™ Fire Barrier Water Tight Sealant 1003 SL
3M™ Fire Barrier Water Tight Sealant 3000 WT
3M™ Fire Barrier Wrap Strips FS-195+
3M™ Fire Barrier Wrap Ultra GS
3M™ Fire Block Foam FB-Foam
3M™ Fire Block Sealant FB 136
3M™ FireDam™ Spray 200
3M™ Interam™ Stainless Steel Foil Tape T-65
3M™ Marine Fire Wrap
3M™ Smoke and Sound Sealant SS 100
3M™ Fire Barrier RC-1 Restricting Collar

The above listed products are tested to one or more of the following standards:

- ASTM E 119 (ANSI/UL 263) Standard Test Methods for Fire Tests of Building Construction and Materials
- ASTM E 814 (ANSI/UL 1479) Standard Test Method for Fire Tests of Penetration Firestop Systems(under positive furnace pressure of minimum .01 inches of water column)
- ASTM E 84 (ANSI/UL 723) Standard Test Method for Surface Burning Characteristics of Building Materials
- ASTM E 1966 (ANSI/UL 2079) Standard Test Method for Fire-Resistive Joint Systems
- NFPA 252 Standard Methods of Fire Test and Door Assemblies
- UBC Standard 7-2(97)
- IMO Res. A.754(18)
- ASTM E 2307 Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Test Apparatus
- ASTM E 136 Standard Test Method for Behavior of Material in a Vertical Tube Furnace at 750° C

3M Fire Protection Products

- ASTM C 1338 Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings
- ISO 6944-1985 Fire resistance tests -- Ventilation ducts
- ASTM C 1241 Standard Test Method for Volume Shrinkage of Latex Sealants During Cure
- CAN/ULC S115 Standard Method of Fire Tests of Firestop Systems
- ASTM E 90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

These products are formulated without asbestos, polychlorinated biphenyls (PCBs), or lead.

Issued by:

Quality Manager or Designee

Technical Manager, or Designee

Product Use: Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for user's particular purpose and suitable for user's method of application.

Technical Information: The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

Warranty and Limited Remedy: 3M warrants that each 3M Fire Protection Product will be free from defects in material and manufacture for 90 days from the date of purchase from 3M's authorized distributor. 3M MAKES NO OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. If a 3M product does not conform to this warranty, the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price. **Limitation of Liability:** Except where prohibited by law, 3M will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted."

3M

Industrial Adhesives and Tapes Division
St. Paul, MN 55144-1000
1-800-328-1687
www.3M.com/firestop

3M Firestop Protection Products

Matrix of UL Tested and Approved Systems for Firestopping

ELECTRICAL PENETRATIONS

In Rated Gypsum Walls and Concrete Floor & Wall Construction

***Note: Final selection of UL system numbers subject to field conditions meeting parameters listed in the respective UL system number**

Penetrating Item	Assembly Penetrated	F Rating	System Number	3M FPP Product Solutions
Metal Pipe/Conduit	Framed Gypsum Walls	1 & 2 Hours	WL1296	IC15WB+, CP25WB+ or FB3000WT
Jacketed Cables	Framed Gypsum Walls	1 & 2 Hours	WL3195 WL3148	IC15WB+, CP25WB+ or FB3000WT
Insulated Cables via Device	Framed Gypsum Walls	1 & 2 Hours	WL3289	Pass Through Device and MP+ Putty
Cable Tray	Framed Gypsum Walls	1 & 2 Hours	WL4037	Fire Barrier Pillows and MP+ Putty
Cables Max 48% fill in Sleeve	Framed Gypsum Walls	1 & 2 Hours	WL3371	DT Series Putty and Sleeve Kit
Cables 50% fill in EMT sleeve	Framed Gypsum Walls	1 & 2 Hours	WL3347	IC15WB+, CP25WB+ or FB3000WT
Multiple Conduit (Max opening 67-1/2 sq in)	Framed Gypsum Walls	1 & 2 Hours	WL1228	IC15WB+, CP25WB+ or FB3000WT
Multiple Conduit (Max opening 225 sq in)	Framed Gypsum Walls	1 & 2 Hours	WL1255	Fire Barrier Pillows and MP+ Putty
Outlet Boxes	Framed Gypsum Walls	1 & 2 Hours	CLIV	MPP+ Putty Pads
Metal Pipe/Conduit	Concrete Floor & Walls	2 Hour	CAJ1427	IC15WB+, CP25WB+ or FB3000WT
Multiple Metal Pipe/Conduit	Concrete Floor & Walls	2 Hour	CAJ1429	IC15WB+, CP25WB+ or FB3000WT
Jacketed Cables	Concrete Floor & Walls	2 Hour	CAJ3200	IC15WB+, CP25WB+ or FB3000WT
Insulated Cables via Device	Concrete Floor & Walls	2 & 3 Hour	CAJ3250	Pass Through Device and IC15WB+ or MP+ Putty
Cables Max 48% fill in Sleeve	Concrete Floor & Walls	3 Hour	CAJ3310	DT Series Putty & Sleeve Kit
Cables Min 12% to Max 40% in Sleeve	Concrete Floor & Walls	3 Hour	CAJ3021	MP + Stix
Insulated Cables	Concrete Floor	2 Hours	FA3017	Cast-in-Place (CID)
Insulated Cables	Concrete Floor	2 Hour	FA3020	Cast-in-Place (CID)
Bus Duct	Concrete Floor	3 Hour	CAJ6041	Fire Barrier Pillows and MP+ Putty

3M Sleeve Systems

3M Firestop Sleeve – Max 6 in blank opening. Min 4-1/2 in concrete or min 6 in. hollow core or concrete block.	**Floor or Wall Assembly**	**3 Hour**	**CAJ0134**	**3M Fire Barrier MP+ Putty stix DT100, DT200, DT400**
Max 48% cable fill. Max 6 in. opening. Min 4-1/2 in. concrete or min 6 in. hollow core or concrete block wall. Space between device and periphery of opening point contact to max 1 in.	**Concrete Block Wall**	**3 Hour**	**CAJ3310**	**3M Fire Barrier MP+ Putty stix DT100, DT200, DT400**
Max 6-1/2 in. blank opening. U300 or U400 Series wall with wood or steel studs. Space between device and periphery of opening point contact to max 1 in.	**Wall with Wood or Steel Studs**	**1 and 2 hour**	WL0036	**3M Fire Barrier MP+ Putty stix DT100, DT200, DT400**
Max 6-1/2 in. blank opening. U300 or U400 Series wall with wood or steel studs. Space between device and periphery of opening point contact to max 1 in. Packing material required.	**Wall with Wood or Steel studs**	**3 and 4 Hour**	WL0037	**3M Fire Barrier MP+ Putty stix DT100, DT200, DT400**
Max 48% cable fill. Max 6-1/2 in. opening. U300 or U400 Series wall with wood or steel studs. Space between device and periphery of opening point contact to max 1 in.	**Wall with Wood or Steel studs**	**1 and 2 Hour**	WL3371	**3M Fire Barrier MP+ Putty stix DT100, DT200, DT400**
Max 48% cable fill. Max 6-1/2 in. opening. U300 or U400 Series wall with wood or steel studs. Space between device and periphery of opening point contact to max 1 in. Packing material required.	**Wall with Wood or Steel studs**	**3 and 4 hour**	WL3372	**3M Fire Barrier MP+ Putty stix DT100, DT200, DT400**

3M™ Interam™ Endothermic Mat

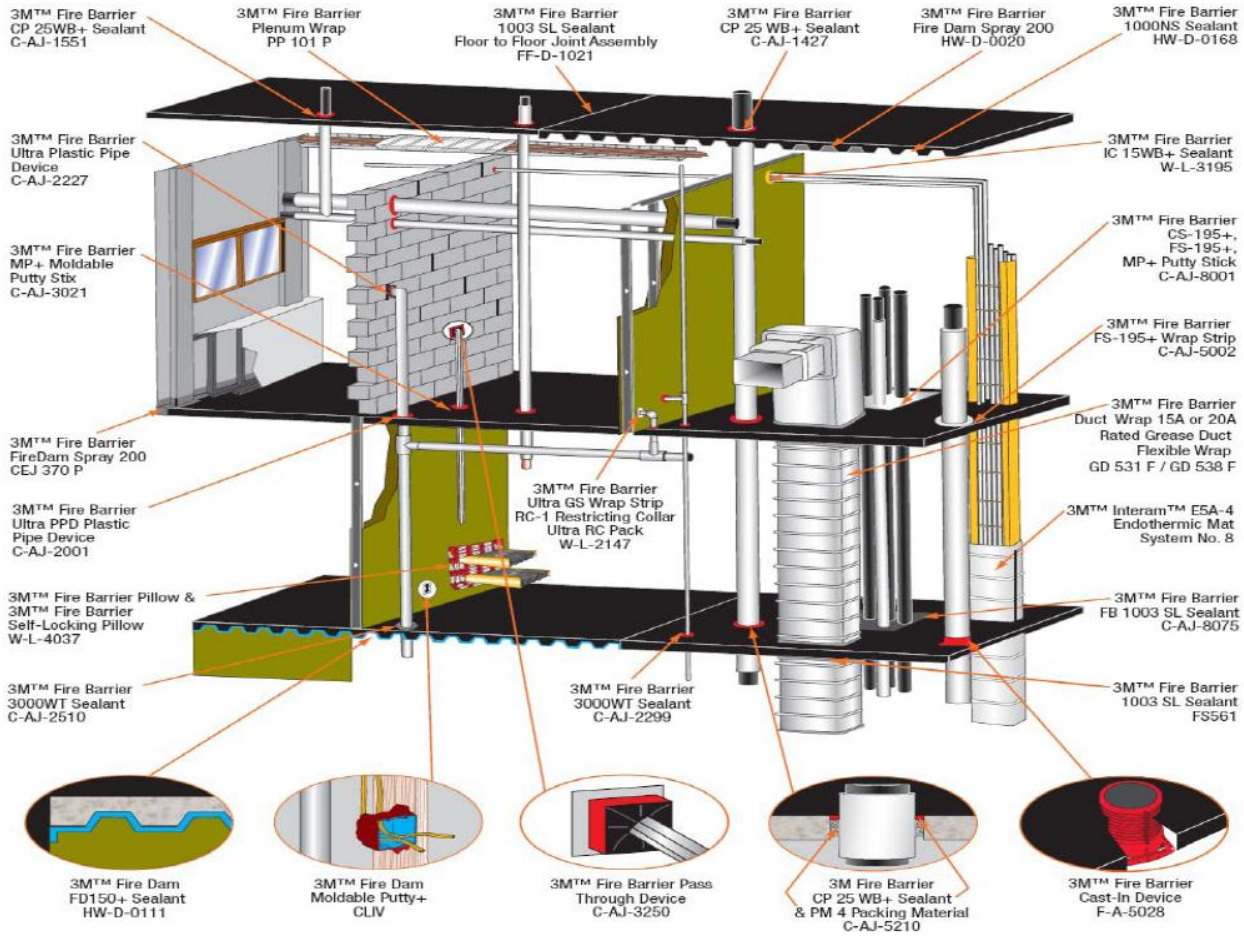
15’ Run of 4” Conduit

2 Hr Protection With 4 Layers Of E-Mat

2.5 Rolls Of E-Mat

Blankets to wrap items requiring fire protection. Made of ceramic fibers and inorganic endothermic material. These advanced endothermic materials contain chemically bound water. In the event of fire, they help prevent heat penetration via a chemical reaction which absorbs heat energy.

3M™ Interam™ Endothermic Mat when exposed to high temperatures release chemically bound water to cool the outer surfaces of wrap material, retard heat transfer and help protect critical electrical and structural components in the event of a fire. 3M™ Aluminum Foil Tape is ideal for high-temperature applications such as completing the total encapsulation of fire barrier mat or duct wrap.



3M™ Fire Protection Product Specifications are available on ARCAT.com (website for Building Materials and Manufacturers Specifications for the Architectural and Spec Writing Communities)

Note, Arcat currently defaults to MasterFormat 1995, you can toggle to MasterFormat 2004 in the upper right areas of Arcat's landing page

MasterFormat (2004) specification divisions relating to 3M™ Fire Protection Products are as follows:

Section 03 00 00 – Concrete
Section 04 20 00 – Unit Masonry
Section 05 12 00 – Structural Steel Framing
Section 07 27 00 – Air Barriers
Section 07 80 00 – Fire and Smoke Protection
Section 07 81 00 – Applied Fireproofing
Section 07 84 00 – Firestopping
Section 07 84 13 – Penetration Firestopping
Section 07 84 16 – Annular Space Protection
Section 07 84 43 – Fire-Resistant Joint Sealants
Section 07 86 00 – Smoke Seals
Section 07 87 00 – Smoke Containment Barriers

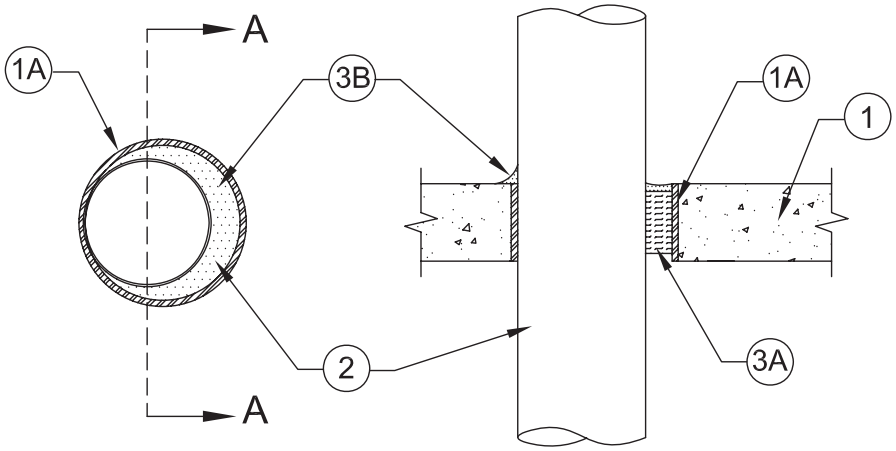
Section 07 92 13 – Elastomeric Joint Sealants
Section 07 92 19 – Acoustical Joint Sealants
Section 09 26 00 – Gypsum Wallboard Assemblies

Section 15 08 00 – Fire Rated Duct Insulation
Section 15 81 00 – Ducts
Section 15 82 00 – Duct Accessories
Section 26 00 00 – Electrical
Section 21 00 00 – Fire Suppression
Section 22 00 00 – Plumbing
Section 23 00 00 – Heating, Ventilation and Air-Conditioning (HVAC)
Section 26 01 00 – Operation and Maintenance of Electrical Systems
Section 27 20 00 – Data communications

CLICK HERE FOR MORE INFORMATION

System No. C-AJ-1427

March 05, 2007
F Rating – 3 Hr
T Rating – 0 Hr
W Rating – Class 1 (See Item 3)



SECTION A-A

1. **Floor or Wall Assembly** – Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600 - 2400 kg/m^3) concrete floors or min 3 in. (76 mm) thick reinforced lightweight or normal weight concrete walls. Floor assembly may also be constructed of any min 6 in.(152 mm) thick UL Classified hollow-core **Precast Concrete Units***. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening 12-3/4 in. (324 mm). Max diam of opening in floors constructed of hollow-core concrete is 7 in. (78 mm).

   See **Concrete Blocks** (CAZT) and **Precast Concrete Units** (CFTV) categories in Fire Resistance Directory for names of manufacturers.

1A. **Steel Sleeve** – (Optional) - Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly. Steel sleeve may be installed flush or may project max 2 in. (51 mm) beyond the floor or wall surfaces. As an alternate, nom 12 in. (305 mm) diam (or smaller) sleeve fabricated from nom 0.019 in. (0.48 mm) thick galv steel cast or grouted into floor or wall assembly flush with floor or wall surfaces.

2. **Through Penetrant** – One metallic pipe, conduit, tubing or flexible metal piping installed concentrically or eccentrically within opening. Annular space between penetrant and periphery of opening or sleeve shall be min of 0 in. (0 mm) (point contact) to max 2 in. (51 mm). Penetrant to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of penetrants may be used:

   A. **Steel Pipe** – Nom 10 in. (254 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. **Iron Pipe** – Nom 10 in. (254 mm) diam (or smaller) cast or ductile iron pipe.
   C. **Conduit** – Nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing.
   D. **Copper Tubing** – Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. **Copper Pipe** – Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.
   F. **Through Penetrating Product*** – **Flexible Metal Piping** – The following types of steel flexible metal gas piping may be used:

      1.) Nom 2 in. (51 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.
      OMEGA FLEX INC

      2.) Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.
      GASTITE, DIV OF TITEFLEX

      3.) Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.
      WARD MFG INC

3. **Firestop System** – The details of the firestop system shall be as follows:

   A. **Packing Material** – Min 2 in. (51 mm) thickness of min 4 pcf (64 kg/m^3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or top edge of sleeve or from both surfaces of wall or both ends of sleeve as required to accommodate the required thickness of fill material. In floors constructed of hollow-core concrete, packing material to be recessed from top and bottom surfaces of floor or sleeve as required to accommodate the required thickness of fill material.

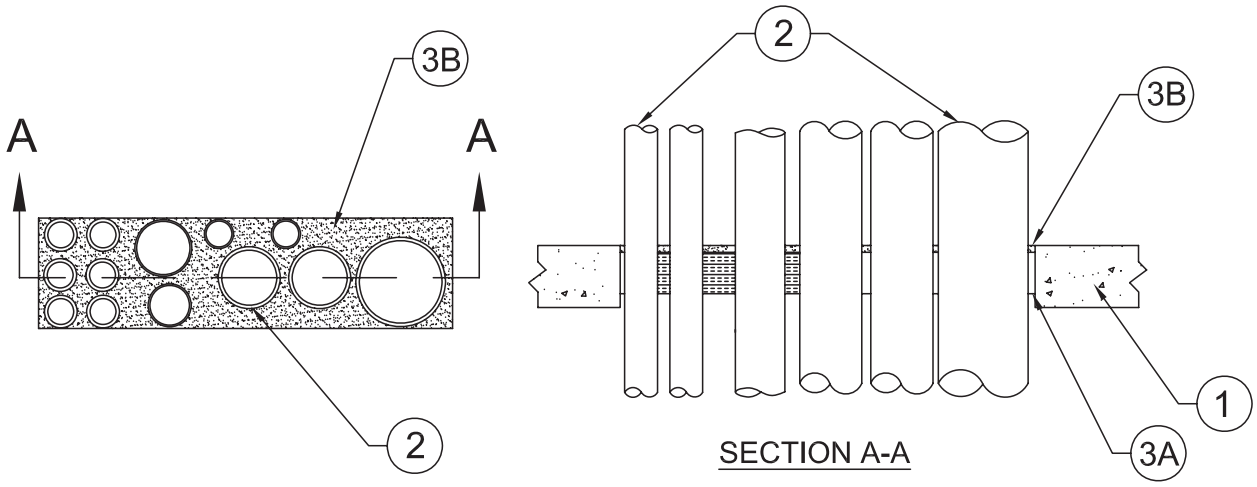
   B. **Fill, Void or Cavity Materials*** – **Caulk or Sealant** – Min 1/2 in. (13 mm) thickness of caulk applied within the annulus, flush with top surface of floor or top edge of sleeve or with both surfaces of wall or both ends of sleeves. In floors constructed of hollow-core concrete, min 1/2 in. (13 mm) thickness of caulk applied within the annulus, flush with top and bottom surfaces of floor or sleeve. Min 1/4 in. (6 mm) diam bead of caulk applied to the penetrant/concrete or penetrant/sleeve interface at the point contact location on the top surface of floor or both surfaces of wall or hollow-core.

      3M COMPANY – IC 15WB+, CP 25WB+ caulk or FB-3000 WT sealant
      (Note: W Rating applies only when FB-3000 WT is used.)

*Bearing the UL Classification Mark

System No. C-AJ-1429

March 05, 2007
F Rating – 2 Hr
T Rating – 0 Hr
W Rating – Class 1 (See Item 3)



1. **Floor or Wall Assembly** – Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete. Floor assembly may also be constructed of any min 6 in. (152 mm) thick UL Classified hollow-core **Precast Concrete Units***. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max area of opening 240 sq in. (1548 sq cm) with a max dimension of 30 in. (762 mm). Max area of opening in floors constructed of hollow-core concrete is 49 sq in. (316 sq cm) with a max dimension of 7 in. (178 mm).

   See **Concrete Blocks** (CAZT) and **Precast Concrete Units** (CFTV) categories in Fire Resistance Directory for names of manufacturers.

1A. **Steel Sleeve** – (Optional, Not Shown) – Nom 16 in. (406 mm) diam (or smaller) circular sleeve fabricated from nom 0.028 in. (0.71 mm) thick galv steel cast or grouted into floor or wall assembly flush with floor or wall surfaces.

2. **Through Penetrant** – One or more metallic pipes, conduits, tubes or flexible metal pipes installed concentrically or eccentrically within opening. Annular space between penetrants and periphery of opening shall be min of 0 in. (0 mm) (point contact) to max 2 in. (51 mm) Space between penetrants shall be min of 1/4 in. (6 mm) to max 2 in. (51 mm). Penetrants to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of penetrants may be used:

   A. **Steel Pipe** – Nom 6 in. (152 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. **Iron Pipe** – Nom 6 in. (152 mm) diam (or smaller) cast or ductile iron pipe.
   C. **Conduit** – Nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing.
   D. **Copper Tubing** – Nom 3 in. (76 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. **Copper Pipe** – Nom 3 in. (76 mm) diam (or smaller) Regular (or heavier) copper pipe.
   F. **Through Penetrating Product*** – **Flexible Metal Piping** – The following types of steel flexible metal gas piping may be used:

      1. Nom 2 in. (51 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

         OMEGA FLEX INC.

      2. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

         GASTITE, DIV OF TITEFLEX

      3. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

         WARD MFG INC.

3. **Firestop System** – The details of the firestop system shall be as follows:

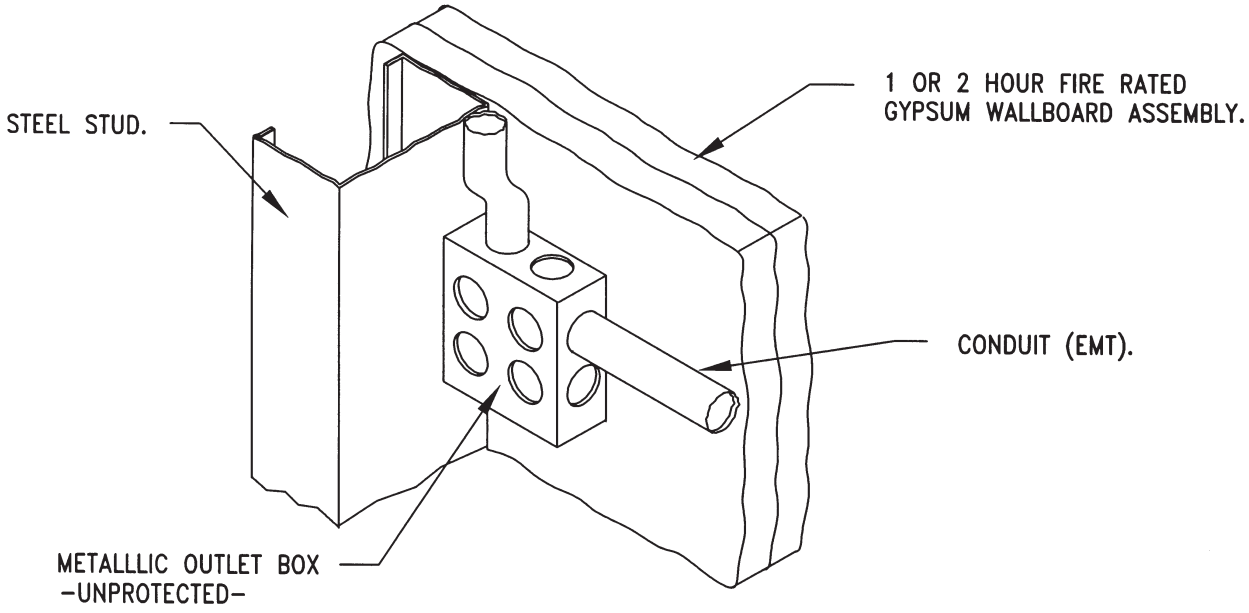
   A. **Packing Materia**l – Min 3 in. (76 mm) thickness of min 4 pcf (64 kg/m^3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material. In floors constructed of hollow-core concrete, packing material to be recessed from top and bottom surfaces of floor as required to accommodate the required thickness of fill material.

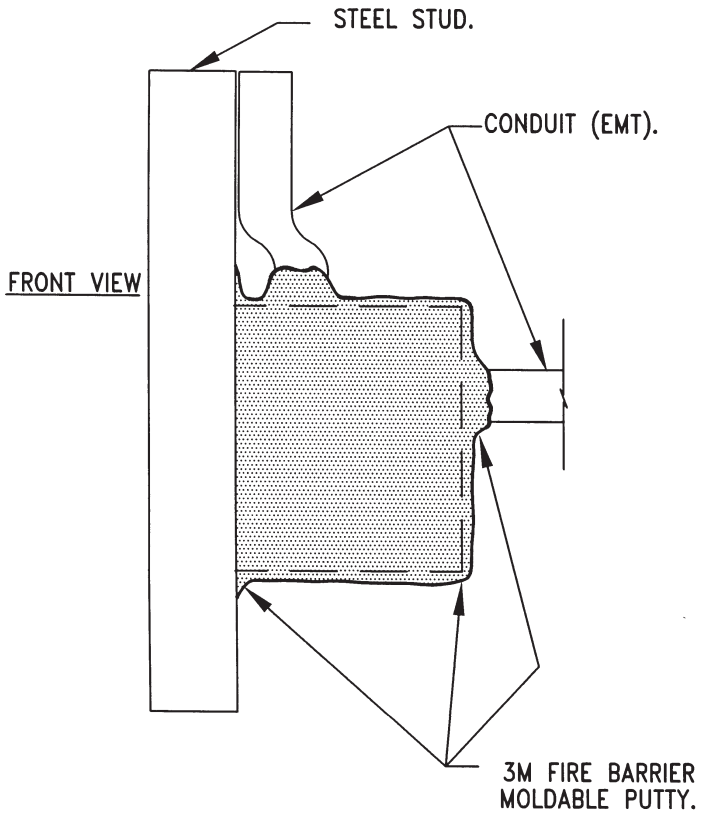
   B. **Fill, Void or Cavity Materials*** – **Caulk or Sealant** – Min 1/2 in. (13 mm) thickness of caulk applied within the annulus, flush with top surface of floor or with both surfaces of wall. In floors constructed of hollow-core concrete, min 1/2 in. (13 mm) thickness of caulk applied within the annulus, flush with top and bottom surfaces of floor. Min 1/4 in. (6 mm) diam bead of caulk applied to the penetrant/concrete interface at the point contact location on the top surface of floor or both surfaces of wall or hollow-core concrete.

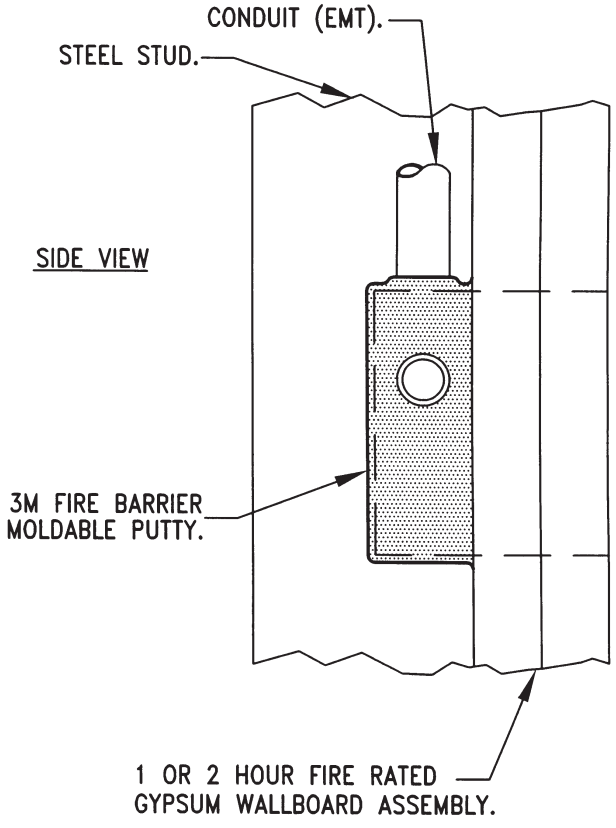
      3M COMPANY – IC 15WB+, CP 25WB+ caulk or FB-3000 WT sealant.
      (Note: W Rating applies only when FB-3000 WT is used.)

* Bearing the UL Classification Marking

Suggested Installation for 3M™ Fire Barrier Moldable Putty+ on Electrical Outlet Boxes







This material was extracted and drawn by 3M Fire Protection Products from the 2007 edition of the UL Fire Resistance Directory.

WALL OPENING PROTECTIVE MATERIALS
(CLIV)

This category covers proprietary compositions which are used to maintain the hourly ratings of fire resistive walls and partitions containing flush mounted devices such as outlet boxes, electrical cabinets and mechanical cabinets. The individual Classifications indicate the specific applications and the method of installation for which the materials have been evaluated.

The basic standard used to investigate products in this category is ANSI/UL 263, "Fire Tests of Building Construction and Materials".

LOOK FOR CLASSIFICATION MARKING ON PRODUCT

The Classification Marking of Underwriters Laboratories Inc. (shown below) on the product or container is the only method provided by Underwriters Laboratories Inc. to identify Wall Opening Protective Materials produced under its Classification and Follow-Up Service.

UNDERWRITERS LABORATORIES INC.®
CLASSIFIED
WALL OPENING PROTECTIVE MATERIAL
FIRE RESISTANCE CLASSIFICATION
SEE PRODUCT CATEGORY IN UL FIRE RESISTANCE DIRECTORY

3M COMPANY **R9700**
3M CENTER, ST PAUL MN 55144 USA

Type MPP+ moldable putty pads for use with max 4-11/16 by 4-11/16 by 2-1/8 in. deep flush device UL Listed Metallic Outlet Boxes installed with steel cover plates for use in 1 or 2 hr fire rated gypsum board wall assemblies framed with min 3-1/2 in. wide wood or steel studs and constructed as specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the Fire Resistance Directory.

Type MPP+ moldable putty pads for use with max 4-11/16 by 4-11/16 by 2 1/8 in. deep flush device UL Listed Metallic Outlet Boxes installed with steel or plastic cover plates for use in 1 hr or 2 hr fire rated gypsum board wall assemblies framed with min 5-1/2 in. wide wood or steel studs and constructed as specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the Fire Resistance Directory. Metallic outlet boxes to be provided with steel attachment brackets which offset box min 1/4 in. from stud. Putty pad to be affixed to the back and all four sides of the box. Boxes may be installed back-to-back within the stud cavity. When back-to-back boxes are interconnected, a ball of putty is to be installed to plug the open end of each electrical metallic tube or conduit within the outlet boxes.

Type MPP+ moldable putty pads for use with max 4 by 4 by 2-1/8 in. deep flush device UL Listed Metallic Outlet Boxes installed with plastic cover plates for use in 1 or 2 hr fire rated gypsum board wall assemblies framed with min 3-1/2 in. wide wood or steel studs and constructed as specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the Fire Resistance Directory.

Type MPP+ moldable putty pads for use with max 14 by 4 by 2-1/2 in. deep flush device UL Listed Metallic Outlet Boxes installed with steel cover plates for use in 1 or 2 hr fire rated gypsum board wall assemblies framed with min 3-1/2 in. wide steel studs and constructed as specified in the individual U400 or V400 Series Wall and Partition Designs in the fire Resistance Directory.

Type MPP+ moldable putty pads for use with max 14 by 4-1/2 by 2-1/2 in. deep UL Listed Nonmetallic Outlet Boxes manufactured by Carlon Electrical Products, made of PVC and bearing a 2 hr rating under the "Outlet Boxes and Fittings Classified for Fire Resistance" category in the Fire Resistance Directory. Boxes installed with steel cover plates, for use in 1 or 2 hr rated gypsum board wall assemblies framed with min 3-1/2 in. wide wood studs and constructed as specified in the individual U300 Series Wall and Partition Designs in the Fire Resistance Directory.

Type MPP+ moldable putty pads for use with max 4 by 3-1/4 by 3-3/4 in. deep UL Listed Nonmetallic Outlet Boxes manufactured by Thomas & Betts Corp., made of polycarbonate, Type 234 or made of phenolic, Type 1052 and bearing a 2 hr rating under the "Outlet Boxes and Fittings Classified for Fire Resistance" category in the Fire Resistance Directory. Boxes installed with steel cover plates. For use in 1 hr fire rated gypsum board wall assemblies framed with min 3-1/2 in. wide wood studs and constructed as specified in the individual U300 series Wall and Partition Designs in the Fire Resistance Directory.

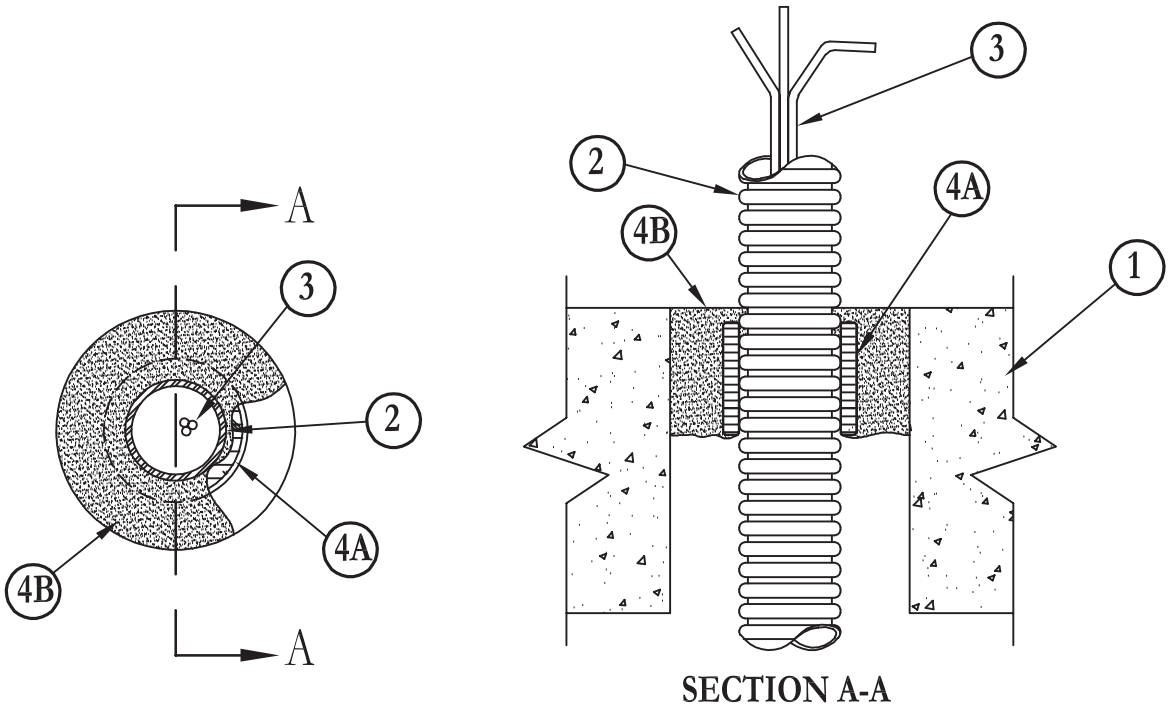
Type MPP+ moldable putty pads for use with max 4 by 3-3/4 by 3 in. deep UL Listed Nonmetallic Outlet Boxes manufactured by Carlon Electrical Products, made of PVC and bearing a 2 hr rating under the "Outlet Boxes and Fittings Classified for Fire Resistance" category in the Fire Resistance Directory. Boxes installed with plastic cover plates, for use in 1 hr rated gypsum board wall assemblies framed with min 3-1/2 in. wide wood studs and constructed as specified in the individual U300 Series Wall and Partition Designs in the Fire Resistance Directory.

Type MPP+ moldable putty pads for use with max 4 by 3-1/4 by 3-3/4 in. deep UL Listed Nonmetallic Outlet Boxes manufactured by Thomas & Betts Corp., made of phenolic, Type 2002-738-C and bearing a 2 hr rating under the "Outlet Boxes and Fittings Classified for Fire Resistance" category in the Fire Resistance Directory. Boxes installed with steel cover plates. For use in 2 hr fire rated gypsum board wall assemblies framed with min 3-1/2 in. wide steel studs and constructed as specified in the individual U400 or V400 Series Wall and Partition Designs in the Fire Resistance Directory.

Moldable putty pads are to be installed to completely cover the exterior surfaces of the outlet box (except for the side of the outlet box against the stud unless otherwise noted) including nailing tabs and to completely seal against the stud within the stud cavity. Multiple moldable putty pads may be installed on an outlet box to attain the required minimum thickness of putty material. Additional putty material used to seal around each conduit and/or cable fitting on the exterior of each box. A min 1/10 in. thickness of putty material is required on the exterior surfaces of flush device boxes in 1 and 2 hr fire rated Wall and Partition Designs. When the moldable putty pad outlet box protective material is used on boxes on both sides of wall as directed, the horizontal separation between outlet boxes on opposite sides of the wall may be less than 24 in. provided that the outlet boxes are not installed back to back, except as noted.

System No. C-AJ-2028

December 14, 1995
(Formerly System No. 448)
F Ratings – 2 Hr
T Ratings – 2 Hr



SECTION A-A

1. **Floor or Wall Assembly** – Min 4-1/2 in. thick lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening not to exceed 4 in.

   See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. **Electrical Nonmetallic Tubing++** – Nom 1-1/4 in. diam (or smaller) corrugated wall ENT constructed of polyethylene (PE) or nom 2 in. diam (or smaller) corrugated wall ENT constructed of polyvinyl chloride (PVC). ENT to be installed as a complete system with all terminations in junction boxes, outlet boxes or other approved enclosures as specified in the National Electrical Code. A max of one ENT is allowed in the opening. The ends of the ENT shall be sealed with a min 1/4 in. thickness of moldable putty fill material (Item 4B) unless it is determined that the enclosure in which it terminates is relatively air tight and is normally closed. ENT to be rigidly supported on each side of the floor or wall assembly.

   See **Electrical Nonmetallic Tubing** (FKHU) category in Electrical Construction Materials Directory for names of manufacturers.

3. **Fiber Optic Cables** – Multiple fiber optical communication cables jacketed with PE or PVC and having a max outside diam of 3/4 in. Max cross-sectional area of fiber optic cables in ENT shall not exceed 40 percent.

4. **Firestop System** – The details of the firestop system shall be as follows:

   A. **Fill, Void or Cavity Materials*** – **Wrap Strip** – Nom 1/4 in. thick intumescent elastomeric material faced on one side with aluminum foil, supplied in nom 2 in. wide by 24 in. long strips. Nom 2 in. wide strips tightly-wrapped around ENT (foil side exposed), secured in place with two min 0.062 in. diam (16 gauge) steel tie wires and slid into through opening such that the top edge is recessed 1/4 in. from top surface of the floor. When nom 1-1/4 in. diam (or smaller) ENT is used, a single layer of wrap strip is required. When nom 1-1/2 or 2 in. diam ENT is used, two layers of wrap strip are required. In wall assemblies, wrap strip layer(s) on ENT to be installed in same manner used for floor assemblies but shall be installed symmetrically on both sides of the wall assembly.

      3M COMPANY – FS-195+

   B. **Fill, Void or Cavity Materials*** – **Putty** – Moldable putty material applied to fill annular space between wrap strip layer(s) and perimeter of through opening to a min depth of 2 in. with an additional 1/4 in. thickness applied over edge(s) of wrap strip layer(s) flush with top surface of floor and both surfaces of wall.

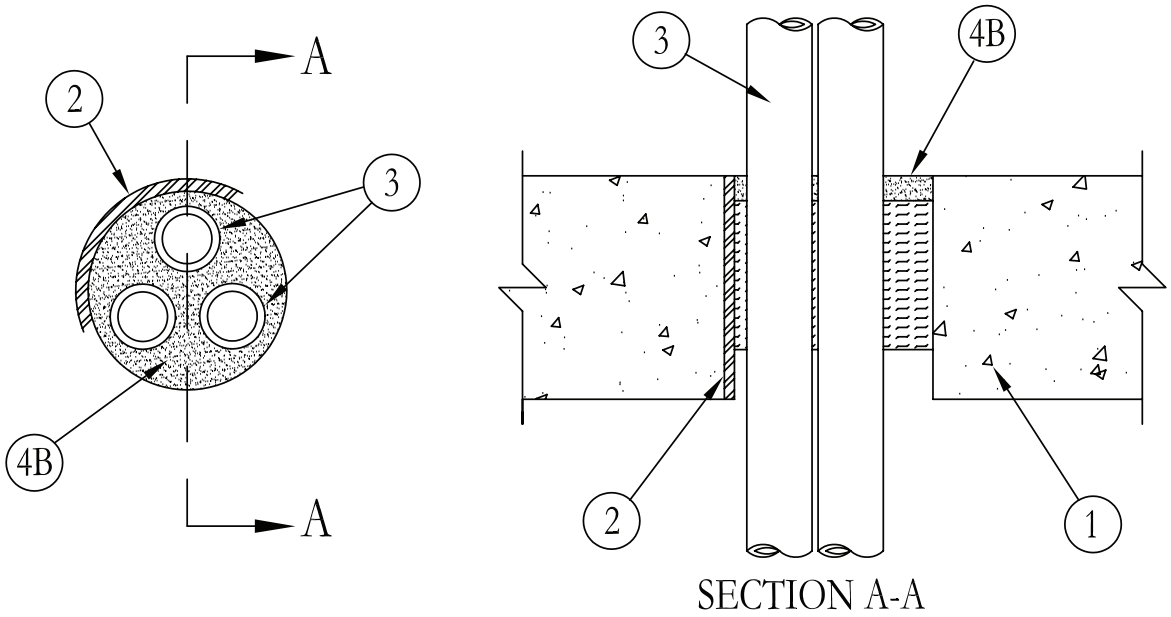
      3M COMPANY – MP+ Stix

++Bearing the UL Listing Mark
*Bearing the UL Classification Marking

Note: This system was tested with a pressure differential of 50 Pa between the exposed and unexposed surfaces with the higher pressure on the exposed side.

System No. C-AJ-2378

May 19, 2005
F Rating – 2 Hr
T Rating – 0 Hr
W Rating – Class I (See Item 4)



SECTION A-A

1. **Floor or Wall Assembly** – Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete. Floor assembly may also be constructed of any min 6 in. (152 mm) thick UL Classified hollow-core **Precast Concrete Units***. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening 5 in. (127 mm).

   See **Concrete Blocks** (CAZT) and **Precast Concrete Units** (CFTV) categories in Fire Resistance Directory for names of manufacturers.

2. **Steel Sleeve** (Optional) – Nom 5 in. (127 mm) diam (or smaller) Schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly. Steel sleeve may be installed flush or may project max 2 in. (51 mm) beyond the floor or wall surfaces.

3. **Through Penetrants** – One or more nonmetallic pipes, conduits or tubes installed concentrically or eccentrically within opening. Annular space between penetrants and periphery of opening or sleeve shall be min of 1/4 in. to max 2 in. (6 mm to max 51 mm).The space between penetrants shall be min of 1/4 in. to max 2 in. (6 mm to max 51 mm). Penetrants to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of penetrants may be used:

   A. **Polyvinyl Chloride (PVC) Pipe** – Nom 1-1/2 in. (38 mm) diam (or smaller) Schedule 40 solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

   B. **Rigid Nonmetallic Conduit+** – Nom 1-1/2 in. (38 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA No. 70).

   C. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** – Nom 1-1/2 in. (38 mm) diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping systems.

   D. **Crosslinked Polyethylene (PEX) Tubing** – Nom 1 in. (25 mm) diam (or smaller) SDR 9 PEX tubing for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

4. **Firestop System** – The details of the firestop system shall be as follows:

   A. **Packing Material** – Min 3 in. (76 mm) thickness of min 4 pcf (64 kg/m^3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or top edge of sleeve or from both surfaces of wall or both ends of sleeve as required to accommodate the required thickness of fill material. In floors constructed of hollow-core concrete, packing material to be recessed from top and bottom surfaces of floor or sleeve as required to accommodate the required thickness of fill material.

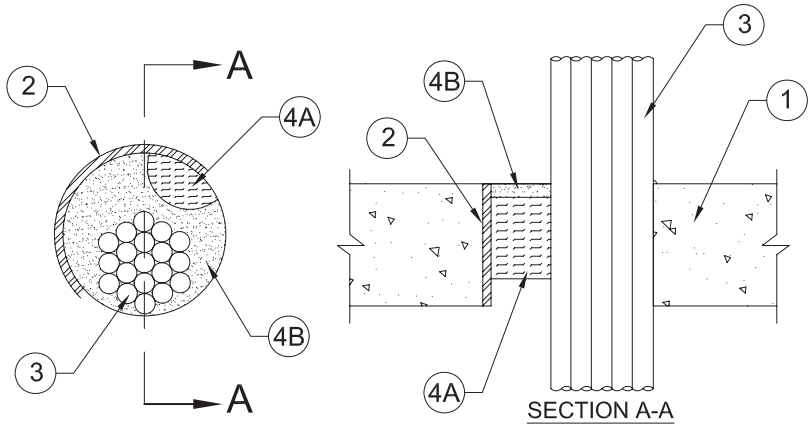
   B. **Fill, Void or Cavity Materials*** – **Caulk or Sealant** – Min 1/2 in. (13 mm) thickness of caulk applied within the annulus, flush with top surface of floor or top edge of sleeve or with both surfaces of wall or both ends of sleeves. In floors constructed of hollow-core concrete, min 1/2 in. (13 mm) thickness of caulk applied within the annulus, flush with top and bottom surfaces of floor or sleeve. Min 1/4 in. (6 mm) diam bead of caulk applied to the penetrant/concrete or penetrant/sleeve interface at the point contact location on the top surface of floor or both surfaces of wall or hollow-core concrete.

      3M COMPANY – IC 15WB+, CP 25WB+ caulk or FB-3000 WT sealant.
      (Note: W Rating applies only when FB-3000 WT sealant is used. CP 25WB+ not suitable for use with CPVC pipes.)

*Bearing the UL Classification Marking

System No. C-AJ-3200

March 15, 2007
F Rating – 2 Hr
T Rating – 1/4 Hr



1. **Floor or Wall Assembly** – Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600 - 2400 kg/m^3) concrete. Floor assembly may also be constructed of any min 6 in. thick UL Classified hollow-core **Precast Concrete Units***. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening 6 in. (152 mm).

   See **Concrete Blocks** (CAZT) and **Precast Concrete Units** (CFTV) categories in Fire Resistance Directory for names of manufacturers.

2. **Steel Sleeve** – (Optional) - Nom 6 in. (152 mm) diam (or smaller) Schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly. Steel sleeve may be installed flush or may project max 2 in. (51 mm) beyond the floor or wall surfaces. As an alternate, nom 6 in. (152 mm) diam (or smaller) sleeve fabricated from nom 0.019 in. (0.48 mm) thick galv steel cast or grouted into floor or wall assembly flush with floor or wall surfaces.

3. **Cables** – Aggregate cross-sectional area of cables in opening to be max 49 percent of the cross-sectional area inside the sleeve or opening. Annular space between cables and periphery of opening or sleeve shall be min of 0 in. (0 mm) (point contact) to max 2 in. (51 mm). Cables to be rigidly supported on both sides of floor or wall assembly. Any combination of the following types and sizes of cable may be used;

   A. Max 200 pair No. 22 AWG (or smaller) copper conductor with polyvinyl chloride (PVC) insulation and jacketing material.
   B. Max 1/C No. 750 kcmil (or smaller) copper conductor cable with cross-linked polyethylene (XLPE) jacket.
   C. Max 7/C No. 12 AWG (or smaller) copper conductor power and control cables with XLPE or PVC insulation with XLPE or PVC jacket.
   D. Max 3/C No. 3/0 AWG (or smaller) copper or aluminum conductor SER cables with PVC insulation and jacket.
   E. Max 3/C No. 2/0 AWG (or smaller) copper conductor PVC jacketed aluminum clad or steel clad TECK 90 cable.
   F. Max 110/125 fiber optic (F.O.) cable with PVC insulation and jacket.
   G. Max 3/C with ground No. 8 AWG (or smaller) copper conductor NM cable with PVC insulation and jacket.
   H. RG/U coaxial cable with fluorinated ethylene (FE) or PVC insulation and jacket.
   I. Max 4 pair No. 24 AWG (or smaller) copper conductor data cable with Hylar jacket and insulation.
   J. Max three conductor No. 12 AWG (or smaller) MC (BX) copper cable with polyvinyl chloride insulation and jacket materials.
   K. **Through Penetrating Product*** – Any cables, **Armored Cable**+ or **Metal Clad Cable**+ currently Classified under the **Through Penetrating Product** category.

      See **Through Penetrating Product** (XHLY) category in the Fire Resistance Directory for names of manufacturers.

4. **Firestop System** – The details of the firestop system shall be as follows:

   A. **Packing Material** – Min 3 in. (76 mm) thickness of min 4 pcf (64 kg/m^3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or top edge of sleeve or from both surfaces of wall or both ends of sleeve as required to accommodate the required thickness of fill material. In floors constructed of hollow-core concrete, packing material to be recessed from top and bottom surfaces of floor or sleeve as required to accommodate the required thickness of fill material.

   A1. **Forming Material*** – As an alternate to the packing material in Item 4A, nom 4 in. (102 mm) wide strips of min 1/2 in (13 mm) thick compressible mat to be stacked to a thickness greater than the width of the annular space and compression-fitted, edge-first, to fill the annular space to a min 4 in. (102 mm) depth. Top of forming material to be recessed from top surface of floor or top edge of sleeve or from both surfaces of wall as necessary to accommodate the required thickness of caulk fill material. In floors constructed of hollow-core concrete, packing material to be recessed from top and bottom surfaces of floor or sleeve as required to accommodate the required thickness of fill material.

      3M COMPANY – Fire Barrier Packing Material

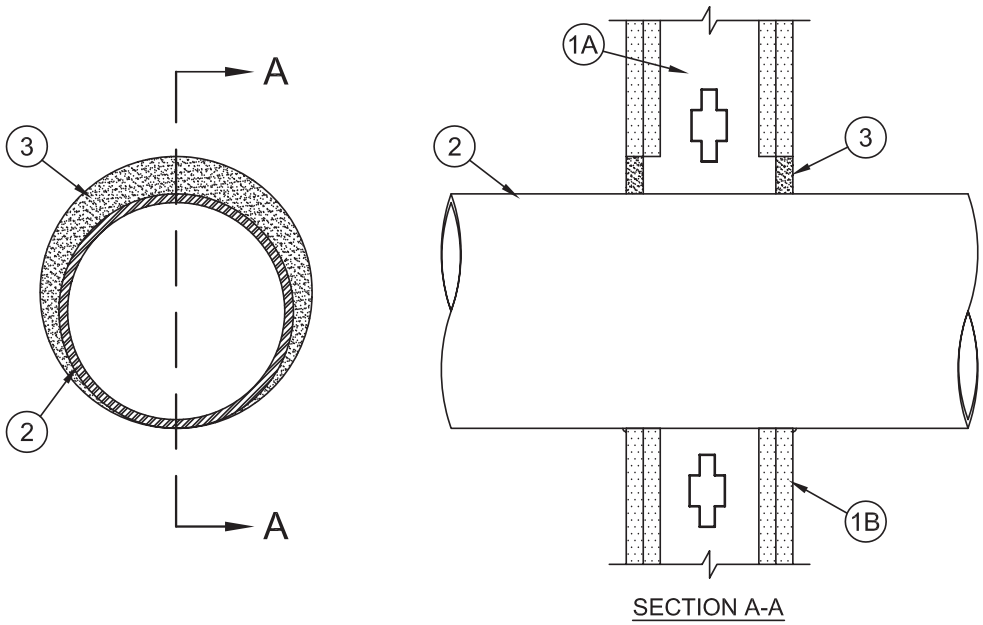
   B. **Fill, Void or Cavity Materials*** – **Caulk or Sealant** – Min 1/2 in. (13 mm) thickness of caulk applied within the annulus, flush with top surface of floor or top edge of sleeve or with both surfaces of wall or both ends of sleeves. In floors constructed of hollow-core concrete, min 1/2 in. (13 mm) thickness of caulk applied within the annulus, flush with top and bottom surfaces of floor or sleeves. Min 1/4 in. (6 mm) diam bead of caulk applied to the penetrant/concrete or penetrant/sleeve interface at the point contact location on the top surface of floor or both surfaces of wall or hollow-core concrete.

      3M COMPANY – IC 15WB+, CP 25WB+ caulk or FB-3000 WT sealant.

* Bearing the UL Classification Marking
\+ Bearing the UL Listing Mark

System No. W-L-1296

February 14, 2008
F Ratings – 1 and 2 Hr (See Item 1)
T Ratings – 0 and 1/4 Hr (See Item 1)



SECTION A-A

1. **Wall Assembly** – The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

   A. **Studs** – Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide spaced max 24 in. (610 mm) OC.

   B. **Gypsum Board*** – The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, U400 or V400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 10-5/8 in. (270 mm).

   C. **Steel Sleeve** – (Optional, Not Shown) - Cylindrical sleeve fabricated from min 0.019 in. thick (0.48 mm) galv sheet steel and having a min 2 in. (51 mm) lap along the longitudinal seam. Length of steel sleeve to be equal to thickness of wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the openings and releasing the coil to let it uncoil against the circular cutouts in the gypsum wallboard layers.

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed. The hourly T Rating is 0 and 1/4 Hr for 1 and 2 Hr rated assemblies, respectively.

2. **Through Penetrants** – One metallic pipe, conduit, tubing or flexible metal pipe installed concentrically or eccentrically within opening. Annular space between penetrant and periphery of opening to be min 0 in. (0 mm point contact) to max 2 in. (51 mm). Penetrant to be rigidly supported on both sides of wall. The following types and sizes of penetrants may be used:

   A. **Steel Pipe** – Nom 8 in. (203 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.

   B. **Iron Pipe** – Nom 8 in. (203 mm) diam (or smaller) cast or ductile iron pipe.

   C. **Conduit** – Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing (EMT) or nom 6 in. (152 mm) rigid steel conduit.

   D. **Copper Tubing** – Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.

   E. **Copper Pipe** – Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.

   F. **Through Penetrating Product*** – **Flexible Metal Piping** – The following types of steel flexible metal gas piping may be used:

      1. Nom 2 in. (51 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

         OMEGA FLEX INC

      2. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

         GASTITE, DIV OF TITEFLEX

      3. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

         WARD MFG INC

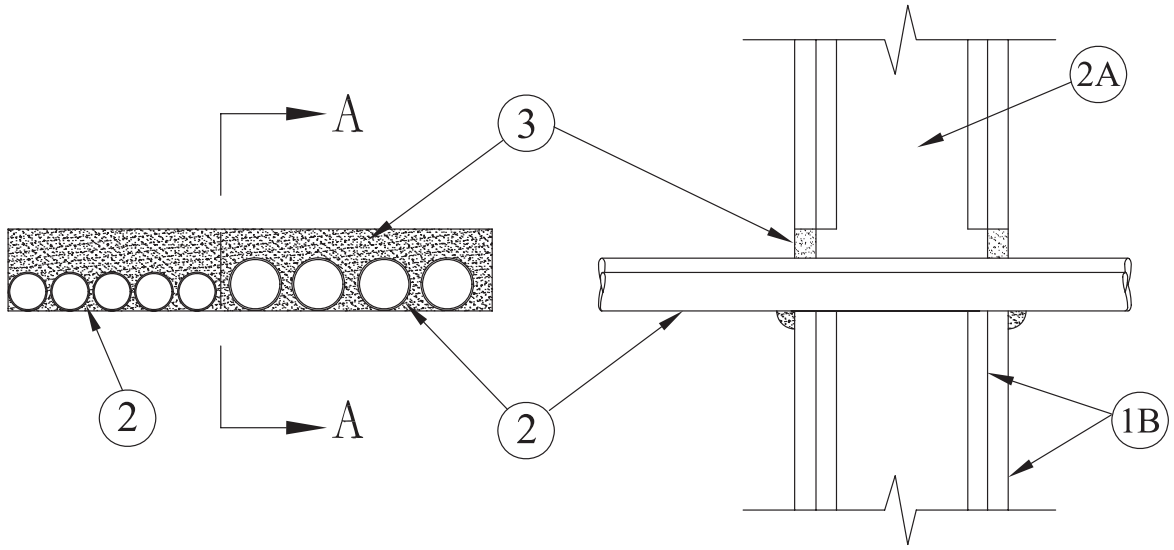
3. **Fill, Void or Cavity Material*** – **Caulk or Sealant** – Min 5/8 in. (16 mm) thickness of caulk applied within annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of caulk applied to gypsum board/penetrant interface at point contact location on both sides of wall.

   3M COMPANY – IC 15WB+, CP 25WB+ caulk or FB-3000 WT sealant

*Bearing the UL Classification Mark

System No. W-L-1228

May 19, 2005
F Rating – 1 and 2 Hr (See Item 1)
T Rating – 0, 1/2 and 1 Hr (See Item 3)
L Rating At Ambient – Less Than 1 CFM/sq ft
L Rating At 400 F – 2 CFM/sq ft



SECTION A-A

1. **Wall Assembly** – The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

   A. **Studs** – Wall framing shall consist of min 3-5/8 in. (92 mm) wide steel channel studs spaced max 24 in. (610 mm) OC.

   B. **Gypsum Board*** – Thickness, type, number of layers and fasteners shall be as specified in the individual U400 series Wall and Partition Design in the UL Fire Resistance Directory. Max area of opening is 67-1/2 sq. in. (435 sq cm) with max dimension of 22-1/2 in. (572 mm).

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Through Penetrant** – One or more nom 2 in. (51 mm) diam (or smaller) rigid steel conduit or electrical metallic tubing (EMT) installed either concentrically or eccentrically within the firestop system. The annular space between conduits or tubing and periphery of opening shall be min 0 in. (point contact) to max 1-1/4 in. (0 mm to max 32 mm). The space between conduits or tubing shall be min 1/4 in. to max 1 in. (6 mm to max 25 mm). Conduit or tubing to be rigidly supported on both sides of wall assembly.

3. **Fill, Void or Cavity Material*** – **Caulk or Sealant** – Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. Min 1/2 in. (13 mm) diam bead of caulk applied to the penetrant/gypsum board interface at the point contact location on both sides of wall.

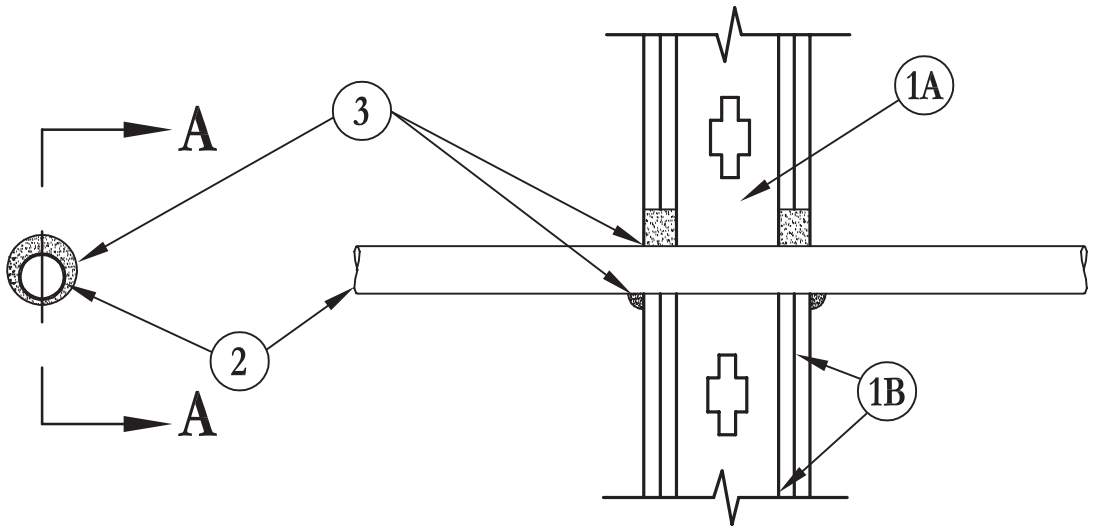
   The hourly T Rating of the firestop system is 0 Hr when used in 1 Hr rated assemblies. The T Rating for 2 Hr rated assemblies is 1/2 and 1 Hr for FireDam 150+ and CP 25WB+, respectively.

   3M COMPANY – IC 15WB+, CP 25WB+, FireDam 150+ caulk or FB-3000 WT sealant.

*Bearing the UL Classification Mark

System No. W-L-2088

May 23, 2005
F Ratings – 1 and 2 Hr (See Item 1)
T Ratings – 0, 1 and 2 Hr (See Item 2)



SECTION A-A

1. **Wall Assembly** – The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

   A. **Studs** – Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 in. by 4 in. (51 mm by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.

   B. **Gypsum Board*** – Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Design. Diam of opening shall be 7/8 in. (22 mm) larger than the outside diam of nonmetallic pipe or conduit (Item 2).

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Through Penetrants** – One nonmetallic pipe or conduit to be installed either concentrically or eccentrically within the firestop system. The annular space for max 1-1/4 in. (32 mm) diam pipe or conduit shall be min 0 in. (point contact) to max 7/8 in. (0 mm to max 22 mm). The annular space for pipe or conduit larger than nom 1-1/4 in. (32 mm). diam shall be min 1/2 in. to max 1 in. (13 mm to max 25 mm). Pipe or conduit to be rigidly supported on both sides of wall assembly. The following types and sizes of nonmetallic pipes or conduits may be used:

   A. **Polyvinyl Chloride (PVC) Pipe** – Nom 2 in. (51 mm) diam (or smaller) Schedule 40 solid core or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.

   B. **Polyvinyl Chloride (PVC) Pipe** – Nom 3 in. (76 mm) diam (or smaller) Schedule 40 solid core PVC pipe for use in closed (process or supply) piping system.

   C. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** – Nom 3 in. (76 mm) diam (or smaller) SDR 11 CPVC pipe for use in closed (process or supply) piping systems.

   D. **Rigid Nonmetallic Conduit**++ – Nom 3 in. (76 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA No 70).

   E. **Electrical Nonmetallic Tubing (ENT)**++ – Nom 1 in. (25 mm) diam (or smaller) ENT formed of PVC, installed in accordance with Article 331 of the National Electrical Code (NFPA No. 70).

   See **Rigid Nonmetallic Conduit** (DZKT) and **Electrical Nonmetallic Tubing** (FKHU) categories in the UL Electrical Construction Equipment Directory for names of manufacturers.

   F. **Acrylonitrile Butadiene Styrene (ABS) Pipe** – Nom. 2 in. (51 mm) diam (or smaller) Schedule 40 solid core or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

   The hourly T Rating is dependent on the hourly rating of the wall assembly, the pipe or conduit size and whether the pipe is intended for use as a closed or vented system, as shown in the following table.

Nom Pipe Diam In. (mm)	Wall Assembly Rating Hr	Closed (c) or Vented (v)	T Rating Hr
1/2 to 3 (13 to 76)	1	c	1
1/2 to 1-1/4 (13 to 32)	1	v	1
1/2 to 1-1/4 (13 to 32)	2	c	2
1/2 to 1-1/4 (13 to 32)	2	v	1
2 (51)	1	v	0
2 (51)	2	v	0

System No. W-L-2088 *continued*

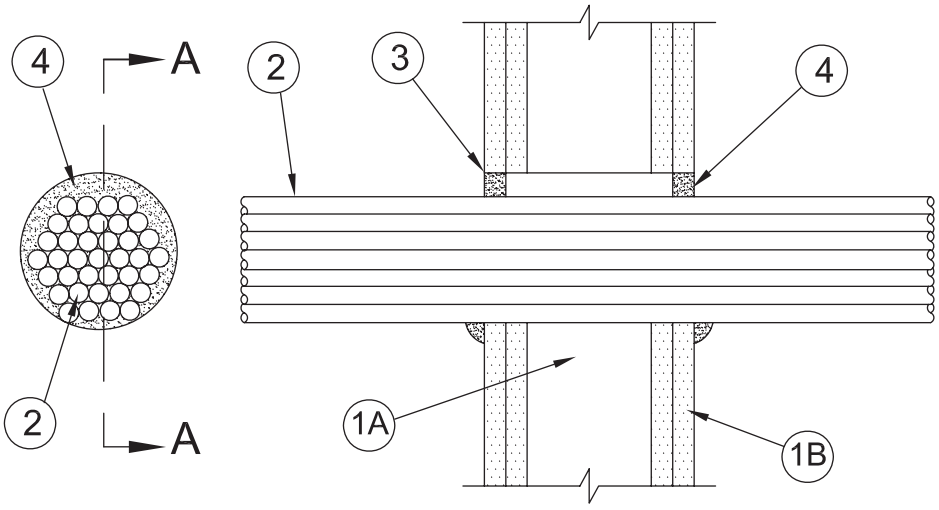
3. **Fill, Void or Cavity Materials*** – **Caulk, Sealant or Putty** – Min thickness of 5/8 in. and 1-1/4 in. (16 mm and 32 mm) of caulk or putty for 1 and 2 hr rated wall assemblies, respectively, applied within annulus between pipe or conduit and periphery of the opening, flush with both surfaces of wall assembly. At the point contact location between pipe or conduit and gypsum board, a min 1/2 in. (13 mm) diam bead of caulk or putty shall be applied at the pipe or conduit/wallboard interface on both surfaces of wall assembly.

   3M COMPANY – CP 25WB+, IC 15WB+ caulk, FB-3000 WT sealant or MP+ Stix putty
   (Note: CP 25WB+ not suitable for use with CPVC pipes.)

+++Bearing the UL Listing Mark.
*Bearing the UL Classification Marking

System No. W-L-3195

October 01, 2008
F Ratings – 1 and 2 Hr (See Item 1)
T Ratings – 0 and 1/2 Hr (See Item 1)



SECTION A-A

1. **Wall Assembly** – The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

   A. **Studs** – Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide spaced max 24 in. (610 mm) OC.

   B. **Gypsum Board*** – The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Design in the UL Fire Resistance Directory. Max diam of opening is 5 in. (127 mm).

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed. The hourly T Rating is 0 and 1/2 Hr for 1 and 2 Hr fire rated assemblies, respectively.

2. **Steel Sleeve** – (Optional) - Cylindrical sleeve fabricated from min 0.018 in. (0.46 mm) thick (No. 28 gauge) galv sheet steel and having a min 1 in. (25 mm) lap along the longitudinal seam. Length of sleeve to be equal to or max 2 in. (51 mm) greater than the thickness of wall. Ends of sleeve to be flush with or extend a max 1 in. (25 mm) beyond each surface of wall.

3. **Cable** – Max 4 in. (102 mm) diam cable bundle installed eccentrically or concentrically within opening. Annular space between cable bundle and periphery of opening or sleeve to be min 0 in. (0 mm, point contact) to max 1 in. (25 mm). Cable bundle to be rigidly supported on both sides of wall. The following types and sizes of cables may be used:

   A. Max 200 pair No. 22 AWG (or smaller) copper conductor with polyvinyl chloride (PVC) insulation and jacketing material.

   B. Max 1/C No. 350 kcmil (or smaller) copper conductor cable with cross-linked polyethylene (XLPE) or PVC jacket.

   C. Max 7/C No. 12 AWG (or smaller) copper conductor power and control cables with XLPE or PVC insulation with XLPE or PVC jacket.

   D. Max 3/C No. 4/0 AWG (or smaller) copper or aluminum conductor SER cables with XLPE or PVC insulation and jacket.

   E. Max 4/C No. 2/0 AWG (or smaller) copper conductor, aluminum clad or steel clad TECK 90 cable with or without PVC jacketed.

   F. Max 110/125 fiber optic (F.O.) cable with PVC insulation and jacket.

   G. Max 3/C with ground No. 8 AWG (or smaller) copper conductor NM cable with PVC insulation and jacket.

   H. Max RG/U coaxial cable with fluorinated ethylene insulation and jacket.

   I. Max 4 pair No. 24 AWG (or smaller) copper conductor data cable with Hylar jacket and insulation.

   J. **Through Penetrating Product*** – Any cables, **Armored Cable**+ or **Metal Clad Cable**+ currently Classified under the **Through Penetrating Product** category.

   See **Through Penetrating Product** (XHLY) category in the Fire Resistance Directory for names of manufacturers.

4. **Fill, Void or Cavity Material*** – **Caulk or Sealant** – Min 5/8 in. (16 mm) thickness of caulk applied within annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of caulk applied to gypsum board/cable bundle interface at point contact location on both sides of wall.

   3M COMPANY – IC 15WB+, CP 25WB+ caulk or FB-3000 WT sealant

*Bearing the UL Classification Mark

3M™ Fire Barrier Water Tight Sealant 3000WT

Product Data Sheet

FIRE BARRIER
UP TO 4 HOUR Fire Protection

SMOKE SEAL
L RATED Meets Air Leakage Requirements

WATER BARRIER
MEETS CLASS 1W Rating UL Water Leakage

SOUND BARRIER
STC 53 In SRC 53-rated Wall Assembly

CLASSIFIED UL

FILL, VOID OR CAVITY MATERIAL
FOR USE IN JOINT SYSTEMS AND
THROUGH-PENETRATION FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
8R57

LISTED
Intertek
FIRESTOP SYSTEMS
SEE INTERTEK DIRECTORY

ULC LISTED
FILL, VOID OR CAVITY MATERIALS
8R57

1. Product Description

3M™ Fire Barrier Water Tight Sealant 3000 WT is a high-performance, ready-to-use, single component, neutral cure, non-slumping intumescent silicone sealant. Product cures upon exposure to atmospheric humidity to form a flexible firestop seal that also acts as a barrier to water leakage and airborne sound transmission. 3M™ Fire Barrier Water Tight Sealant 3000 WT helps control the spread of fire, smoke and noxious gasses before, during and after exposure to a fire when installed in accordance with a listed through penetration or fire-resistive joint assembly. 3M™ Fire Barrier Water Tight Sealant 3000 WT meets UL Water Leakage Test, W Rating – Class 1 requirements for systems tested and listed in accordance with ANSI/UL 1479 and is tested in accordance with ASTM G 21 standard practice for determining resistance of synthetic polymeric materials to fungi.

3M™ Fire Barrier Water Tight Sealant 3000 WT firestops penetrations passing through fire-rated floor, floor/ceiling or wall assemblies, static construction joints, blank openings and other fire-rated interior building construction. The intumescent property of 3M™ Fire Barrier Water Tight Sealant 3000 WT allows it to expand and help maintain a firestop penetration seal for up to 4 hours as penetrants are exposed to fire.

High-performance silicone sealant provides a barrier against fire, water and sound

Available in: Light Gray with Black Flecks

Product Features

- Firestop tested up to 4 hours in accordance with ASTM E 814 (UL 1479) & CAN/ULC S115
- Fire Resistance tested for static construction joint systems in accordance with ASTM E 1966 (UL 2079)
- Meets UL Water Leakage Test, W Rating — Class 1 requirements
- Meets optional L-Rating Requirements (smoke seal)
- Minimizes noise transfer — STC-rating of 53 when tested in STC 54-rated wall assembly
- Sag-resistant, re-enterable and repairable
- Halogen-free
- Excellent adhesion, weatherability and caulk rate
- Meets UL 1479 aging requirements

Meets the intent of LEED® VOC environmental quality requirements—helps reduce the quantity of indoor air contaminants that may be odorous, irritating and harmful to the comfort and well-being of the installers and occupants. <250g/L VOC contents (less H_2O and exempt solvents).

2. Applications

3M™ Fire Barrier Water Tight Sealant 3000 WT is a high-performance intumescent firestop ideal for sealing single or multiple through penetrations in fire-rated construction. 3M™ Fire Barrier Water Tight Sealant 3000 WT is typically used in mechanical, electrical and plumbing applications to firestop openings created by the following penetrations in fire-rated floors, floor/ceilings or walls: metallic pipe, non-metallic pipe (e.g. plastic), conduit, power and communication cable, cable trays, busways, combos, insulated pipe and HVAC duct penetrations. This product is also used to firestop blank openings and bottom-of-wall static construction joints.

3. Specifications

3M™ Fire Barrier Water Tight Sealant 3000 WT shall be a high-performance, ready-to-use, single component, neutral cure, non-slumping, intumescent silicone sealant capable of expanding a minimum of six times its cured volume when exposed to temperatures above 662°F (350°C). The sealant shall be listed by independent test agencies such as UL, Intertek or FM. 3M™ Fire Barrier Water Tight Sealant 3000 WT shall be tested to and pass the criteria of ASTM E 814 (UL 1479) Standard Test Method for Fire Tests of Penetration Firestop Systems, ASTM E 1966 (UL 2079) Standard Test Method for Fire Resistive Joint Systems and CAN/ULC S115 Standard Method of Fire Tests of Firestop Systems. 3M™ Fire Barrier Water Tight Sealant 3000 WT meets the requirements of the IBC, IRC, IFC, IPC, IMC, NFPA 5000, NEC (NFPA 70) and NFPA 101.

Typically Specified MasterFormat (2004)
Section 07 84 00 – Firestopping

Related Sections
Section 07 27 00 – Air Barriers
Section 07 84 16 – Annular Space Protection
Section 07 84 43 – Fire-Resistant Joint Sealants
Section 07 86 00 – Smoke Seals
Section 07 87 00 – Smoke Containment Barriers
Section 07 92 19 – Acoustical Joint Sealants
Section 21 00 00 – Fire Suppression
Section 22 00 00 – Plumbing
Section 23 00 00 – Heating, Ventilating, and Air Conditioning (HVAC)
Section 26 00 00 – Electrical

4. Performance & Typical Physical Properties

Color:	Light Gray with Black Flecks
Application Temperature Range: (ASTM C 1299)	-20°F to 122°F (-29°C to 50°C)
Service Temperature Range:	14°F to 230°F (-10°C to 110°C)
STC (ASTM E 90 and ASTM E 413)**:**	53 when tested in STC 54 rated wall assembly
Fungi Testing:	Meets ASTM G 21 requirements
Surface Burning (ASTM E 84 Mod)**:**	Flame Spread 0, Smoke Development 0

Working Time:	20–40 minutes
Expansion Volume:	> 6 times at 662°F (350°C)
Specific Gravity:	1.25
VOC Less H_2O and Exempt Solvents:	< 31g/L

Cure: Full cure depends upon ambient conditions and volume of sealant. Cure rate is approximately 1/8 inch (3mm) per day under typical conditions of 75°F (23°C) and 50% R.H.

Meets the intent of LEED® VOC environmental quality requirements.

Unit Volume: 10.1 fl. oz tube (298.7cc, 18.2 in.^{3}), 20 fl. oz. sausage (591.5cc, 36.1 in.^{3}), 4.5 gal. pail (.017m^3, 1039.5 in.^{3})

5. Packaging, Storage, Shelf Life

Packaging: Volume: 10.1 fl. oz. cartridge (tube), 20 fl. oz. sausage and 4.5 gallon pail

Storage: 3M™ Fire Barrier Water Tight Sealant 3000 WT should be stored indoors in dry conditions between 40°F and 90°F (4°C and 32°C). Avoid repeated freeze / thaw exposures of the 3M™ Fire Barrier Water Tight Sealant 3000 WT while still in the packaging.

Shelf Life: 3M™ Fire Barrier Water Tight Sealant 3000 WT shelf life is 12 months in original unopened containers from date of packaging when stored above 68°F (2°C).

Lot numbering: First to sixth digit = Date of Production (MMDDYY), Seventh indicator = dash symbol (-), Eighth digit = shift number

6. Installation Techniques

Consult a 3M Authorized Fire Protection Products Distributor / Dealer or Sales Representative for Applicable UL, Intertek or other third-party drawings and system details.

Preparatory Work: The surface of the opening and any penetrating items should be clean and free of dirt and debris to allow for the proper adhesion of 3M™ Fire Barrier Water Tight Sealant 3000 WT. Do not use alcohol to clean surfaces in penetration or joint opening, instead use a commercial solvent such as mineral spirits, xylene, toluene or methyl ethyl ketone (MEK). Ensure that the surface of the substrates are not wet and are frost free. Sealant can be installed with a standard caulking gun, pneumatic pumping equipment or it can be easily applied with a putty knife or trowel.

Installation Details: Install the applicable depth of backing material, if required, as detailed within the applicable UL, Intertek or other third-party listed system. Cut the end of the 3M™ Fire Barrier Water Tight Sealant 3000 WT tube spout to achieve the desired bead width. After cutting tip, puncture inner foil seal. Install the applicable depth of 3M™ Fire Barrier Water Tight Sealant 3000 WT into the opening flush with the surface of the substrate, or as detailed within the applicable listed system, at the required depth for the assembly and rating that is required. Tool within 5 minutes, if required. Clean all tools immediately after use with a commercial solvent such as mineral spirits, xylene, toluene or methyl ethyl ketone (MEK).

Limitations: Do not apply 3M™ Fire Barrier Sealant 3M™ Fire Barrier Water Tight Sealant 3000 WT when surfaces are wet (Note: once applied, sealant may be exposed to intermittent water – exhibits excellent weatherability when fully cured) or frost-coated, where seals may be exposed to rain or in unvented spaces where sealant is not exposed to atmospheric moisture. In confined cure conditions there may be discoloration of brass, copper or other sensitive metals. Do not apply 3M™ Fire Barrier Water Tight Sealant 3000 WT to polycarbonates or to building materials that bleed oil, plasticizers or solvent (e.g. impregnated wood, oil-based sealants, or green or partially vulcanized rubber).

7. Maintenance

No maintenance is expected to be required when installed in accordance with the applicable UL, Intertek or other third-party listed system. Once installed, if any section of the 3M™ Fire Barrier Water Tight Sealant 3000 WT is damaged, the following procedure will apply: the damaged section should be removed and reinstalled in accordance with the applicable listed system, with a minimum 1/2 in. (26mm) overlap onto the adjacent material.

8. Availability

3M™ Fire Barrier Water Tight Sealant 3000 WT is available from 3M Authorized Fire Protection Products Distributors and Dealers. 3M™ Fire Barrier Water Tight Sealant 3000 WT is available in 10.1 fl. oz. cartridges (12/case), 20.0 oz. sausages (12/case) and 4.5 gallon pails (1/case). For additional technical and purchasing information regarding this and other 3M Fire Protection Products, please call: 1-800-328-1687 or visit www.3M.com/firestop.

9. Safe Handling Information

Consult product's Material Safety Data Sheet (MSDS) prior to handling and disposal.

Building and Commercial Services Division
3M Center, Building 223-2N-21
St. Paul, MN 55144-1000 USA
1-800-328-1687
www.3M.com/firestop

3M™ Fire Barrier Water Tight Sealants 1000 NS and 1003 SL

Product Data Sheet

FIRE BARRIER: UP TO 3 HOUR Fire Protection

SMOKE SEAL: L RATED Meets Air Leakage Requirements

SOUND BARRIER: STC 56 In SRC 56-rated Wall Assembly

ELASTOMERIC: ±25% Movement Capability

WATER BARRIER: MEETS CLASS 1W Rating UL Water Leakage

CLASSIFIED UL

FILL, VOID OR CAVITY MATERIAL
FOR USE IN JOINT SYSTEMS AND
THROUGH-PENETRATION FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
8R57

LISTED Intertek
FIRESTOP SYSTEMS
SEE INTERTEK DIRECTORY

ULC LISTED
FILL, VOID OR CAVITY
MATERIALS
8R57

1. Product Description

3M™ Fire Barrier Water Tight Sealants 1000 NS and 1003 SL are ready-to-use, single component, neutral cure, silicone sealants that cure upon exposure to atmospheric humidity to form a flexible firestop seal. 3M™ Fire Barrier Water Tight Sealants help control the spread of fire, smoke and noxious gasses before, during and after exposure to a fire when installed in accordance with a listed through penetration or fire-resistive joint assembly.

3M™ Fire Barrier Water Tight Sealant 1000 NS is a non-slump firestop used primarily on vertical surfaces while 3M™ Fire Barrier Water Tight Sealant 1003 SL is a self-leveling firestop ideal for floor applications. These firestop sealants also meets UL Water Leakage Test, W Rating — Class 1 requirements for systems tested and listed in accordance with ANSI/UL 1479. Both products are elastomeric, are ready-to use and exhibit excellent weatherability.

High-performance silicone sealant provides a barrier against fire, water and sound

1000 NS and 1003 SL ■ Light Gray

Product Features

- Firestop tested up to 3 hours in accordance with ASTM E 814 (UL 1479) & CAN/ULC-S115
- Joint System Fire Resistance tested in accordance with ASTM E 1966 (UL 2079) & CAN/ULC-S115
- Meets UL Water Leakage Test, W Rating — Class 1 requirements
- Compression/extension capability of ± 31%
- Excellent adhesion
- Re-enterable/repairable
- Excellent weatherability upon cure
- Paintable with primer
- Helps minimize sound transfer*
- Halogen-free, low VOC**
- Excellent caulk rate — applied with conventional caulking equipment

Minimizes noise transfer — STC-Rating of 56 when tested in STC 56-rated wall assembly.
***Complies with the intent of LEED® NC-EQ Credit 4.1 for Low-Emitting Materials: Adhesives and Sealants, contains <250 g/L VOC contents (less H_2O and exempt solvents per SCAQMD Rule 1168).*

2. Applications

3M™ Fire Barrier Water Tight Sealant 1000NS and 3M™ Fire Barrier Water Tight Sealant 1003SL are used to firestop blank openings, dynamic and static construction joints and the following penetrating items that pass through fire-rated floor or wall assemblies: metallic pipes, non-metallic pipes, cables, cable tray, insulated pipes, combos and other miscellaneous mechanical penetrations. For vertical firestop applications use 3M™ Fire Barrier Water Tight Sealant 1000 NS (non-slump) and for horizontal applications use 3M™ Fire Barrier Water Tight Sealant 1003 SL (self-leveling).

3. Specifications

3M™ Fire Barrier Water Tight Sealant 1000 NS and 1003 SL are ready-to-use, single component, neutral cure, non- slumping (1000 NS) or self-leveling (1003 SL), silicone sealants. The seal- ants shall be listed by independent test agencies such as UL, ULC, Intertek or FM. 3M™ Fire Barrier Water Tight Sealants 1000 NS and 1003 SL shall be tested to and pass the criteria of ASTM E 814 (UL 1479) Standard Test Method for Fire Tests of Penetration Firestop Systems, ASTM E 1966 (UL 2079) Standard Test Method for Fire Resistive Joint Systems, CAN/ULC-S115 Standard Method of Fire Tests of Firestop Systems. These sealants shall meet UL W-Rating Class 1 requirements for watertightness. 3M™ Fire Barrier Water Tight Sealant 1000 NS and 1003 SL shall meet the requirements of NEC (NFPA 70), IBC, IFC, IRC, NBCC, NFPA 101 and NFPA 5000.

Typically Specified MasterFormat (2004)
Section 07 84 00 – Firestopping

Related Sections
Section 07 27 00 – Air Barriers
Section 07 84 16 – Annular Space Protection
Section 07 84 43 – Fire-Resistant Joint Sealants
Section 07 86 00 – Smoke Seals
Section 07 87 00 – Smoke Containment Barriers
Section 07 92 13 – Elastomeric Joint Sealants
Section 07 92 19 – Acoustical Joint Sealants
Section 21 00 00 – Fire Suppression
Section 22 00 00 – Plumbing
Section 23 00 00 – Heating, Ventilating and Air Conditioning (HVAC)
Section 26 00 00 – Electrical

4. Performance & Typical Physical Properties

Color:	Light Gray
Elongation at Break (ASTM D 412)**:**	600%
Service Temperature Range:	-60°F to 300°F (-51°C to 149°C)
STC (ASTM E 90 and ASTM E 413)**:**	56 when tested in STC 56 rated wall assembly
Surface Burning (ASTM E 84 Mod)**:**	Flame Spread 0, Smoke Development 0

Hardness (ASTM C 66 Shore A)**:**	20–25 (1000 NS) 10–15 (1003 SL)
Tensile Strength:	85 psi (0.59 MPa)
VOC Less H_2O and Exempt Solvents:	< 250g/L

Cure: Under typical cure rate conditions of 77°F (25°C) and 50% R.H., sealant becomes tack-free in about ten minutes, dry-to-touch in 30 to 60 minutes and obtains full-cure adhesion in 14–21 days. Full cure depends upon abient conditions and volume of sealant. Typical cure rate is approximately 1/8 inch (3mm) per day.

Unit Volume: 10.1 fl. oz. tube (298.7cc, 18.2 $in.^3$), 20 fl. oz. sausage (591.5cc, 36.1 $in.^3$), 4.5 gal. pail (.017m^3, 1039.5 $in.^3$)

Meets the intent of LEED® VOC environmental quality requirements.

5. Packaging, Storage, Shelf Life

Packaging: Product packaged in cartridge or pail is enclosed in HDPE plastic containers, sausage is packaged in aluminum foil wrap.

Storage: 3M™ Fire Barrier Water Tight Sealants should be stored indoors in dry conditions between 40°F and 90°F (4°C and 32°C). Avoid repeated freeze/thaw exposures of the 3M™ Fire Barrier Water Tight Sealants while still in the packaging.

Shelf Life: 3M™ Fire Barrier Water Tight Sealant 1000 NS and 1003 SL shelf life is 18 months in original unopened containers from date of packaging when stored between 40°F and 90°F (4°C and 32°C). Normal stock rotation is recommended.

Lot numbering: First to sixth digit = Date of Production (MMDDYY), Seventh indicator = dash symbol (-), Eighth digit = shift number

6. Installation Techniques

Consult a 3M Authorized Fire Protection Products Distributor / Dealer or Sales Representative for Applicable UL, cUL, ULC, Intertek or other third-party drawings and system details.

Preparatory Work: The surface of the opening and any penetrating items should be clean and free of dirt and debris to allow for the proper adhesion of 3M™ Fire Barrier Water Tight Sealant. Do not use alcohol to clean surfaces in penetration or joint opening, instead use a commercial solvent such as mineral spirits, xylene, toluene or methyl ethyl ketone (MEK). Ensure that the surface of the substrates are not wet and are frost free. Sealant can be installed with a standard caulking gun, pneumatic pumping equipment or it can be easily applied with a putty knife or trowel.

Installation Details: Install the applicable depth of backing material, if required, as detailed within the applicable UL, cUL, ULC, Intertek or other third-party listed system. Cut the end of the 3M™ Fire Barrier Water Tight Sealant tube spout to achieve the desired beadwidth. Install the applicable depth of 3M™ Fire Barrier Water Tight Sealant into the opening flush with the surface of the substrate,or as detailed within the applicable listed system, at the required depth for the assembly and rating that is specified. Tool within 5 minutes. Clean all tools immediately after use with a commercial solvent such as mineral spirits, xylene, toluene or methyl ethyl ketone (MEK).

Limitations: Do not apply 3M™ Fire Barrier Water Tight Sealants 1000 NS or 1003 SL (Note: once applied,sealant may be exposed to intermittent water — exhibits excellent weatherability when fully cured) or frost-coated, in unvented spaces where sealant is not exposed to atmospheric moisture, in areas where abrasion or physical abuse of the sealant are likely and/or where painting of sealant is required. Do not apply 3M™ Fire Barrier Water Tight Sealants 1000 NS or 1003 SL to polycarbonates or to building materials that bleed oil, plasticizers or solvent (e.g. impregnated wood, oil-based sealants, or green or partially vulcanized rubber).

Note: In confined cure conditions there may be discoloration of brass, copper or other sensitive metals.

7. Maintenance

No maintenance should be required when installed in accordance with the applicable UL, Intertek, FM or other third- party listed system. Once installed,if any section of the 3M™ Fire Barrier Water Tight Sealant is damaged, the following procedure will apply: remove and reinstall the damaged section in accordance with the applicable listed system, with a minimum 1/2 in. (12.7mm) overlap onto the adjacent material.

8. Availability

3M™ Fire Barrier Water Tight Sealant 1000 NS and 1003 SL are available from 3M Authorized Fire Protection Products Distributors and Dealers in 10.1 fl. oz. cartridges (12/case), 20.0 oz. sausages (12/case) and 4.5 gallon pails (1/case); light gray-colored sealant. For additional technical and purchasing information regarding 3M Fire Protection Products, please call: 1-800-328-1687 or visit www.3M.com/firestop.

9. Safe Handling Information

Consult product Material Safety Data Sheet (MSDS) prior to handling and disposal.

3M Building and Commercial Services Division
3M Center, Building 223-2N-21
St. Paul, MN 55144-1000 USA
1-800-328-1687
www.3M.com/firestop

3M™ Fire Barrier Sealant IC 15WB+

Product Data Sheet

FIRE BARRIER
UP TO 3 HOUR Fire Protection

SMOKE SEAL
L RATED Meets Optional L Requirements

SOUND BARRIER
STC 54 In STC 54-rated wall assembly

CLASSIFIED UL

FILL, VOID, OR CAVITY
FOR USE IN JOINT SYSTEMS,
THROUGH-PENETRATION FIRESTOP SYSTEMS
AND PERIMETER CONTAINMENT SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
90G9

ULC LISTED
FILL, VOID OR CAVITY MATERIALS
90G9

LISTED C US Intertek
FIRESTOP SYSTEMS
SEE INTERTEK DIRECTORY

1. Product Description

3M™ Fire Barrier Sealant IC 15WB+ is a cost-effective, one-part, gun-grade, latex-based, intumescent firestop sealant that dries to form a monolithic firestop seal that also acts as a barrier to airborne sound transmission. 3M™ Fire Barrier Sealant IC 15WB+ firestops through penetrations passing through fire-rated floor, floor/ceiling or wall assemblies, as well as other fire-rated interior building partitions and assemblies (e.g. static construction joints or blank openings). In addition, the unique intumescent property of this material allows 3M™ Fire Barrier Sealant IC 15WB+ to expand and help maintain a firestop penetration seal for up to 3 hours as penetrants are exposed to fire. 3M™ Fire Barrier Sealant IC 15WB+ bonds to most construction substrates, including: gypsum wallboard, concrete, metals, wood, plastic (including CPVC) and cable jacketing. No mixing is required.

FBC SYSTEM COMPATIBLE

Cost-effective firestop sealant available in tube, pail or sausage.

Product Color: Yellow.

Product Features

- Firestop tested up to 3 hours in accordance with ASTM E 814 (UL 1479), ASTM E 1966 (UL 2079) & CAN/ULC-S115
- CPVC compatible
- Expanded fire protection systems
- Helps minimize sound transfer*
- Sag-resistant
- Halogen-free
- Excellent adhesion
- Re-enterable/repairable
- Excellent caulk rate
- Paintable
- Water clean up

Complies with the intent of LEED® NC-EQ Credit 4.1 for Low-Emitting Materials: Adhesives and Sealants, contains <250 g/L VOC contents (less H_2O and exempt solvents per SCAQMD Rule 1168).

**Minimizes noise transfer—STC-Rating of 54 when tested in STC 54-rated wall assembly.*

2. Applications

3M™ Fire Barrier Sealant IC 15WB+ is a general-purpose intumescent firestop ideal for sealing single or multiple through penetrations in fire-rated construction. 3M™ Fire Barrier Sealant IC 15WB+ is typically used in mechanical, electrical and plumbing applications to firestop openings created by the following penetrations in fire-rated floors, floor/ceilings or walls: metallic pipe, plastic pipe, conduit, power and communication cable, cable trays, busways, combos, insulated pipe and HVAC duct penetrations. 3M™ Fire Barrier Sealant IC 15WB+ is also used to firestop blank openings and static construction joints.

3. Specifications

3M™ Fire Barrier Sealant IC 15WB+ shall be a one component, ready-to-use, gun-grade, latex-based, intumescent firestop sealant capable of expanding a minimum of 3 times at 1000°F. The material shall be thixotropic and be applicable to overhead, vertical and horizontal firestops. The sealant shall be listed by independent test agencies such as UL, ULC, Intertek or FM. 3M™ Fire Barrier Sealant IC 15WB+ shall be tested to and pass the criteria of ASTM E 814 (UL 1479) Standard Test Method for Fire Tests of Penetration Firestop Systems, ASTM E 1966 (UL 2079) Standard Test Method for Fire Resistive Joint Systems and CAN/ULC-S115 Standard Method of Fire Tests of Firestop Systems. 3M™ Fire Barrier Sealant IC 15WB+ meets the requirements of the IBC, IRC, NBCC, IFC, IPC, IMC, NFPA 5000, NEC (NFPA 70) and NFPA 101.

Typically Specified MasterFormat (2004)
Section 07 84 00 – Firestopping

Related Sections
Section 07 27 00 – Air Barriers
Section 07 84 16 – Annular Space Protection
Section 07 84 43 – Fire-Resistant Joint Sealants
Section 07 86 00 – Smoke Seals
Section 07 87 00 – Smoke Containment Barriers
Section 07 92 13 – Elastomeric Joint Sealants
Section 07 92 19 – Acoustical Joint Sealants
Section 21 00 00 – Fire Suppression
Section 22 00 00 – Plumbing
Section 23 00 00 – Heating, Ventilating, and Air Conditioning (HVAC)
Section 26 00 00 – Electrical

4. Performance & Typical Physical Properties

Color:	Yellow
Application Temperature Range: (ASTM C 1299)	40° to 122°F (4° to 50°C)
Service Temperature Range:	-20° to 180°F (-28° to 82°C)
STC Acoustic Barrier: (ASTM E 90 and ASTM E 413)	54 when tested in STC 54 rated wall assembly

Surface Burning (ASTM E 84)**:** Flame Spread 5, Smoke Development 50

Hardness (ASTM D 2240 Shore A)**:**	70
Tensile Strength:	85 psi (0.59 MPa)
Volume Shrinkage (ASTM C 1241)**:**	28%
VOC Less H_2O and Exempt Solvents:	<2 g/L

Dry: Under typical conditions of 75°F (23°C) and 50% R.H., sealant becomes tack-free in about ten minutes and dry-to-touch in 30 to 60 minutes. Full dry depends upon ambient conditions and volume of sealant. Typical dry rate is approximately 1/8 inch (3 mm) per day.

Unit Volume: 10.1 fl. oz tube (298.7 ml, 18.2 $in.^3$), 20 fl. oz. sausage (591.5 ml, 36.1 $in.^3$), 27 fl. oz tube (798.5 ml, 48.7 $in.^3$), 4.5 gal. pail (17.03 L, 1039.5 $in.^3$)

5. Packaging, Storage, Shelf Life

Packaging Product packaged in cartridge or pail is enclosed in HDPE plastic containers, sausage is packaged in aluminum foil wrap.

Storage 3M™ Fire Barrier Sealant IC 15WB+ should be stored indoors in dry conditions between 40°F and 90°F (4°C and 32°C) in the original unopened package. Avoid repeated freeze / thaw exposures of the 3M™ Fire Barrier Sealant IC 15WB+ prior to installation.

Shelf Life 3M™ Fire Barrier Sealant IC 15WB+ shelf life is 12 months in original unopened containers from date of packaging when stored above 68°F (2°C).

Lot numbering (e.g. 8183AS): First digit = Last digit of year manufactured, Second to fourth digit = Julian Date, Letters = Random to distinguish between lot numbers

6. Installation Techniques

Consult a 3M Authorized Fire Protection Products Distributor / Dealer or Sales Representative for applicable UL, cUL, ULC, Intertek, FM or other third-party drawings and system details.

Preparatory Work The surface of the opening and any penetrating items should be cleaned to allow for the proper adhesion of the 3M™ Fire Barrier Sealant IC 15WB+. Ensure that the surface of the substrates are not wet and are frost free. Sealant can be installed with a standard caulking gun, pneumatic pumping equipment or it can be easily applied with a putty knife or trowel.

Installation Details Install the applicable depth of backing material, if required, as detailed within the applicable UL, cUL, ULC, Intertek, FM or other third-party listed system. Cut the end of the 3M™ Fire Barrier Sealant IC 15WB+ tube spout to achieve the desired bead width when applying. Install the applicable depth of 3M™ Fire Barrier Sealant IC 15WB+ into the opening flush with the surface of the substrate, or as detailed within the applicable listed system, at the depth for the assembly and rating that is required. Tool within 5 minutes. Clean all tools immediately after use with water.

Limitations Do not apply 3M™ Fire Barrier Sealant IC 15WB+ when surrounding temperature is than less 40°F (4°C) and in conditions where seals may be exposed to rain or water spray within 18 hours of application. Do not apply 3M™ Fire Barrier Sealant IC 15WB+ to building materials that bleed oil, plasticizers or solvent (e.g. impregnated wood, oil-based sealants, or green or partially vulcanized rubber). Do not apply 3M™ Fire Barrier Sealant IC 15WB+ to wet or frost-coated surfaces or to areas that are continuously damp or immersed in water.

7. Maintenance

No maintenance is expected to be required when installed in accordance with the applicable UL, cUL, ULC, Intertek, FM or other third-party listed system. Once installed, if any section of the 3M™ Fire Barrier Sealant IC 15WB+ is damaged, the following procedure will apply: remove and reinstall the damaged section in accordance with the applicable listed system, with a minimum 1/2 in. (12.7 mm) overlap onto the adjacent material.

8. Availability

3M™ Fire Barrier Sealant IC 15WB+ is available from 3M Authorized Fire Protection Products Distributors and Dealers. 3M™ Fire Barrier Sealant IC 15WB+ is available in 10.1 fl. oz. cartridges (3M ID 98-0400-5509-1, 12/case), 20.0 fl. oz. sausages (3M ID 98-0400-5512-5, 10/case), and 4.5 gallon pails (3M ID 98-0400-5510-9, 1/case). For additional technical and purchasing information regarding this and other 3M Fire Protection Products, please call: 1-800-328-1687 or visit www.3m.com/firestop.

9. Safe Handling Information

Consult country-of-use Material Safety Data Sheet (MSDS) prior to handling and disposal.

Building and Commercial Services Division
3M Center, Building 223-2N-21
St. Paul, MN 55144-1000 USA
1-800-328-1687
www.3M.com/firestop

Please Recycle. Printed in USA.

98-0400-5077-9 REV B

3M™ Fire Barrier Sealant CP 25WB+

Product Data Sheet

1. Product Description

3M™ Fire Barrier Sealant CP 25WB+ is a high-performance, ready-to-use, gun-grade, latex-based, intumescent sealant that dries to form a monolithic firestop seal that also acts as a barrier to airborne sound transmission. 3M™ Fire Barrier Sealant CP 25WB+ helps control the spread of fire, smoke and noxious gasses before, during and after exposure to a fire when installed in accordance with a listed through penetration or fire-resistive joint assembly system.

3M™ Fire Barrier Sealant CP 25WB+ firestops blank openings and penetrations passing through fire-rated floor, floor/ceiling or wall assemblies and other fire-rated interior building construction. The unique intumescent property of this material allows 3M™ Fire Barrier Sealant CP 25WB+ to expand and help maintain a firestop penetration seal for up to 4 hours as penetrants are exposed to fire. 3M™ Fire Barrier Sealant CP 25WB+ exhibits excellent adhesion to a full range of construction substrates and penetrants. No mixing is required.

High-performance firestop sealant that also helps minimize sound transfer

Product Color: Red

Product Features

- Firestop tested up to 4 hours in accordance with ASTM E 814 (UL 1479) & CAN/ULC S115
- Fire Resistance tested for static construction joint systems in accordance with ASTM E 1966 (UL 2079)
- Re-enterable / repairable
- Meets UL 1479 aging requirements
- Helps minimize sound transfer*
- Applied with conventional caulking equipment (excellent caulk rate)
- Extensive listed systems
- Sag-resistant
- Halogen-free
- Excellent adhesion
- Paintable
- Water clean up

Meets the intent of LEED® VOC regulations — helps reduce the quantity of indoor air contaminants that may be odorous, irritating and harmful to the comfort and well-being of the installers and occupants. <250 g/L VOC contents (less H_2O and exempt solvents).

**Minimizes noise transfer — STC-Rating of 54 when tested in STC 54-rated wall assembly.*

FIRE BARRIER
UP TO 4 HOUR Fire Protection

SMOKE SEAL
L RATED Meets Optional L Requirements

SOUND BARRIER
STC 54 In STC 54-rated wall assembly

CLASSIFIED UL

FILL, VOID OR CAVITY MATERIAL
FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
90G9

ULC LISTED

FILL, VOID OR CAVITY MATERIALS
90G9

FM APPROVED

SUBJECT TO THE CONDITIONS OF APPROVAL AS A WALL & FLOOR PENETRATION FIRESTOP WHEN INSTALLED AS DESCRIBED IN THE CURRENT EDITION OF THE FMRC APPROVAL GUIDE

LISTED
OMEGA POINT LABORATORIES US
Intertek
FIRESTOP SYSTEMS
SEE INTERTEK DIRECTORY

LISTED
C US
Intertek
FIRESTOP SYSTEMS
SEE INTERTEK DIRECTORY

2. Applications

High-performance 3M™ Fire Barrier Sealant CP 25WB+ is ideal for sealing single or multiple through penetrations in fire-rated construction. 3M™ Fire Barrier Sealant CP 25WB+ is typically used in mechanical, electrical and plumbing applications to firestop openings created by the following penetrations in fire-rated floors, floor/ceilings or walls: metallic pipe, plastic pipe (excluding CPVC), conduit, power and communication cable, cable trays, busways, combos, insulated pipe and HVAC duct penetrations 3M™ Fire Barrier Sealant CP 25WB+ is also used to firestop blank openings and static construction joints.

3. Specifications

3M™ Fire Barrier Sealant CP 25WB+ shall be a one component, ready-to-use, gun-grade, latex-based, intumescent firestop sealant capable of expanding a minimum of three times its dried volume when exposed to temperatures above 1000°F (538°C). The material shall be thixotropic and shall be applicable to overhead, vertical and horizontal firestops. The sealant shall be listed by independent test agencies such as UL, Intertek or FM. 3M™ Fire Barrier Sealant CP 25WB+ shall be tested to and pass the criteria of ASTM E 814 (UL 1479) Standard Test Method for Fire Tests of Penetration Firestop Systems, ASTM E 1966 (UL 2079) Standard Test Method for Fire Resistive Joint Systems and CAN/ULC S115 Standard Method of Fire Tests of Firestop Systems. 3M™ Fire Barrier Sealant CP 25WB+ meets the requirements of the IBC, IRC, IFC, IPC, IMC, NFPA 5000, NEC (NFPA 70) and NFPA 101.

Typically Specified Division
Division 7
Section 07 84 00 – Firestopping

Related Sections
Section 07 84 16 – Annular Space Protection
Section 07 84 43 – Fire-Resistant Joint Sealants
Section 07 86 00 – Smoke Seals
Section 07 87 00 – Smoke Containment Barriers
Section 07 27 00 – Air Barriers
Section 21 00 00 – Fire Suppression
Section 22 00 00 – Plumbing
Section 26 00 00 – Electrical

4. Physical Properties

Color:	Red
Application Temperature Range (ASTM C 1299)**:**	40° to 122°F (4° to 50°C)
Service Temperature Range:	-20° to 180°F (-28° to 82°C)
STC (ASTM E 90 and ASTM E 413)**:**	54 when tested in STC 54-rated wall assembly
Surface Burning (ASTM E 84)**:**	Flame Spread 0, Smoke Development 0

Hardness (ASTM D 2240 Shore A)**:**	45
Tensile Strength:	85 psi (0.59 MPa)
Volume Shrinkage (ASTM C 1241)**:**	28%
VOC Less H_2O and Exempt Solvents:	< 1g/L

Dry: Under typical conditions of 75°F (23°C) and 50% relative humidity, sealant becomes tack-free in about ten minutes and dry-to-touch in 30–60 minutes. Full dry depends upon ambient conditions and volume of sealant. Typical dry rate is approximately 1/8-inch (3mm) per day.

Unit Volume: 10.1 fl. oz. tube (298.7mL, 18.2 in.^{3}), 20 fl. oz. sausage (591.5mL, 36.1 in.^{3}), 27 fl. oz tube (798.5mL, 48.7 in.^{3}), 2 gallon pail (7.57L, 462 in.^{3}), 5 gallon pail (18.9L, 1155 in.^{3})

5. Packaging, Storage, Shelf Life

Packaging: Product packaged in cartridge or pail is enclosed in HDPE plastic containers, sausage is packaged in aluminum foil wrap.

Storage: 3M™ Fire Barrier Sealant CP 25WB+ should be stored indoors in dry conditions between 40°F and 90°F (4°C and 32°C) in the original unopened package. Avoid repeated freeze / thaw exposures of the 3M™ Fire Barrier Sealant CP 25WB+ prior to installation.

Shelf Life: 3M™ Fire Barrier Sealant CP 25WB+ shelf life is 12 months in original unopened containers from date of packaging when stored above 68°F (20°C).

Lot numbering (e.g. 8183AS): First digit = Last digit of year manufactured, Second to fourth digit = Julian Date, Letters = Random to distinguish between lot numbers

6. Installation Techniques

Consult a 3M Authorized Fire Protection Products Distributor / Dealer or Sales Representative for Applicable UL, Intertek or other third-party drawings and system details.

Preparatory Work: The surface of the opening and any penetrating items should be cleaned to allow for the proper adhesion of the 3M™ Fire Barrier Sealant CP 25WB+. Ensure that the surface of the substrates are not wet and are frost free. Sealant can be installed with a standard caulking gun, pneumatic pumping equipment or it can be easily applied with a putty knife or trowel.

Installation Details: Install the applicable depth of backing material, if required, as detailed within the applicable UL, Intertek, FM or other third-party listed system. Cut the end of the 3M™ Fire Barrier Sealant CP 25WB+ tube spout to achieve the desired bead width when applying. Install the applicable depth of 3M™ Fire Barrier Sealant CP 25WB+ into the opening flush with the surface of the substrate, or as detailed within the applicable listed system, at the depth for the assembly and rating that is required. Tool within five minutes. Clean all tools immediately after use with water.

Limitations: Do not apply 3M™ Fire Barrier Sealant CP 25WB+ when surrounding temperature is less than 40°F (4°C) and in conditions where seals may be exposed to rain or water spray within 18 hours of application. Do not apply 3M™ Fire Barrier Sealant CP 25WB+ to building materials that bleed oil, plasticizers or solvent (e.g. impregnated wood, oil-based sealants, or green or partially vulcanized rubber). Do not apply 3M™ Fire Barrier Sealant CP 25WB+ to wet or frost-coated surfaces or to areas that are continuously damp or immersed in water.

NOTICE: This product is not acceptable for use with chlorinated polyvinylchloride (CPVC) pipes.

7. Maintenance

No maintenance should be required when installed in accordance with the applicable UL, Intertek, FM or other third-party listed system. Once installed, if any section of the 3M™ Fire Barrier Sealant CP 25WB+ is damaged, the following procedure will apply: remove and reinstall the damaged section in accordance with the applicable listed system, with a minimum 1/2 in. (12.7mm) overlap onto the adjacent material.

8. Availability

3M™ Fire Barrier Sealant CP 25WB+ is available from 3M Authorized Fire Protection Products Distributors and Dealers. 3M™ Fire Barrier Sealant CP 25WB+ is available in 10.1 fl. oz. cartridges (12/case), 20.0 fl. oz. sausages (10/case), 27.0 fl. oz. cartridges (6/case), 2 gallon pails (1/case) and 5 gallon pails (1/case). For additional technical and purchasing information regarding this and other 3M™ Fire Protection Products, please call: 1-800-328-1687 or visit www.3M.com/firestop.

9. Safe Handling Information

Consult product Material Safety Data Sheet (MSDS) prior to handling and disposal.

3M

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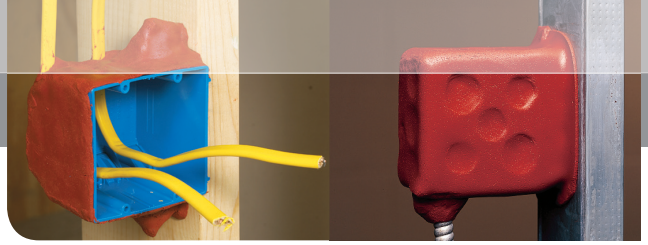


3M™ Fire Barrier Moldable Putty Pads MPP+

Product Data Sheet

FIRE BARRIER: UP TO 4 HOUR Fire Protection

SMOKE SEAL: L RATED Meets Optional L Requirements

WALL OPENING: UP TO 2 HOUR Fire Protection

SOUND BARRIER: STC 52 In STC 53-Rated Wall Assembly

FM APPROVED

SUBJECT TO THE CONDITIONS OF APPROVAL AS A WALL & FLOOR PENETRATION FIRESTOP WHEN INSTALLED AS DESCRIBED IN THE CURRENT EDITION OF THE FMRC APROVAL GUIDE

ULC LISTED

FILL, VOID OR CAVITY MATERIALS
90G9

CLASSIFIED UL

WALL OPENING PROTECTIVE MATERIAL FIRE RESISTANCE CLASSIFICATION SEE UL FIRE RESISTANCE DIRECTORY
90G9

CLASSIFIED UL

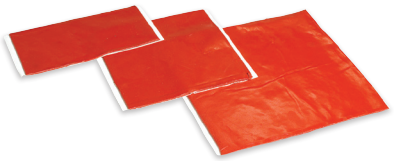
FILL, VOID, OR CAVITY FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
90G9

1. Product Description

3M™ Fire Barrier Moldable Putty Pads MPP+ are a one-part, ready-to-use, intumescent wall-opening protective. When properly applied to the back of electrical outlet boxes, 3M™ Fire Barrier Moldable Putty Pads MPP+ help control the spread of fire, smoke and noxious gases through fire-restive walls and partitions. Installed in accordance with the UL wall-opening protective listing (UL Category CLIV), the product helps achieve up to 2-hour ratings in a variety of wall constructions. 3M™ Fire Barrier Moldable Putty Pads MPP+ can effectively provide protection for back-to-back electrical boxes.

3M™ Fire Barrier Moldable Putty Pads MPP+ are also used as a firestop material in through-penetration firestop systems. 3M™ Fire Barrier Moldable Putty Pads MPP+ help to maintain a firestop penetration seal for up to 4 hours. 3M™ Fire Barrier Moldable Putty Pads MPP+ exhibit excellent adhesion to a full range of construction substrates and penetrants. The pads are easily molded by hand (no mixing required). In addition to its fire-resistant properties, the 1/10th in. (2.54mm) thick pads have airborne sound reduction characteristics which helps minimize sound transmission through assemblies requiring an STC rating.

Color: Dark Red



4 in. x 8 in. (101.6mm x 203.3mm), 7 in. x 7 in. (177.8mm x 177.8mm) and 9.5 in. x 9.5 in. (241.2mm x 241.3mm) pad sizes available.

Product Features

- Firestop tested up to 4 hours in accordance with ASTM E 814 (UL 1479) & CAN/ULC-S115
- Wall opening protective tested up to 2 hours in accordance with UL 263
- Provides draft and cold smoke seal
- Pliable and conformable—molds easily into required shape
- Helps reduce noise transfer*
- Excellent adhesion
- Re-enterable/repairable
- Halogen-free and solvent-free
- Excellent aging properties
- Low VOC
- Will not dry out or crumble
- Red color widely recognized as a fire protective product

Meets the intent of LEED® VOC regulations—helps reduce the quantity of indoor air contaminants that may be odorous, irritating and harmful to the comfort and well-being of the installers and occupants.

**Minimizes noise transfer—STC-Rating of 52 when tested in STC 53-rated wall assembly.*

2. Applications

4 in. x 8 in. (101.6mm x 203mm) 3M™ Fire Barrier Moldable Putty Pads MPP+ are typically used as a wall opening protective to meet building requirements, for protection of membrane penetrations made by listed steel or non-metallic electrical boxes. It is also used to seal gaps between cables in multiple penetrations (including fiber optic inner duct) and to firestop cable bundles, insulated pipe, electrical conduit and metal pipe. Larger sized pads, 7 in. x 7 in. and 9.5 in x 9.5 in. (177.8mm x 177.8mm and 241.2mm x 241.2mm) are widely used to firestop metallic and non-metallic electrical outlet boxes up to 14 in. x 4.5 in. by 2-1/2 in. (355.6mm x 114.3mm x 63.5mm) deep. For larger applications, pads can be molded together by hand.

3. Specifications

3M™ Fire Barrier Moldable Putty Pads MPP+ shall be a one component, ready-to-use, intumescent elastomer capable of expanding a minimum of 3 times at 1000°F. The material shall be thixotropic and shall be applicable to overhead, vertical and horizontal firestops. Under normal conditions, 3M™ Fire Barrier Moldable Putty Pads MPP+ shall be noncorrosive to metal and compatible with synthetic cable jackets. The putty shall be listed by independent test agencies such as UL, Intertek or FM. 3M™ Fire Barrier Moldable Putty Pads MPP+ shall be tested to and pass the criteria of ASTM E 814 (UL 1479) Standard Test Method for Fire Tests of Penetration Firestop Systems and CAN/ULC S115 Standard Method of Fire Tests of Firestop Systems. 3M™ Fire Barrier Moldable Putty Pads MPP+ meets the requirements of the IBC, NFPA 5000, NEC (NFPA 70), NFPA 101 and NCB (Canada) Building Codes.

Typically Specified MasterFormat (2004)

Section 07 84 00 – Firestopping

Related Sections

Section 07 84 16 – Annular Space Protection
Section 07 86 00 – Smoke Seals
Section 07 87 00 – Smoke Containment Barriers
Section 07 27 00 – Thermal and Moisture Protection Firestopping
Section 21 00 00 – Fire Suppression
Section 26 00 00 – Electrical

4. Performance & Typical Physical Properties

Color:	Dark Red
Nominal Density:	10–12 lbs./gal. (1.2–1.45kg/L)
Nominal Thickness:	1/10 in. (2.54mm)
Surface Burning (ASTM E 84)**:**	Flame Spread 0, Smoke Development 0
Heat Expansion:	Begins at 350°F (177°C) Significant at 400°F (204°C) Free Expansion is Nominal 3 times
STC (ASTM E 90 and ASTM E 413)**:** **Tested in STC 53 rated wall assembly**	52 when tested on back-to-back electrical boxes
VOC Less H_2O and Exempt Solvents:	< 250g/L

Dimensions: 4 in. x 8 in. x 1/10 in. (101.6mm x 203.2mm x 2.5mm)
Unit Volume: 2.52 in.^{3} (41.4cm^3)
Unit Weight: 2.7 oz (76g)

Dimensions: 7 in. x 7 in. x 1/10 in. (177.8mm x 177.8mm x 2.5mm)
Unit Volume: 4.63 in.^{3} (76.0cm^3)
Unit Weight: 4.1 oz (116g)

Dimensions: 9.5 in. x 9.5 in. x 1/10 in. (241.3mm x 241.3mm x 2.5mm)
Unit Volume: 6.1 in.^{3} (139.8cm^3)
Unit Weight: 7.6 oz (215g)

5. Packaging, Storage, Shelf Life

Packaging: Corrugated cardboard box with liner between individual pads.

Storage: 3M™ Fire Barrier Moldable Putty Pads MPP+ should be stored indoors in dry conditions.

Shelf Life: 3M™ Fire Barrier Moldable Putty Pads MPP+ shelf life is indefinite in original unopened containers. Product will not dry or crumble in opened containers. Normal stock and stock rotation practices are recommended.

6. Installation Techniques

Consult a 3M Authorized Fire Protection Products Distributor / Dealer or Sales Representative for Applicable UL, Intertek or other third-party drawings and system details.

Preparatory Work: The surface of the electrical box, or opening and any penetrating items should be cleaned (i.e. free of dust, grease, oil, loose materials, rust or other substances) to allow for the proper adhesion of the 3M™ Fire Barrier Moldable Putty+ Pad. Ensure that the surface of the substrates are not wet and are frost-free.

Installation Details: Electrical boxes must be firestopped under the following conditions: boxes larger than 16 sq. in. (103 sq. cm), if horizontal spacing between boxes is less than 24 in. (609.6mm), when multiple boxes are located in one stud cavity or if the aggregate of all boxes exceeds 100 sq. in. per 100 sq. ft. (645 sq. cm. per 9.29 sq. m) — refer to listed system details and applicable local building code requirements. For electrical box installations, a minimum of 1/10 in. (2.5mm) thick putty application is required. 3M™ Fire Barrier Moldable Putty Pads MPP+ are to be installed to completely cover the exterior of the outlet box (except for the side against the stud). To firestop penetrations, install the applicable depth of backing material (if required), remove the desired amount of putty from the pad, form (if necessary) and install as detailed within the listed system. Make sure that putty is in complete contact with the substrate and penetrating item(s).

Note: Partial pads can be pieced together and the seams between partial pads should overlap a minimum of 1/8 in. with the seams worked with the fingertips to create adhesion at the seam.

Limitations: Over application (i.e., using excessive amount of material) of product to vertical surfaces may cause sagging, follow system details. Product is not impaired by freezing but should be warmed to 32°F (0°C) before applying.

7. Maintenance

No maintenance is expected when installed in accordance with the applicable UL, Intertek, FM or other third-party listed system. Once installed, if any section of the 3M™ Fire Barrier Moldable Putty Pad MPP+ is damaged, the following procedure will apply: remove damaged putty, clean the affected area and install the proper thickness of putty, ensuring it bonds to the substrate and adjacent putty (product from damaged area can be reused if it is free from contaminants). Putty can be molded together at new/existing putty overlap.

8. Availability

3M™ Fire Barrier Moldable Putty Pads MPP+ are available from 3M Authorized Fire Protection Products Distributors and Dealers. 3M™ Fire Barrier Moldable Putty Pads MPP+ are available in the following sizes: (10 pads/pack, 10 packs/case) 4 in. x 8 in. x 1/10 in. (101.6mm x 203.2mm x 2.5mm), (20 pads/case) 7 in. x 7 in. 1/10 in. (177.8mm x 177.8mm x 2.5mm), (20 pads/case) 9.5 in. x 9.5 in. 1/10 in. (241.3mm x 241.3mm x 2.5mm); red-colored firestop material. For additional technical and purchasing information regarding this and other 3M Fire Protection Products, please call: 1-800-328-1687 or visit www.3M.com/firestop.

9. Safe Handling Information

Consult product's Material Safety Data Sheet (MSDS) from country-of-use prior to handling and disposal.

3M

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St. Paul, MN 55144-1000
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www.3M.com/firestop

Fire Barrier FS-195+ Wrap/Strip

Product Data

FILL, VOID OR CAVITY MATERIALS
CLASSIFIED BY
UNDERWRITERS LABORATORIES. INC®
FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS (XHEZ).
SEE CURRENT UL FIRE RESISTANCE DIRECTORY.

1. Product Description

3M Fire Barrier FS-195+ Wrap/ Strip is one-part, organic/inorganic, fire resistive elastomeric sheet with aluminum foil on one side. It is available in convenient strips which are quickly and easily installed. FS-195+ is designed to firestop penetrations in fire-rated walls and floors and floor-ceiling assemblies.

The unique, intumescent property of this material (expands when heated) means that as penetrating items such as, plastic pipe, cable jackets and pipe insulation are consumed by fire, FS-195+ Wrap/Strip expands to maintain a tight seal preventing the spread of fire, deadly smoke, and other by-products of combustion.

FS-195+ is UL classified in firestop systems for plastic and metal pipe/ conduit, insulated metal pipe, bus duct, glass pipe and insulated cable. See the UL Fire Resistance Directory.

Product features are:

- Intumescent: Expands when heated to seal around items consumed by fire.
- Smoke seal: Retards spread of toxic by-products of combustion.
- Superior, documented aging properties. Proven stability and performance for life of building.
- Improved flexibility: Easy, cost-effective installation.
- Low flame spread and smoke development.
- Normal disposal procedures.
- Versatile: Can be cut to fit irregular shapes.
- Re-enterable: No special tools required.
- Non-flame supporting.
- Low odor.
- Red-brown color: Consistent, enforceable.

2. Applications

3M Fire Barrier FS-195+ Wrap/Strip provides a rapid and cost-effective means of sealing wall and floor penetrations where fire resistance is required.

Because of its unique intumescent action, FS-195+ can be used to seal a variety of penetration types including: telephone cable, metal pipe, plastic pipe and conduit, insulated metal pipe and blank penetrations.

When used by itself or in conjunction with other 3M Fire Barrier Products such as CS-195+ Composite Sheet, CP 25WB+ Caulk, Moldable Putty+ or RC-1 Restricting Collar, fire rated penetration seals can be provided for cable trays, bus duct and cable bundles.

3. Physical Properties

Strip Size: (¼" X 2" x 24")

Detail:
Wrap/Strip thickness
0.22" - 0.32"

Aluminum foil Thickness
.002" ± 0.0005"

4. Specifications

A. Product

The penetration seal must be capable of passing ASTM E814 (ANSI/UL 1479) Standard Method of Fire Tests for Through Penetration Fire Stops up to the desired fire resistance.

B. Engineering/ Architectural

All penetrations in fire-rated walls or floors shall be fitted and sealed with 3M Brand Fire Barrier Products in accordance with the manufacturer's installation instructions.

5. Performance Tests

A. Physical & Electrical Properties

Thermal Conductivity

• FS195+ sheet as supplied: 2.392 BTU/hr/ft^2/°F• in @ 110°F
2.406 BTU/hr/ft^2/°F• in @ 165°F

Intumescent Activation:

Expansion sequence begins	300°F (150°C)
Significant expansion	350°F (175°C)
Multi-directional free expansion	5 to 15 times (8 times average)
Weight loss (TGA)	20% @ 662°F/350°C
	31% @ 932°F/500°C

Hardness: 70 to 90 Shore A

Tensile Strength (psi)/Elongation (%): (ASTM D-412)104 psi/514%

Color: Red - Brown / Black Char

B. Weatherability

				After Exposure	
				Elastic	Nominal
Test Condition	Temperature	Humidity	Time	Properties	Expansion
Oven	194°F/90°C	-	90 Days	Very Good	6

C. Fire Performance Tests

Test	Results
Summary of Fire Tests Results per ASTM E 814 (UL1479)	Up to 4 hours rating for penetrations in wall and floors. See UL Building Materials Directory.
Flame Spread Index (ASTM E 84)	5
Smoke Development Index (ASTM E 84)	50
Oxygen Index (ASTM D 2863)	50

6. Installation Techniques

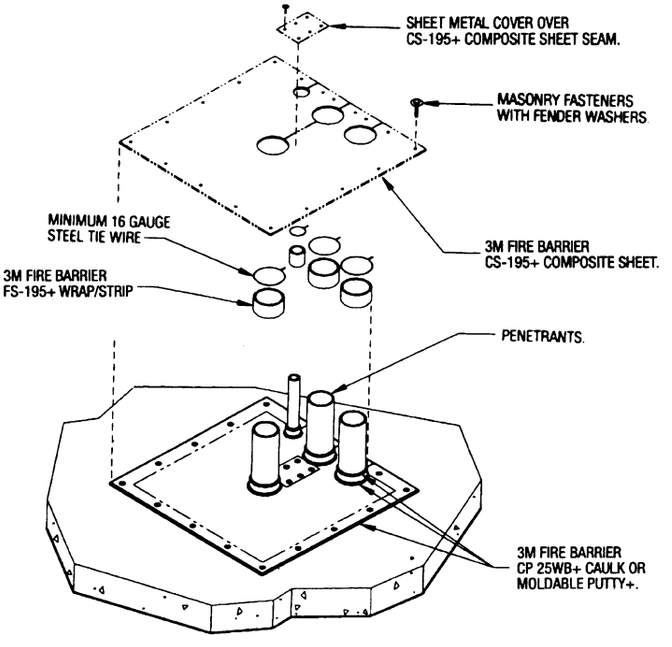
Exact instructions for specific applications are available upon request from 3M or your local 3M Fire Protection Products Distributor. The following summarizes a representative application:

A. Penetration Firestop for Large Openings With Pipe Using CS-195+ Composite Sheet and FS-195+ Wrap/Strip. See Underwriters Laboratories Fire Resistance Directory for current system numbers.

1. Seal around pipes. Wrap two inch wide 3M Fire Barrier FS-195+Wrap/ Strip around each pipe, foil side facing out. Position so wrap/strip extend one inch above the floor surface and one inch into the floor. Secure with steel wire.

2. Cover Sheet. Opening is covered with Composite Sheet cut to fit snugly around pipes and wrap/strip and to overlap the opening by a minimum of two inches. The sheet's galvanized steel layer should face outward (exposed).

3. Seal entire penetration. 3M Fire Barrier CP 25WB+ Caulk or Moldable Putty+ is used to seal the penetration. A ¼" diameter bead of caulk or putty is applied around the opening before or after installing the cover sheet. After the cover sheet is in place, caulk or putty is applied between the wrap/strip and the composite sheet and between the wrap/strip and the pipe. A thin film of caulk or putty is used to cover the entire wrap/strip area. All openings in the composite cover sheet are filled with CP 25WB+ Caulk or Moldable Putty+ to complete the seal.



B. Penetration Firestop for insulated metal pipe in gypsum wallboard assemblies. Refer to current UL Fire Resistance Directory for system numbers.

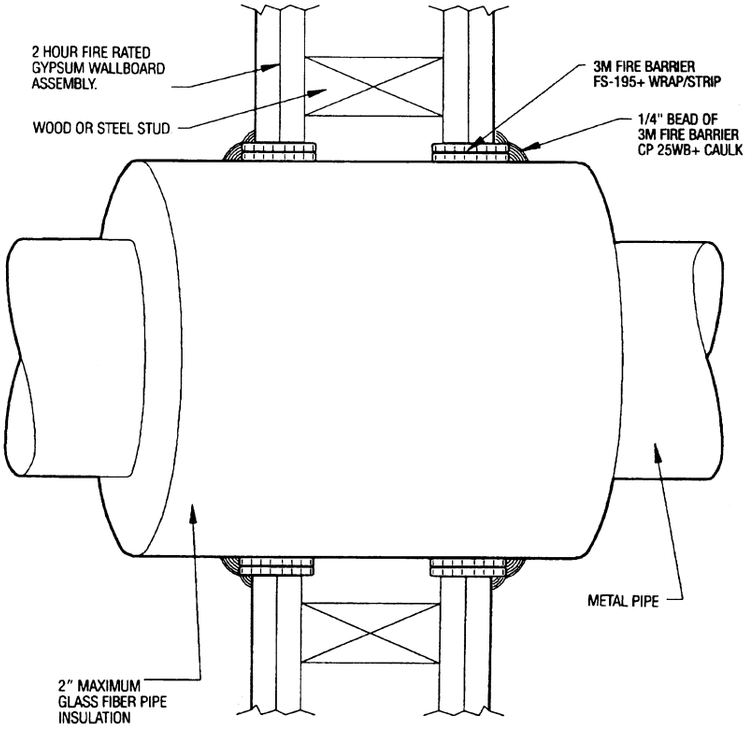
1. Install the firestop symmetrically on both sides of the wall assembly.

2. Minimum annular space requirement is 1/2 in. Maximum annular space requirement is 3/4 in.

3. Two layers of 3M Fire Barrier FS-195+ Wrap/Strip are required.

4. Tightly wrap the FS-195+ Wrap/ Strip, foil side out, around the pipe insulation with the seam butted. Stagger the butted seams. Secure the FS-195+ Wrap/Strip with a steel tie wire or aluminum foil tape and slide the FS-195+ Wrap/Strip into the annular space. The FS-195+ Wrap/Strip should be positioned so approximately 3/4 in. protrudes from the wall surface.

5. Seal the FS-195+ Wrap/Strip with 3M Fire Barrier CP 25WB+ with a 1/4 in. bead at the FS-195+ Wrap/Strip/ wall interface and the FS-195+ Wrap/Strip/insulation interface.



C. Penetration Firestop for Plastic Pipe up to 10" max. dia. in Fire-Rated Floors and Walls. Refer to current UL Fire Resistance Directory for system numbers.

1. As an alternative to the 3M Fire Barrier RC-1 Restricting Collar and FS-195+ Wrap/Strip assembly the 3M Fire Barrier Plastic Pipe Device (PPD), UL File No. R9269, may be substituted.

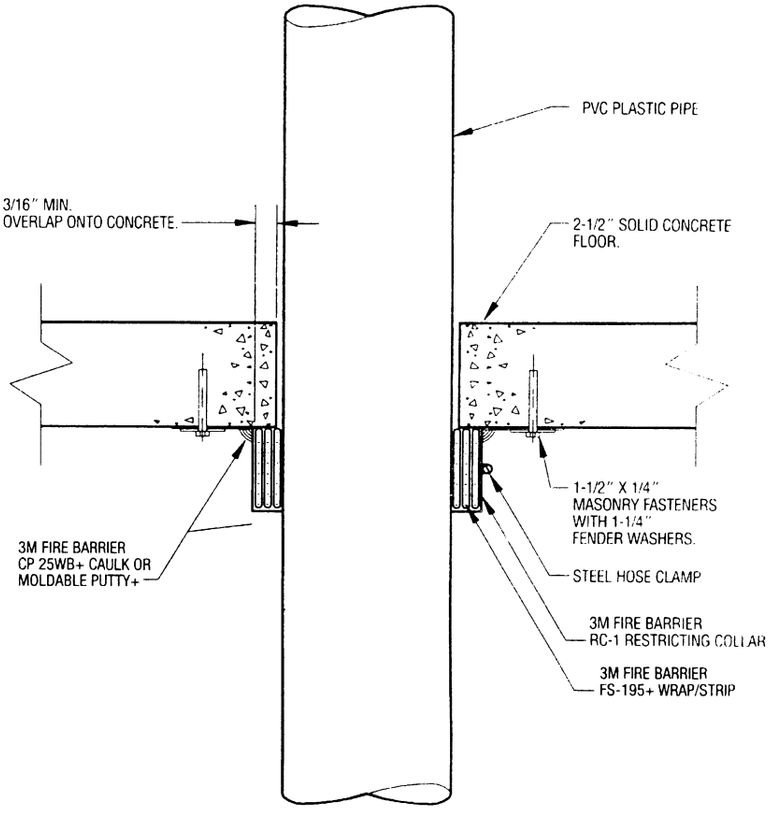
2. Tightly wrap the proper number of FS-195+ Wrap/Strips around the plastic pipe foil side out. Secure with tape or tie wire. Make sure FS-195+ Wrap/Strip or PPD butts securely against the concrete with a 3/16 inch minimum overlap over the edge of the penetrating opening. When using more than one wrap, stagger the butted seams.

3. Apply RC-1 Restricting Collar. Remove enough RC-1 Restricting Collar to make one wrap around the applied FS-195+ Wrap/Strip with a minimum 1 inch overlap. Bend the mounting tabs away from the pipe at right angles, flush with the bottom floor surface. **Warning:** Edges of the RC-1 Restricting Collar are sharp. Handle with care.

4. Tightly secure the RC-1 Restricting Collar around the pipe with a steel hose clamp centered on the RC-1 Restricting Collar assembly. Two bands of 16 gauge steel tie wire placed 1/2 inch from the ends of the RC-1 Restricting Collar assembly may be used instead of the hose clamp.

5. Secure the collar to the slab with ¼ inch x 1½ inch masonry fasteners. Use 1¼ inch diameter fender washers on the mounting tabs. Fender washers are not needed when using the PPD. For 3 inch and smaller pipe secure a minimum of 3 mounting tabs. For 4 inch pipe secure a minimum of 4 mounting tabs. Secure all mounting tabs on the PPD.

6. Seal the system with a 1/4 inch bead of 3M Fire Barrier CP 25WB+ Caulk or Moldable Putty+ at the concrete and collar assembly interface.



7. Maintenance

3M Fire Barrier FS-195+ Wrap/Strip remains stable for an indefinite period of time under normal storage conditions.

8. Availability

3M Fire Barrier FS-195+ Wrap/Strip is available in strips 2" x 24" packaged 10 per box. Available from 3M Fire Protection Products Distributors.

Other 3M Fire Protection Products: CP 25WB+ Caulk- 10 1/2 oz. Tube and 5 Gallon Pails. CS 195+ Composite Sheet - 16" x 28", 36" x 36", 24" x 36", 36" x 41". Restricting Collar. Moldable Putty+ Stix and pads. Plastic Pipe Devices-1.5",2",3",4".

Warranty and Limited Remedy. This product will be free from defects in material and manufacture for a period of ninety (90) days from date of purchase. **3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of application. If this 3M product is proved to be defective within the warranty period stated above, your exclusive remedy and 3M's sole obligation shall be, at 3M's option, to replace or repair the 3M product or refund the purchase price of the 3M product.

Limitation of Liability. Except where prohibited by law, 3M will not be liable for any loss or damages arising from the use of this 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.

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Litho in USA MCS223

Safety Data Sheet

Document Group:	19-2499-2	**Version Number:**	9.00
Issue Date:	08/18/14	**Supercedes Date:**	08/18/14

SECTION 1: Identification

1.1. Product identifier
3M Fire Barrier Watertight Sealant 3000 WT

Product Identification Numbers
98-0400-5503-4, 98-0400-5504-2, 98-0400-5553-9, 98-0400-5586-9

1.2. Recommended use and restrictions on use

Recommended use
Caulk, Fire barrier caulking.

1.3. Supplier's details

MANUFACTURER:	3M
DIVISION:	Industrial Adhesives and Tapes Division
ADDRESS:	3M Center, St. Paul, MN 55144-1000, USA
Telephone:	1-888-3M HELPS (1-888-364-3577)

1.4. Emergency telephone number
1-800-364-3577 or (651) 737-6501 (24 hours)

SECTION 2: Hazard identification

2.1. Hazard classification
Serious Eye Damage/Irritation: Category 2A.
Skin Corrosion/Irritation: Category 2.
Skin Sensitizer: Category 1B.
Specific Target Organ Toxicity (single exposure): Category 1.
Specific Target Organ Toxicity (repeated exposure): Category 1.

2.2. Label elements
Signal word
Danger

Symbols
Exclamation mark | Health Hazard |

Pictograms

Hazard Statements
Causes serious eye irritation.
Causes skin irritation.
May cause an allergic skin reaction.

Causes damage to organs:
blood or blood-forming organs |

Causes damage to organs through prolonged or repeated exposure:
blood or blood-forming organs |

May cause damage to organs through prolonged or repeated exposure:
kidney/urinary tract |

Precautionary Statements
General:
Keep out of reach of children.

Prevention:
Do not breathe dust/fume/gas/mist/vapors/spray.
Wear protective gloves and eye/face protection.
Do not eat, drink or smoke when using this product.
Wash thoroughly after handling.
Contaminated work clothing must not be allowed out of the workplace.

Response:
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
IF exposed: Call a POISON CENTER or doctor/physician.

Storage:
Store locked up.

Disposal:
Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

2.3. Hazards not otherwise classified
None.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Melamine	108-78-1	30 - 60 Trade Secret *
Siloxanes and Silicones, Di-Me, Hydroxy-Terminated	70131-67-8	15 - 40 Trade Secret *
Graphite	7782-42-5	10 - 30 Trade Secret *

Poly(Dimethylsiloxane)	63148-62-9	10 - 30 Trade Secret *
Methyl Tris(Butylideneaminooxy)Silane	22984-54-9	3 - 7 Trade Secret *
Synthetic Amorphous Silica, Fumed, Crystalline Free	112945-52-5	0 - 5 Trade Secret *
Silica	7631-86-9	0 - 5 Trade Secret *
(3-Aminopropyl)Triethoxysilane	919-30-2	0.5 - 1.5 Trade Secret *
3-Iodo-2-Propynyl Butylcarbamate	55406-53-6	< 0.1 Trade Secret *

*The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Remove person to fresh air. If you feel unwell, get medical attention.

Skin Contact:
Immediately wash with soap and water. Remove contaminated clothing and wash before reuse. If signs/symptoms develop, get medical attention.

Eye Contact:
Immediately flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. Get medical attention.

If Swallowed:
Rinse mouth. If you feel unwell, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed
See Section 11.1. Information on toxicological effects.

4.3. Indication of any immediate medical attention and special treatment required
Not applicable

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media
Material will not burn. Non-combustible. Use a fire fighting agent suitable for surrounding fire.

5.2. Special hazards arising from the substance or mixture
None inherent in this product.

5.3. Special protective actions for fire-fighters
No special protective actions for fire-fighters are anticipated.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Evacuate area. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Warning! A motor could be an ignition source and could cause flammable gases or vapors in the spill area to burn or explode. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

6.2. Environmental precautions

Avoid release to the environment. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water.

6.3. Methods and material for containment and cleaning up
Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue. Seal the container. Dispose of collected material as soon as possible.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Avoid breathing of vapors created during cure cycle. Keep out of reach of children. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wash contaminated clothing before reuse. Avoid contact with oxidizing agents (eg. chlorine, chromic acid etc.)

7.2. Conditions for safe storage including any incompatibilities
Store away from oxidizing agents.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Ingredient	C.A.S. No.	Agency	Limit type	Additional Comments
Melamine	108-78-1	AIHA	TWA(inhalable particulates):10 mg/m3;TWA(respirable particles):5 mg/m3	
SILICA, AMORPHOUS	112945-52-5	OSHA	TWA concentration:0.8 mg/m3;TWA:20 millions of particles/cu. ft.	
Silica	7631-86-9	CMRG	TWA(as respirable dust):3 mg/m3	
SILICA, AMORPHOUS	7631-86-9	OSHA	TWA concentration:0.8 mg/m3;TWA:20 millions of particles/cu. ft.	
Graphite	7782-42-5	ACGIH	TWA(respirable fraction):2 mg/m3	
Graphite	7782-42-5	OSHA	TWA:15 millions of particles/cu. ft.	
GRAPHITE SYNTHETIC	7782-42-5	OSHA	TWA(as total dust):15 mg/m3;TWA(respirable fraction):5 mg/m3	

ACGIH : American Conference of Governmental Industrial Hygienists
AIHA : American Industrial Hygiene Association
CMRG : Chemical Manufacturer's Recommended Guidelines
OSHA : United States Department of Labor - Occupational Safety and Health Administration
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

8.2. Exposure controls

8.2.1. Engineering controls

Provide ventilated enclosure for heat curing. Curing enclosures must be exhausted to outdoors or to a suitable emission control device. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:
Indirect Vented Goggles

Skin/hand protection
Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing. Note: Nitrile gloves may be worn over polymer laminate gloves to improve dexterity.
Gloves made from the following material(s) are recommended: Polymer laminate

If this product is used in a manner that presents a higher potential for exposure (eg. spraying, high splash potential etc.), then use of protective coveralls may be necessary. Select and use body protection to prevent contact based on the results of an exposure assessment. The following protective clothing material(s) are recommended: Apron - polymer laminate

Respiratory protection

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:
Half facepiece air-purifying respirator suitable for organic vapors and particulates

For questions about suitability for a specific application, consult with your respirator manufacturer.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General Physical Form:	Solid
Specific Physical Form:	Paste
Odor, Color, Grade:	Light gray with black flecks, thixotropic paste
Odor threshold	*No Data Available*
Melting point	*Not Applicable*
Boiling Point	*No Data Available*
Flash Point	No flash point
Evaporation rate	*No Data Available*
Flammability (solid, gas)	Not Classified
Flammable Limits(LEL)	*No Data Available*
Flammable Limits(UEL)	*No Data Available*
Vapor Pressure	Nil
Vapor Density	Nil
Specific Gravity	1.25 [*Ref Std:* WATER=1]
Solubility in Water	Nil
Solubility- non-water	*No Data Available*
Partition coefficient: n-octanol/ water	*No Data Available*
Autoignition temperature	*Not Applicable*

Decomposition temperature	*No Data Available*
Viscosity	*No Data Available*
Volatile Organic Compounds	30 g/l
Percent volatile	*No Data Available*
VOC Less H2O & Exempt Solvents	30 g/l

SECTION 10: Stability and reactivity

10.1. Reactivity
This material may be reactive with certain agents under certain conditions - see the remaining headings in this section.

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4. Conditions to avoid
Not determined

10.5. Incompatible materials
Strong oxidizing agents

10.6. Hazardous decomposition products

Substance	Condition
Formaldehyde	Not Specified
Carbon monoxide	Not Specified
Carbon dioxide	Not Specified
Oxides of Nitrogen	Not Specified

SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1. Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation:
May cause target organ effects after inhalation.

Skin Contact:
Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, dryness, cracking, blistering, and pain.
Allergic Skin Reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching.

Eye Contact:

Severe Eye Irritation: Signs/symptoms may include significant redness, swelling, pain, tearing, cloudy appearance of the cornea, and impaired vision.

Ingestion:
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

May cause target organ effects after ingestion.

Target Organ Effects:

Single exposure may cause:
Blood Effects: Signs/symptoms may include generalized weakness and fatigue, skin pallor, changes in blood clotting time, internal bleeding, and/or hemoglobinemia.

Prolonged or repeated exposure may cause:
Blood Effects: Signs/symptoms may include generalized weakness and fatigue, skin pallor, changes in blood clotting time, internal bleeding, and/or hemoglobinemia.

Kidney/Bladder Effects: Signs/symptoms may include changes in urine production, abdominal or lower back pain, increased protein in urine, increased blood urea nitrogen (BUN), blood in urine, and painful urination.

Toxicological Data
If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Overall product	Dermal		No data available; calculated ATE > 5,000 mg/kg
Overall product	Ingestion		No data available; calculated ATE > 5,000 mg/kg
Melamine	Dermal	Rabbit	LD50 > 1,000 mg/kg
Melamine	Ingestion	Rat	LD50 3,161 mg/kg
Siloxanes and Silicones, Di-Me, Hydroxy-Terminated	Dermal	Rabbit	LD50 > 16,000 mg/kg
Siloxanes and Silicones, Di-Me, Hydroxy-Terminated	Ingestion	Rat	LD50 > 64,000 mg/kg
Poly(Dimethylsiloxane)	Dermal	Rabbit	LD50 > 19,400 mg/kg
Graphite	Ingestion	Rat	LD50 > 2,000 mg/kg
Poly(Dimethylsiloxane)	Ingestion	Rat	LD50 > 17,000 mg/kg
Methyl Tris(Butylideneaminooxy)Silane	Ingestion	Rat	LD50 2,260 mg/kg
Silica	Dermal	Rabbit	LD50 > 5,000 mg/kg
Synthetic Amorphous Silica, Fumed, Crystalline Free	Dermal	Rabbit	LD50 > 5,000 mg/kg
Silica	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 0.691 mg/l
Silica	Ingestion	Rat	LD50 > 5,110 mg/kg
Synthetic Amorphous Silica, Fumed, Crystalline Free	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 0.691 mg/l
Synthetic Amorphous Silica, Fumed, Crystalline Free	Ingestion	Rat	LD50 > 5,110 mg/kg
(3-Aminopropyl)Triethoxysilane	Dermal	Rabbit	LD50 4,290 mg/kg
(3-Aminopropyl)Triethoxysilane	Ingestion	Rat	LD50 1,570 mg/kg
3-Iodo-2-Propynyl Butylcarbamate	Dermal	Rabbit	LD50 > 2,000 mg/kg
3-Iodo-2-Propynyl Butylcarbamate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.67 mg/l
3-Iodo-2-Propynyl Butylcarbamate	Ingestion	Rat	LD50 1,056 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Melamine	Guinea pig	No significant irritation
Graphite	Rabbit	No significant irritation

Poly(Dimethylsiloxane)	Rabbit	No significant irritation
Silica	Rabbit	No significant irritation
Synthetic Amorphous Silica, Fumed, Crystalline Free	Rabbit	No significant irritation
(3-Aminopropyl)Triethoxysilane	Rabbit	Corrosive
3-Iodo-2-Propynyl Butylcarbamate	Rabbit	Minimal irritation

Serious Eye Damage/Irritation

Name	Species	Value
Melamine	Rabbit	No significant irritation
Graphite	Rabbit	No significant irritation
Poly(Dimethylsiloxane)	Rabbit	No significant irritation
Silica	Rabbit	No significant irritation
Synthetic Amorphous Silica, Fumed, Crystalline Free	Rabbit	No significant irritation
(3-Aminopropyl)Triethoxysilane	Rabbit	Corrosive
3-Iodo-2-Propynyl Butylcarbamate	Rabbit	Corrosive

Skin Sensitization

Name	Species	Value
Melamine	Guinea pig	Not sensitizing
Silica	Human and animal	Not sensitizing
Synthetic Amorphous Silica, Fumed, Crystalline Free	Human and animal	Not sensitizing
(3-Aminopropyl)Triethoxysilane	Guinea pig	Sensitizing
3-Iodo-2-Propynyl Butylcarbamate	Multiple animal species	Sensitizing

Respiratory Sensitization

Name	Species	Value

Germ Cell Mutagenicity

Name	Route	Value
Melamine	In Vitro	Not mutagenic
Melamine	In vivo	Not mutagenic
Siloxanes and Silicones, Di-Me, Hydroxy-Terminated	In Vitro	Not mutagenic
Graphite	In Vitro	Some positive data exist, but the data are not sufficient for classification
Silica	In Vitro	Not mutagenic
Synthetic Amorphous Silica, Fumed, Crystalline Free	In Vitro	Not mutagenic

Carcinogenicity

Name	Route	Species	Value
Melamine	Ingestion	Rat	Some positive data exist, but the data are not sufficient for classification
Silica	Not Specified	Mouse	Some positive data exist, but the data are not sufficient for classification
Synthetic Amorphous Silica, Fumed, Crystalline Free	Not Specified	Mouse	Some positive data exist, but the data are not sufficient for classification

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
Melamine	Ingestion	Not toxic to development	Rat	NOAEL 1,060 mg/kg/day	during organogenesis
Silica	Ingestion	Not toxic to female reproduction	Rat	NOAEL 509 mg/kg/day	1 generation

Silica	Ingestion	Not toxic to male reproduction	Rat	NOAEL 497 mg/kg/day	1 generation
Silica	Ingestion	Not toxic to development	Rat	NOAEL 1,350 mg/kg/day	during organogenesis
Synthetic Amorphous Silica, Fumed, Crystalline Free	Ingestion	Not toxic to female reproduction	Rat	NOAEL 509 mg/kg/day	1 generation
Synthetic Amorphous Silica, Fumed, Crystalline Free	Ingestion	Not toxic to male reproduction	Rat	NOAEL 497 mg/kg/day	1 generation
Synthetic Amorphous Silica, Fumed, Crystalline Free	Ingestion	Not toxic to development	Rat	NOAEL 1,350 mg/kg/day	during organogenesis

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Melamine	Ingestion	kidney and/or bladder	May cause damage to organs though prolonged or repeated exposure	Rat	LOAEL 63 mg/kg/day	13 weeks
Graphite	Inhalation	pneumoconiosis	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	occupational exposure
Silica	Inhalation	respiratory system | silicosis	All data are negative	Human	NOAEL Not available	occupational exposure
Synthetic Amorphous Silica, Fumed, Crystalline Free	Inhalation	respiratory system | silicosis	All data are negative	Human	NOAEL Not available	occupational exposure
3-Iodo-2-Propynyl Butylcarbamate	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Rat	NOAEL .00116 mg/l	90 days

Aspiration Hazard

Name	Value

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

Ecotoxicological information

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

Chemical fate information

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

SECTION 13: Disposal considerations

13.1. Disposal methods

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Dispose of waste product in a permitted industrial waste facility. Empty drums/barrels/containers used for transporting and

handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

EPA Hazardous Waste Number (RCRA): Not regulated

SECTION 14: Transport Information

For Transport Information, please visit **http://3M.com/Transportinfo** or call 1-800-364-3577 or 651-737-6501.

SECTION 15: Regulatory information

15.1. US Federal Regulations

Contact 3M for more information.

311/312 Hazard Categories:

Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - Yes

15.2. State Regulations

Contact 3M for more information.

15.3. Chemical Inventories

The components of this material are in compliance with the provisions of Australia National Industrial Chemical Notification and Assessment Scheme (NICNAS). Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the new substance notification requirements of CEPA.

The components of this material are in compliance with the China "Measures on Environmental Management of New Chemical Substance". Certain restrictions may apply. Contact the selling division for additional information.

The components of this material are in compliance with the provisions of the Korean Toxic Chemical Control Law. Certain restrictions may apply. Contact the selling division for additional information.

The components of this material are in compliance with the provisions of Philippines RA 6969 requirements. Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the chemical notification requirements of TSCA.

Contact 3M for more information.

15.4. International Regulations

Contact 3M for more information.

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: Other information

NFPA Hazard Classification
Health: 2 **Flammability:** 0 **Instability:** 0 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

HMIS Hazard Classification
Health: *2 **Flammability:** 0 **Physical Hazard:** 0 **Personal Protection:** X - See PPE section.

Hazardous Material Identification System (HMIS® III) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS® III ratings are to be used with a fully implemented HMIS® III program. HMIS® is a registered mark of the American Coatings Association (ACA).

Document Group:	19-2499-2	**Version Number:**	9.00
Issue Date:	08/18/14	**Supercedes Date:**	08/18/14

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3M USA SDSs are available at www.3M.com

Safety Data Sheet

Document Group:	08-8510-3	**Version Number:**	19.00
Issue Date:	07/28/14	**Supercedes Date:**	08/13/13

SECTION 1: Identification

1.1. Product identifier
3M™ Fire Barrier Water Tight Sealant 1000 NS and 1003 SL

Product Identification Numbers
98-0400-5276-7, 98-0400-5278-3, 98-0400-5279-1, 98-0400-5281-7, 98-0400-5554-7, 98-0400-5555-4

1.2. Recommended use and restrictions on use

Recommended use
Fire Protection, This product is a watertight sealant that will help control the spread of fire, smoke and noxious gases.

1.3. Supplier's details

MANUFACTURER:	3M
DIVISION:	Industrial Adhesives and Tapes Division
ADDRESS:	3M Center, St. Paul, MN 55144-1000, USA
Telephone:	1-888-3M HELPS (1-888-364-3577)

1.4. Emergency telephone number
1-800-364-3577 or (651) 737-6501 (24 hours)

SECTION 2: Hazard identification

2.1. Hazard classification
Serious Eye Damage/Irritation: Category 2A.
Skin Sensitizer: Category 1.
Reproductive Toxicity: Category 2.
Specific Target Organ Toxicity (repeated exposure): Category 2.

2.2. Label elements
Signal word
Warning

Symbols
Exclamation mark | Health Hazard |

Pictograms

Hazard Statements
Causes serious eye irritation.
May cause an allergic skin reaction.
Suspected of damaging fertility or the unborn child.

May cause damage to organs through prolonged or repeated exposure:
blood or blood-forming organs |
cardiovascular system |

Precautionary Statements

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust/fume/gas/mist/vapors/spray.
Wear protective gloves and eye/face protection.
Wash thoroughly after handling.
Contaminated work clothing must not be allowed out of the workplace.

Response:
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/attention.
Wash contaminated clothing before reuse.
IF exposed or concerned: Get medical advice/attention.

Storage:
Store locked up.

Disposal:
Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

2.3. Hazards not otherwise classified
Persons previously sensitized to amines may develop a cross-sensitization reaction to certain other amines. This product may release methyl ethyl ketoxime (CAS 96-29-7) during curing and/or when exposed to water or humid air.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Calcium Carbonate	1317-65-3	15 - 40 Trade Secret *
Siloxanes and Silcones, Di-Me, Hydroxy-Terminated	70131-67-8	15 - 40 Trade Secret *
Poly(Dimethylsiloxane)	63148-62-9	15 - 40 Trade Secret *
Ketoxime Silane	22984-54-9	3 - 7 Trade Secret *
Amorphous Silica	7631-86-9	0.5 - 5 Trade Secret *
(Trimethoxysilylpropyl)Ethylenediamine	1760-24-3	0.5 - 1.0 Trade Secret *
Octamethylcyclotetrasiloxane	556-67-2	<= 0.1 Trade Secret *
Quartz silica	14808-60-7	<= 0.1 Trade Secret *

*The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Remove person to fresh air. If you feel unwell, get medical attention.

Skin Contact:
Immediately wash with soap and water. Remove contaminated clothing and wash before reuse. If signs/symptoms develop, get medical attention.

Eye Contact:
Immediately flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. Get medical attention.

If Swallowed:
Rinse mouth. If you feel unwell, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed
See Section 11.1. Information on toxicological effects.

4.3. Indication of any immediate medical attention and special treatment required
Not applicable

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media
In case of fire: Use a fire fighting agent suitable for ordinary combustible material such as water or foam to extinguish.

5.2. Special hazards arising from the substance or mixture
None inherent in this product.

Hazardous Decomposition or By-Products

Substance	Condition
Formaldehyde	During Combustion
Carbon dioxide	During Combustion
Oxides of Nitrogen	During Combustion

5.3. Special protective actions for fire-fighters
No special protective actions for fire-fighters are anticipated.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Evacuate area. Ventilate the area with fresh air. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

6.2. Environmental precautions
Avoid release to the environment.

6.3. Methods and material for containment and cleaning up
Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue. Seal the container. Dispose of collected material as soon as possible.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Keep out of reach of children. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wash contaminated clothing before reuse. Avoid contact with oxidizing agents (eg. chlorine, chromic acid etc.) Use personal protective equipment (gloves, respirators, etc.) as required.

7.2. Conditions for safe storage including any incompatibilities
Store away from acids. Store away from strong bases. Store away from oxidizing agents.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Ingredient	C.A.S. No.	Agency	Limit type	Additional Comments
Calcium Carbonate	1317-65-3	OSHA	TWA(as total dust):15 mg/m3;TWA(respirable fraction):5 mg/m3	
Quartz silica	14808-60-7	ACGIH	TWA(respirable fraction):0.025 mg/m3	A2: Suspected human carcin.
Quartz silica	14808-60-7	OSHA	TWA concentration(as total dust):0.3 mg/m3;TWA concentration(respirable):0.1 mg/m3(2.4 millions of particles/cu. ft.)	
Octamethylcyclotetrasiloxane	556-67-2	CMRG	TWA:10 ppm	
Amorphous Silica	7631-86-9	CMRG	TWA(as respirable dust):3 mg/m3	
SILICA, AMORPHOUS	7631-86-9	OSHA	TWA concentration:0.8 mg/m3;TWA:20 millions of particles/cu. ft.	

ACGIH : American Conference of Governmental Industrial Hygienists
AIHA : American Industrial Hygiene Association
CMRG : Chemical Manufacturer's Recommended Guidelines
OSHA : United States Department of Labor - Occupational Safety and Health Administration
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

8.2. Exposure controls

8.2.1. Engineering controls
Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:
Indirect Vented Goggles

Skin/hand protection
Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing. Note: Nitrile gloves may be worn over polymer laminate gloves to improve dexterity.
Gloves made from the following material(s) are recommended: Polymer laminate

If this product is used in a manner that presents a higher potential for exposure (eg. spraying, high splash potential etc.), then use of protective coveralls may be necessary. Select and use body protection to prevent contact based on the results of an exposure assessment. The following protective clothing material(s) are recommended: Apron - polymer laminate

Respiratory protection

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:
Half facepiece or full facepiece air-purifying respirator suitable for organic vapors and particulates

For questions about suitability for a specific application, consult with your respirator manufacturer.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General Physical Form:	Solid
Specific Physical Form:	Paste
Odor, Color, Grade:	Low odor, light gray, thixotropic caulk
Odor threshold	*No Data Available*
Melting point	*No Data Available*
Flash Point	> 212 ºF [*Test Method:* Closed Cup]
Flammability (solid, gas)	Not Classified
Flammable Limits(LEL)	*Not Applicable*
Flammable Limits(UEL)	*Not Applicable*
Vapor Pressure	< 5 mmHg [@ 25 ºC]
Specific Gravity	1.31 - 1.33 [*Ref Std:* WATER=1]
Solubility in Water	Nil
Solubility- non-water	*No Data Available*
Partition coefficient: n-octanol/ water	*No Data Available*
Autoignition temperature	*No Data Available*
Decomposition temperature	*No Data Available*
Volatile Organic Compounds	< 3 %
Percent volatile	<=3.8 % weight
VOC Less H2O & Exempt Solvents	< 35 g/l

SECTION 10: Stability and reactivity

10.1. Reactivity
This material is considered to be non reactive under normal use conditions.

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4. Conditions to avoid
Not determined

10.5. Incompatible materials
Strong acids
Strong bases
Strong oxidizing agents

10.6. Hazardous decomposition products

Substance	Condition
None known.	

Refer to section 5.2 for hazardous decomposition products during combustion.

SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1. Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation:
No health effects are expected.

Skin Contact:
Contact with the skin during product use is not expected to result in significant irritation. Allergic Skin Reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching.

Eye Contact:
Severe Eye Irritation: Signs/symptoms may include significant redness, swelling, pain, tearing, cloudy appearance of the cornea, and impaired vision.

Ingestion:
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

May cause target organ effects after ingestion.

Target Organ Effects:

Prolonged or repeated exposure may cause:

Cardiac Effects: Signs/symptoms may include irregular heartbeat (arrhythmia), changes in heart rate, damage to heart muscle, heart attack, and may be fatal.

Hematopoietic Effects: Signs/symptoms may include generalized weakness, fatigue and alterations in numbers of circulating blood cells.

Reproductive/Developmental Toxicity:
Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

Carcinogenicity:

Ingredient	C.A.S. No.	Class Description	Regulation
Quartz silica	14808-60-7	Grp. 1: Carcinogenic to humans	International Agency for Research on Cancer
SILICA, CRYS AIRRESP	14808-60-7	Known human carcinogen	National Toxicology Program Carcinogens

Additional Information:
Persons previously sensitized to amines may develop a cross-sensitization reaction to certain other amines.

Toxicological Data
If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Overall product	Ingestion		No data available; calculated ATE > 5,000 mg/kg
Calcium Carbonate	Dermal	Rat	LD50 > 2,000 mg/kg
Calcium Carbonate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 3.0 mg/l
Calcium Carbonate	Ingestion	Rat	LD50 6,450 mg/kg
Siloxanes and Silcones, Di-Me, Hydroxy-Terminated	Dermal	Rabbit	LD50 > 16,000 mg/kg
Siloxanes and Silcones, Di-Me, Hydroxy-Terminated	Ingestion	Rat	LD50 > 64,000 mg/kg
Poly(Dimethylsiloxane)	Dermal	Rabbit	LD50 > 19,400 mg/kg
Poly(Dimethylsiloxane)	Ingestion	Rat	LD50 > 17,000 mg/kg
Amorphous Silica	Dermal	Rabbit	LD50 > 5,000 mg/kg
Amorphous Silica	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 0.691 mg/l
Amorphous Silica	Ingestion	Rat	LD50 > 5,110 mg/kg
Ketoxime Silane	Ingestion	Rat	LD50 2,260 mg/kg
(Trimethoxysilylpropyl)Ethylenediamine	Dermal	Rabbit	LD50 16,480 mg/kg
(Trimethoxysilylpropyl)Ethylenediamine	Ingestion	Rat	LD50 2,400 mg/kg
Quartz silica	Dermal		LD50 estimated to be > 5,000 mg/kg
Quartz silica	Ingestion		LD50 estimated to be > 5,000 mg/kg
Octamethylcyclotetrasiloxane	Dermal	Rat	LD50 > 2,400 mg/kg
Octamethylcyclotetrasiloxane	Inhalation-Dust/Mist (4 hours)	Rat	LC50 36 mg/l
Octamethylcyclotetrasiloxane	Ingestion	Rat	LD50 > 5,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Calcium Carbonate	Rabbit	No significant irritation
Poly(Dimethylsiloxane)	Rabbit	No significant irritation
Amorphous Silica	Rabbit	No significant irritation
Octamethylcyclotetrasiloxane	Rabbit	Minimal irritation
Quartz silica		No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value

Calcium Carbonate	Rabbit	No significant irritation
Poly(Dimethylsiloxane)	Rabbit	No significant irritation
Amorphous Silica	Rabbit	No significant irritation
Octamethylcyclotetrasiloxane	Rabbit	No significant irritation

Skin Sensitization

Name	Species	Value
Amorphous Silica	Human and animal	Not sensitizing
Octamethylcyclotetrasiloxane	Human and animal	Not sensitizing

Respiratory Sensitization

Name	Species	Value

Germ Cell Mutagenicity

Name	Route	Value
Siloxanes and Silcones, Di-Me, Hydroxy-Terminated	In Vitro	Not mutagenic
Amorphous Silica	In Vitro	Not mutagenic
Octamethylcyclotetrasiloxane	In Vitro	Some positive data exist, but the data are not sufficient for classification
Quartz silica	In Vitro	Some positive data exist, but the data are not sufficient for classification
Quartz silica	In vivo	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
Amorphous Silica	Not Specified	Mouse	Some positive data exist, but the data are not sufficient for classification
Quartz silica	Inhalation	Human and animal	Carcinogenic

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
Calcium Carbonate	Ingestion	Not toxic to development	Rat	NOAEL 625 mg/kg/day	premating & during gestation
Amorphous Silica	Ingestion	Not toxic to female reproduction	Rat	NOAEL 509 mg/kg/day	1 generation
Amorphous Silica	Ingestion	Not toxic to male reproduction	Rat	NOAEL 497 mg/kg/day	1 generation
Amorphous Silica	Ingestion	Not toxic to development	Rat	NOAEL 1,350 mg/kg/day	during organogenesis
Octamethylcyclotetrasiloxane	Inhalation	Not toxic to male reproduction	Rat	NOAEL 8.5 mg/l	2 generation
Octamethylcyclotetrasiloxane	Ingestion	Toxic to female reproduction	Rabbit	NOAEL 50 mg/kg/day	during organogenesis
Octamethylcyclotetrasiloxane	Inhalation	Toxic to female reproduction	Rat	NOAEL 3.6 mg/l	2 generation

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration

Calcium Carbonate	Inhalation	respiratory system	All data are negative	Rat	NOAEL 0.812 mg/l	90 minutes

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Calcium Carbonate	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	occupational exposure
Amorphous Silica	Inhalation	respiratory system | silicosis	All data are negative	Human	NOAEL Not available	occupational exposure
Octamethylcyclotetrasiloxane	Dermal	hematopoietic system	All data are negative	Rabbit	NOAEL 960 mg/kg/day	3 weeks
Quartz silica	Inhalation	silicosis	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	occupational exposure
Octamethylcyclotetrasiloxane	Inhalation	liver	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 8.5 mg/l	13 weeks
Octamethylcyclotetrasiloxane	Inhalation	endocrine system | immune system | kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 8.5 mg/l	2 generation
Octamethylcyclotetrasiloxane	Inhalation	hematopoietic system	All data are negative	Rat	NOAEL 8.5 mg/l	13 weeks
Octamethylcyclotetrasiloxane	Ingestion	liver	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1,600 mg/kg/day	2 weeks

Aspiration Hazard

Name	Value

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

Ecotoxicological information

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

Chemical fate information

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

SECTION 13: Disposal considerations

13.1. Disposal methods

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Dispose of waste product in a permitted industrial waste facility. As a disposal alternative, incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

EPA Hazardous Waste Number (RCRA): Not regulated

SECTION 14: Transport Information

For Transport Information, please visit **http://3M.com/Transportinfo** or call 1-800-364-3577 or 651-737-6501.

SECTION 15: Regulatory information

15.1. US Federal Regulations

Contact 3M for more information.

311/312 Hazard Categories:

Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - Yes

This material contains a chemical which requires export notification under TSCA Section 12[b]:

Ingredient (Category if applicable)	C.A.S. No	Regulation	Status
Octamethylcyclotetrasiloxane	556-67-2	Toxic Substances Control Act (TSCA) 4 Test Rule Chemicals	Applicable

15.2. State Regulations

Contact 3M for more information.

California Proposition 65

Ingredient	C.A.S. No.	Classification
Methyl Alcohol	67-56-1	Developmental Toxin

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

15.3. Chemical Inventories

The components of this material are in compliance with the provisions of Australia National Industrial Chemical Notification and Assessment Scheme (NICNAS). Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the new substance notification requirements of CEPA.

The components of this material are in compliance with the China "Measures on Environmental Management of New Chemical Substance". Certain restrictions may apply. Contact the selling division for additional information.

The components of this material are in compliance with the provisions of the Korean Toxic Chemical Control Law. Certain restrictions may apply. Contact the selling division for additional information.

The components of this material are in compliance with the provisions of Philippines RA 6969 requirements. Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the chemical notification requirements of TSCA.

Contact 3M for more information.

15.4. International Regulations

Contact 3M for more information.

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: Other information

NFPA Hazard Classification
Health: 2 **Flammability:** 1 **Instability:** 0 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

HMIS Hazard Classification
Health: 2 **Flammability:** 1 **Physical Hazard:** 0 **Personal Protection:** X - See PPE section.

Hazardous Material Identification System (HMIS® III) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS® III ratings are to be used with a fully implemented HMIS® III program. HMIS® is a registered mark of the American Coatings Association (ACA).

Document Group:	08-8510-3	**Version Number:**	19.00
Issue Date:	07/28/14	**Supercedes Date:**	08/13/13

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Safety Data Sheet

Document Group:	09-5451-1	**Version Number:**	26.00
Issue Date:	06/20/14	**Supercedes Date:**	08/18/13

SECTION 1: Identification

1.1. Product identifier
3M Brand Fire Barrier CP-25WB+

Product Identification Numbers
42-0016-4710-8, 42-0016-4715-7, 42-0016-4716-5, 98-0400-5380-7, 98-0400-5381-5, 98-0400-5382-3, 98-0400-5383-1, 98-0400-5406-0, 98-0400-5456-5, 98-0400-5562-0, 98-0400-5573-7, 98-0400-5610-7, 98-0400-5629-7

1.2. Recommended use and restrictions on use

Recommended use
Fire Protection, Used as Firestop in buildings.

1.3. Supplier's details

MANUFACTURER:	3M
DIVISION:	Industrial Adhesives and Tapes Division
ADDRESS:	3M Center, St. Paul, MN 55144-1000, USA
Telephone:	1-888-3M HELPS (1-888-364-3577)

1.4. Emergency telephone number
1-800-364-3577 or (651) 737-6501 (24 hours)

SECTION 2: Hazard identification

2.1. Hazard classification
Serious Eye Damage/Irritation: Category 2B.

2.2. Label elements
Signal word
Warning

Symbols
Not applicable

Pictograms
Not applicable

Hazard Statements

Causes eye irritation.

Precautionary Statements
General:
Keep out of reach of children.

Prevention:
Wash thoroughly after handling.

Response:
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.

2.3. Hazards not otherwise classified
None.

25% of the mixture consists of ingredients of unknown acute dermal toxicity.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Zinc Borate 2335	138265-88-0	10 - 30 Trade Secret *
Polymer (NJTS Reg. No. 04499600-7270)	Trade Secret*	10 - 30 Trade Secret *
Water	7732-18-5	10 - 30 Trade Secret *
Sodium Silicate	1344-09-8	10 - 30 Trade Secret *
Ethylhexyldiphenyl phosphate	1241-94-7	3 - 7 Trade Secret *
Oxide glass chemicals	65997-17-3	1 - 5 Trade Secret *
Iron oxide	1309-37-1	1 - 5 Trade Secret *
Polyethylene Glycol	25322-68-3	1 - 5 Trade Secret *
Triphenyl phosphate	115-86-6	< 1.0 Trade Secret *
Di-2-ethylhexlphenyl phosphate	16368-97-1	< 1.0 Trade Secret *
Polyoxyethylene monooctylphenyl ether	9036-19-5	< 1.0 Trade Secret *
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	55965-84-9	< 0.001 Trade Secret *

NJTS or NJTSRN: New Jersey Trade Secret Registry Number.

*The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Remove person to fresh air. If you feel unwell, get medical attention.

Skin Contact:
Wash with soap and water. If signs/symptoms develop, get medical attention.

Eye Contact:
Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

If Swallowed:
Rinse mouth. If you feel unwell, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed
See Section 11.1. Information on toxicological effects.

4.3. Indication of any immediate medical attention and special treatment required
Not applicable

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media
Non-combustible. Use a fire fighting agent suitable for surrounding fire.

5.2. Special hazards arising from the substance or mixture
None inherent in this product.

5.3. Special protective actions for fire-fighters
No special protective actions for fire-fighters are anticipated.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Evacuate area. Ventilate the area with fresh air. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

6.2. Environmental precautions
Avoid release to the environment.

6.3. Methods and material for containment and cleaning up
Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue. Seal the container. Dispose of collected material as soon as possible.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Avoid eye contact. Keep out of reach of children. Avoid breathing dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment.

7.2. Conditions for safe storage including any incompatibilities
Keep cool. Store away from heat. Store away from areas where product may come into contact with food or pharmaceuticals. Store in a dry place.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Ingredient	C.A.S. No.	Agency	Limit type	Additional Comments
Triphenyl phosphate	115-86-6	ACGIH	TWA:3 mg/m3	
Triphenyl phosphate	115-86-6	OSHA	TWA:3 mg/m3	

Iron oxide	1309-37-1	ACGIH	TWA(respirable fraction):5 mg/m3	
Iron oxide	1309-37-1	OSHA	TWA(as fume):10 mg/m3	
ROUGE	1309-37-1	OSHA	TWA(as total dust):15 mg/m3;TWA(respirable fraction):5 mg/m3	
Polyethylene Glycol	25322-68-3	AIHA	TWA(as particulate):10 mg/m3	
Oxide glass chemicals	65997-17-3	Manufacturer determined	TWA(as dust):10 mg/m3	

ACGIH : American Conference of Governmental Industrial Hygienists
AIHA : American Industrial Hygiene Association
CMRG : Chemical Manufacturer's Recommended Guidelines
OSHA : United States Department of Labor - Occupational Safety and Health Administration
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

8.2. Exposure controls

8.2.1. Engineering controls
Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:
Indirect Vented Goggles

Skin/hand protection
Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing.
Gloves made from the following material(s) are recommended: Butyl Rubber
Neoprene
Nitrile Rubber

Respiratory protection

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:
Half facepiece or full facepiece air-purifying respirator suitable for particulates

For questions about suitability for a specific application, consult with your respirator manufacturer.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General Physical Form:	Solid
Specific Physical Form:	Paste
Odor, Color, Grade:	Red with negligible odor

Odor threshold	*No Data Available*
Melting point	*No Data Available*
Flash Point	No flash point
Flammability (solid, gas)	Not Classified
Flammable Limits(LEL)	*Not Applicable*
Flammable Limits(UEL)	*Not Applicable*
Specific Gravity	1.35 [*Ref Std:* WATER=1]
Solubility in Water	Complete
Solubility- non-water	*No Data Available*
Autoignition temperature	*Not Applicable*
Decomposition temperature	*No Data Available*
Volatile Organic Compounds	< 1 g/l
VOC Less H2O & Exempt Solvents	< 1 g/l

SECTION 10: Stability and reactivity

10.1. Reactivity
This material is considered to be non reactive under normal use conditions.

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4. Conditions to avoid
None known.

10.5. Incompatible materials
None known.

10.6. Hazardous decomposition products

Substance	Condition
Carbon monoxide	Not Specified
Carbon dioxide	Not Specified
Oxides of Phosphorus	Not Specified

SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient

classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1. Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation:
Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Skin Contact:
Mild Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, and dryness.

Eye Contact:
Moderate Eye Irritation: Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Ingestion:
May be harmful if swallowed.
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

Toxicological Data
If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Overall product	Dermal		No data available; calculated ATE > 5,000 mg/kg
Overall product	Ingestion		No data available; calculated ATE 2,000 - 5,000 mg/kg
Polymer (NJTS Reg. No. 04499600-7270)	Ingestion	Rat	LD50 > 2,000 mg/kg
Zinc Borate 2335	Dermal	Rabbit	LD50 > 10,000 mg/kg
Zinc Borate 2335	Ingestion	Rat	LD50 > 10,000 mg/kg
Sodium Silicate	Dermal	Rabbit	LD50 > 4,640 mg/kg
Sodium Silicate	Ingestion	Rat	LD50 500 mg/kg
Ethylhexyldiphenyl phosphate	Dermal	Rabbit	LD50 > 7,940 mg/kg
Ethylhexyldiphenyl phosphate	Ingestion	Rat	LD50 > 24,000 mg/kg
Iron oxide	Dermal	Not available	LD50 3,100 mg/kg
Iron oxide	Ingestion	Not available	LD50 3,700 mg/kg
Polyethylene Glycol	Dermal	Rabbit	LD50 > 20,000 mg/kg
Polyethylene Glycol	Ingestion	Rat	LD50 32,770 mg/kg
Oxide glass chemicals	Dermal		LD50 estimated to be > 5,000 mg/kg
Oxide glass chemicals	Ingestion		LD50 estimated to be 2,000 - 5,000 mg/kg
Polyoxyethylene monooctylphenyl ether	Dermal	Rabbit	LD50 > 3,000 mg/kg
Polyoxyethylene monooctylphenyl ether	Ingestion	Rat	LD50 > 500 mg/kg
Triphenyl phosphate	Dermal	Rabbit	LD50 > 7,900 mg/kg
Triphenyl phosphate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 50 mg/l
Triphenyl phosphate	Ingestion	Rat	LD50 > 3,000 mg/kg
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Dermal	Rabbit	LD50 87 mg/kg
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.33 mg/l

3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Ingestion	Rat	LD50 40 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Polymer (NJTS Reg. No. 04499600-7270)	Rabbit	Minimal irritation
Sodium Silicate	Rabbit	Corrosive
Iron oxide	Rabbit	No significant irritation
Polyethylene Glycol	Rabbit	Minimal irritation
Oxide glass chemicals		No significant irritation
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Rabbit	Corrosive

Serious Eye Damage/Irritation

Name	Species	Value
Polymer (NJTS Reg. No. 04499600-7270)		Mild irritant
Sodium Silicate	Rabbit	Corrosive
Iron oxide	Rabbit	No significant irritation
Polyethylene Glycol	Rabbit	Mild irritant
Oxide glass chemicals		No significant irritation
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Rabbit	Corrosive

Skin Sensitization

Name	Species	Value
Sodium Silicate	Mouse	Not sensitizing
Iron oxide	Human	Some positive data exist, but the data are not sufficient for classification
Polyethylene Glycol	Guinea pig	Not sensitizing
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Human and animal	Sensitizing

Photosensitization

Name	Species	Value
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Human and animal	Not sensitizing

Respiratory Sensitization

Name	Species	Value

Germ Cell Mutagenicity

Name	Route	Value
Sodium Silicate	In Vitro	Not mutagenic
Sodium Silicate	In vivo	Not mutagenic
Iron oxide	In Vitro	Not mutagenic
Polyethylene Glycol	In Vitro	Not mutagenic
Polyethylene Glycol	In vivo	Not mutagenic
Oxide glass chemicals	In Vitro	Some positive data exist, but the data are not sufficient for classification
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	In vivo	Not mutagenic
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	In Vitro	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
Iron oxide	Inhalation	Human	Some positive data exist, but the data are not

			sufficient for classification
Polyethylene Glycol	Ingestion	Rat	Not carcinogenic
Oxide glass chemicals	Inhalation	Multiple animal species	Some positive data exist, but the data are not sufficient for classification
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Dermal	Mouse	Not carcinogenic
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Ingestion	Rat	Not carcinogenic

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
Sodium Silicate	Ingestion	Some positive developmental data exist, but the data are not sufficient for classification	Mouse	NOAEL 200 mg/kg/day	during gestation
Polyethylene Glycol	Ingestion	Not toxic to female reproduction	Rat	NOAEL 1,125 mg/kg/day	during gestation
Polyethylene Glycol	Ingestion	Not toxic to male reproduction	Rat	NOAEL 5699 +/- 1341 mg/kg/day	5 days
Polyethylene Glycol	Not Specified	Some positive reproductive/developmental data exist, but the data are not sufficient for classification		NOEL N/A	
Polyethylene Glycol	Ingestion	Some positive developmental data exist, but the data are not sufficient for classification	Mouse	NOAEL 562 mg/animal/day	during gestation
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Ingestion	Not toxic to female reproduction	Rat	NOAEL 10 mg/kg/day	2 generation
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Ingestion	Not toxic to male reproduction	Rat	NOAEL 10 mg/kg/day	2 generation
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Ingestion	Not toxic to development	Rat	NOAEL 15 mg/kg/day	during organogenesis

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Sodium Silicate	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	
Polyethylene Glycol	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1.008 mg/l	2 weeks
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL Not available	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Sodium Silicate	Ingestion	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Dog	LOAEL 2,400 mg/kg/day	4 weeks
Sodium Silicate	Ingestion	endocrine system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 804 mg/kg/day	3 months
Sodium Silicate	Ingestion	blood	All data are negative	Rat	NOAEL 804	3 months

					mg/kg/day	
Sodium Silicate	Ingestion	heart | liver	All data are negative	Rat	NOAEL 1,259 mg/kg/day	8 weeks
Iron oxide	Inhalation	pulmonary fibrosis | pneumoconiosis	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	occupational exposure
Polyethylene Glycol	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1.008 mg/l	2 weeks
Polyethylene Glycol	Ingestion	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 5,640 mg/kg/day	13 weeks
Polyethylene Glycol	Ingestion	heart | endocrine system | hematopoietic system | liver | nervous system	All data are negative	Rat	NOAEL 5,640 mg/kg/day	13 weeks
Oxide glass chemicals	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL not available	occupational exposure

Aspiration Hazard

Name	Value

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

Ecotoxicological information

Test Organism	Test Type	Result
Water flea, Daphnia magna	48 hours Aquatic Toxicity - Acute	27 mg/l
Green algae, Pseudokirchneriella subcapitata	72 hours Aquatic Toxicity - Chronic	2.6 mg/l

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

Chemical fate information

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

SECTION 13: Disposal considerations

13.1. Disposal methods

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Dispose of waste product in a permitted industrial waste facility. As a disposal alternative, incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

EPA Hazardous Waste Number (RCRA): Not regulated

SECTION 14: Transport Information

For Transport Information, please visit **http://3M.com/Transportinfo** or call 1-800-364-3577 or 651-737-6501.

SECTION 15: Regulatory information

15.1. US Federal Regulations

Contact 3M for more information.

311/312 Hazard Categories:

Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - No

Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

Ingredient	C.A.S. No	% by Wt
Zinc Borate 2335 (ZINC COMPOUNDS)	138265-88-0	10 - 30

15.2. State Regulations

15.3. Chemical Inventories

The components of this material are in compliance with the provisions of Australia National Industrial Chemical Notification and Assessment Scheme (NICNAS). Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the new substance notification requirements of CEPA.

The components of this material are in compliance with the China "Measures on Environmental Management of New Chemical Substance". Certain restrictions may apply. Contact the selling division for additional information.

The components of this material are in compliance with the provisions of the Korean Toxic Chemical Control Law. Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the chemical notification requirements of TSCA.

15.4. International Regulations

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: Other information

NFPA Hazard Classification
Health: 1 **Flammability:** 1 **Instability:** 0 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

HMIS Hazard Classification

Health: 2 **Flammability:** 1 **Physical Hazard:** 0 **Personal Protection:** X - See PPE section.

Hazardous Material Identification System (HMIS® III) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS® III ratings are to be used with a fully implemented HMIS® III program. HMIS® is a registered mark of the American Coatings Association (ACA).

Document Group:	09-5451-1	**Version Number:**	26.00
Issue Date:	06/20/14	**Supercedes Date:**	08/18/13

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Safety Data Sheet

This Safety Data Sheet (SDS) is provided as a courtesy in response to a customer request. This product is not regulated under, and a SDS is not required for this product by the OSHA Hazard Communication Standard (29 CFR 1910.1200) because, when used as recommended or under ordinary conditions, it should not present a health and safety hazard. However, use or processing of the product not in accordance with the product's recommendations or not under ordinary conditions may affect the performance of the product and may present potential health and safety hazards.

Document Group:	18-6856-1	**Version Number:**	7.00
Issue Date:	05/07/14	**Supercedes Date:**	02/15/11

SECTION 1: Identification

1.1. Product identifier
3M(TM) Fire Barrier Composite Sheet CS-195+

Product Identification Numbers
42-0016-4756-1, 42-0016-4757-9, 42-0016-4758-7, 42-0016-4759-5, 42-0016-4771-0, 42-0016-4772-8, 42-0016-4773-6, 42-0016-4774-4, 98-0400-2407-1, 98-0400-2408-9, 98-0400-2409-7, 98-0400-2601-9, 98-0400-2947-6

1.2. Recommended use and restrictions on use

Recommended use
Fire stopping penetrations in floors & walls to prevent flame and smoke passage.

1.3. Supplier's details

MANUFACTURER:	3M
DIVISION:	Industrial Adhesives and Tapes Division
ADDRESS:	3M Center, St. Paul, MN 55144-1000, USA
Telephone:	1-888-3M HELPS (1-888-364-3577)

1.4. Emergency telephone number
1-800-364-3577 or (651) 737-6501 (24 hours)

SECTION 2: Hazard identification

2.1. Hazard classification
This product is exempt from hazard classification according to OSHA Hazard Communication Standard, 29 CFR 1910.1200.

2.2. Label elements
Signal word
Not applicable.

Symbols

Not applicable.

Pictograms
Not applicable.

2.3. Hazards not otherwise classified
None.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Intumescent material and metal sheet	None	60 - 100

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
No need for first aid is anticipated.

Skin Contact:
No need for first aid is anticipated.

Eye Contact:
No need for first aid is anticipated.

If Swallowed:
No need for first aid is anticipated.

4.2. Most important symptoms and effects, both acute and delayed
See Section 11.1. Information on toxicological effects.

4.3. Indication of any immediate medical attention and special treatment required
Not applicable

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media
In case of fire: Use a fire fighting agent suitable for ordinary combustible material such as water or foam to extinguish.

5.2. Special hazards arising from the substance or mixture
None inherent in this product.

Hazardous Decomposition or By-Products

Substance	Condition
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Oxides of Nitrogen	During Combustion
Oxides of Sulfur	During Combustion

5.3. Special protective actions for fire-fighters
No unusual fire or explosion hazards are anticipated.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Not applicable.

6.2. Environmental precautions
Not applicable.

6.3. Methods and material for containment and cleaning up
Not applicable.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
This product is considered to be an article which does not release or otherwise result in exposure to a hazardous chemical under normal use conditions.

7.2. Conditions for safe storage including any incompatibilities
No special storage requirements.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits
No occupational exposure limit values exist for any of the components listed in Section 3 of this SDS.

8.2. Exposure controls

8.2.1. Engineering controls
Not applicable.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

Eye protection not required.

Skin/hand protection
No chemical protective gloves are required.

Respiratory protection

Respiratory protection is not required.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General Physical Form:	Solid
Odor, Color, Grade:	Material is dark brown to brick red laminated with metal sheet/scrim, neglible odor

Odor threshold	*Not Applicable*
pH	*Not Applicable*
Melting point	*Not Applicable*
Boiling Point	*Not Applicable*
Flash Point	*Not Applicable*
Flammability (solid, gas)	Not Classified
Flammable Limits(LEL)	*Not Applicable*
Flammable Limits(UEL)	*Not Applicable*
Specific Gravity	1.56 g/cm3
Solubility In Water	*No Data Available*
Solubility- non-water	*Not Applicable*
Partition coefficient: n-octanol/ water	*No Data Available*
Autoignition temperature	*No Data Available*
Decomposition temperature	*Not Applicable*
Viscosity	*Not Applicable*
Volatile Organic Compounds	< 1 % weight
VOC Less H2O & Exempt Solvents	< 1 g/l

SECTION 10: Stability and reactivity

10.1. Reactivity
This material is considered to be non reactive under normal use conditions.

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4. Conditions to avoid
None known.

10.5. Incompatible materials
None known.

10.6. Hazardous decomposition products

Substance	**Condition**
None known.	

Refer to section 5.2 for hazardous decomposition products during combustion.

Under recommended usage conditions, hazardous decomposition products are not expected. Hazardous decomposition products may occur as a result of oxidation, heating, or reaction with another material.

SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1. Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation:
No health effects are expected.

Skin Contact:
No health effects are expected.

Eye Contact:
No health effects are expected.

Ingestion:
No health effects are expected.

Additional Information:
This product, when used under reasonable conditions and in accordance with the 3M directions for use, should not present a health hazard. However, use or processing of the product in a manner not in accordance with the product's directions for use may affect the performance of the product and may present potential health and safety hazards.

Toxicological Data
If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Overall product	Ingestion		No data available; calculated ATE > 5,000 mg/kg
Intumescent material and metal sheet	Dermal	Rabbit	LD50 > 4,640 mg/kg
Intumescent material and metal sheet	Ingestion	Rat	LD50 500 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Intumescent material and metal sheet	Rabbit	Corrosive

Serious Eye Damage/Irritation

Name	Species	Value
Intumescent material and metal sheet	Rabbit	Corrosive

Skin Sensitization

Name	Species	Value
Intumescent material and metal sheet	Mouse	Not sensitizing

Respiratory Sensitization

Name	Species	Value

Germ Cell Mutagenicity

Name	Route	Value
Intumescent material and metal sheet	In Vitro	Not mutagenic
Intumescent material and metal sheet	In vivo	Not mutagenic

Carcinogenicity

Name	Route	Species	Value

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
Intumescent material and metal sheet	Ingestion	Some positive developmental data exist, but the data are not sufficient for classification	Mouse	NOAEL 200 mg/kg/day	during gestation

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Intumescent material and metal sheet	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Intumescent material and metal sheet	Ingestion	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Dog	LOAEL 2,400 mg/kg/day	4 weeks
Intumescent material and metal sheet	Ingestion	endocrine system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 804 mg/kg/day	3 months
Intumescent material and metal sheet	Ingestion	blood	All data are negative	Rat	NOAEL 804 mg/kg/day	3 months
Intumescent material and metal sheet	Ingestion	heart | liver	All data are negative	Rat	NOAEL 1,259 mg/kg/day	8 weeks

Aspiration Hazard

Name	Value

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

Ecotoxicological information

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

Chemical fate information

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material

and/or its components.

SECTION 13: Disposal considerations

13.1. Disposal methods
Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Prior to disposal, consult all applicable authorities and regulations to insure proper classification. Dispose of waste product in a permitted industrial waste facility. As a disposal alternative, incinerate in a permitted waste incineration facility. If no other disposal options are available, waste product may be placed in a landfill properly designed for industrial waste.

EPA Hazardous Waste Number (RCRA): Not regulated

SECTION 14: Transport Information

For Transport Information, please visit **http://3M.com/Transportinfo** or call 1-800-364-3577 or 651-737-6501.

SECTION 15: Regulatory information

15.1. US Federal Regulations
Contact 3M for more information.

311/312 Hazard Categories:

Fire Hazard - No Pressure Hazard - No Reactivity Hazard - Yes Immediate Hazard - No Delayed Hazard - No

15.2. State Regulations
Contact 3M for more information.

15.3. Chemical Inventories
The components of this product are in compliance with the new substance notification requirements of CEPA.

The components of this material are in compliance with the provisions of the Korean Toxic Chemical Control Law. Certain restrictions may apply. Contact the selling division for additional information.

The components of this material are in compliance with the provisions of Philippines RA 6969 requirements. Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the chemical notification requirements of TSCA.

Contact 3M for more information.

15.4. International Regulations
Contact 3M for more information.

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: Other information

NFPA Hazard Classification
Health: 0 **Flammability:** 1 **Instability:** 1 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

Document Group:	18-6856-1	**Version Number:**	7.00
Issue Date:	05/07/14	**Supercedes Date:**	02/15/11

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Safety Data Sheet

Document Group:	19-9776-6	**Version Number:**	8.00
Issue Date:	08/13/14	**Supercedes Date:**	08/13/14

SECTION 1: Identification

1.1. Product identifier
3M FireBarrier™ Sealant IC 15 WB+

Product Identification Numbers
42-0016-4768-6, 42-0016-4769-4, 42-0016-4770-2, 98-0400-5509-1, 98-0400-5510-9, 98-0400-5511-7, 98-0400-5512-5, 98-0400-5630-5

1.2. Recommended use and restrictions on use

Recommended use
Fire Barrier Sealant.

1.3. Supplier's details

MANUFACTURER:	3M
DIVISION:	Industrial Adhesives and Tapes Division
ADDRESS:	3M Center, St. Paul, MN 55144-1000, USA
Telephone:	1-888-3M HELPS (1-888-364-3577)

1.4. Emergency telephone number
1-800-364-3577 or (651) 737-6501 (24 hours)

SECTION 2: Hazard identification

2.1. Hazard classification
Serious Eye Damage/Irritation: Category 2B.
Carcinogenicity: Category 1A.

2.2. Label elements
Signal word
Danger

Symbols
Health Hazard |

Pictograms

Hazard Statements
Causes eye irritation.
May cause cancer.

Precautionary Statements
General:
Keep out of reach of children.

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wear protective gloves.
Wash thoroughly after handling.

Response:
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
IF exposed or concerned: Get medical advice/attention.

Storage:
Store locked up.

Disposal:
Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

2.3. Hazards not otherwise classified
None.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Calcium Carbonate	1317-65-3	30 - 60 Trade Secret *
Water	7732-18-5	10 - 30 Trade Secret *
Polymer NJTS Reg. No. 04499600-7314	Trade Secret*	10 - 30 Trade Secret *
Sodium Silicate	1344-09-8	3 - 7 Trade Secret *
ZIinc Borate 2335	138265-88-0	3 - 7 Trade Secret *
Fiberglass	65997-17-3	0.5 - 1.5 Trade Secret *
Quartz Silica	14808-60-7	< 0.5 Trade Secret *

NJTS or NJTSRN: New Jersey Trade Secret Registry Number.

*The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Remove person to fresh air. If you feel unwell, get medical attention.

Skin Contact:
Wash with soap and water. If signs/symptoms develop, get medical attention.

Eye Contact:
Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

If Swallowed:
Rinse mouth. If you feel unwell, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed
See Section 11.1. Information on toxicological effects.

4.3. Indication of any immediate medical attention and special treatment required
Not applicable

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media
In case of fire: Use a fire fighting agent suitable for ordinary combustible material such as water or foam to extinguish.

5.2. Special hazards arising from the substance or mixture
None inherent in this product.

Hazardous Decomposition or By-Products

Substance	Condition
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion

5.3. Special protective actions for fire-fighters
No special protective actions for fire-fighters are anticipated.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Evacuate area. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Warning! A motor could be an ignition source and could cause flammable gases or vapors in the spill area to burn or explode. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

6.2. Environmental precautions
Avoid release to the environment. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water.

6.3. Methods and material for containment and cleaning up
Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue. Seal the container. Dispose of collected material as soon as possible.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Keep out of reach of children. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment. Use personal protective equipment (gloves, respirators, etc.) as required.

7.2. Conditions for safe storage including any incompatibilities
No special storage requirements.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Ingredient	C.A.S. No.	Agency	Limit type	Additional Comments
Calcium Carbonate	1317-65-3	OSHA	TWA(as total dust):15 mg/m3;TWA(respirable fraction):5 mg/m3	
Quartz Silica	14808-60-7	ACGIH	TWA(respirable fraction):0.025 mg/m3	A2: Suspected human carcin.
Quartz Silica	14808-60-7	OSHA	TWA concentration(as total dust):0.3 mg/m3;TWA concentration(respirable):0.1 mg/m3(2.4 millions of particles/cu. ft.)	
Fiberglass	65997-17-3	Manufacturer determined	TWA(as dust):10 mg/m3	

ACGIH : American Conference of Governmental Industrial Hygienists
AIHA : American Industrial Hygiene Association
CMRG : Chemical Manufacturer's Recommended Guidelines
OSHA : United States Department of Labor - Occupational Safety and Health Administration
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

8.2. Exposure controls

8.2.1. Engineering controls
Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:
Indirect Vented Goggles

Skin/hand protection
Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing.

Gloves made from the following material(s) are recommended: Nitrile Rubber

Respiratory protection

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:
Half facepiece or full facepiece air-purifying respirator suitable for organic vapors and particulates

For questions about suitability for a specific application, consult with your respirator manufacturer.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General Physical Form:	Solid
Specific Physical Form:	Paste
Odor, Color, Grade:	Light yellow viscous paste with a mild odor
Odor threshold	*No Data Available*
Melting point	*No Data Available*
Boiling Point	*Not Applicable*
Flash Point	Flash point > 93 °C (200 °F)
Flammability (solid, gas)	Not Classified
Flammable Limits(LEL)	*Not Applicable*
Flammable Limits(UEL)	*Not Applicable*
Specific Gravity	1.4 [*Ref Std:* WATER=1]
Solubility in Water	Moderate
Solubility- non-water	*No Data Available*
Autoignition temperature	*No Data Available*
Decomposition temperature	*No Data Available*
Volatile Organic Compounds	< 2 g/l
VOC Less H2O & Exempt Solvents	< 2 g/l

SECTION 10: Stability and reactivity

10.1. Reactivity
This material is considered to be non reactive under normal use conditions.

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4. Conditions to avoid
None known.

10.5. Incompatible materials
None known.

10.6. Hazardous decomposition products

Substance	Condition
None known.	

Refer to section 5.2 for hazardous decomposition products during combustion.

SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1. Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation:
Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Skin Contact:
Mild Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, and dryness.

Eye Contact:
Moderate Eye Irritation: Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Ingestion:
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

Carcinogenicity:
Contains a chemical or chemicals which can cause cancer.

Ingredient	C.A.S. No.	Class Description	Regulation
Generic: GLASS FILAMENTS	65997-17-3	Anticipated human carcinogen	National Toxicology Program Carcinogens
Generic: GLASS FILAMENTS	65997-17-3	Grp. 2B: Possible human carc.	International Agency for Research on Cancer
Quartz Silica	14808-60-7	Grp. 1: Carcinogenic to humans	International Agency for Research on Cancer
SILICA, CRYS AIRRESP	14808-60-7	Known human carcinogen	National Toxicology Program Carcinogens

Toxicological Data
If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Overall product	Ingestion		No data available; calculated ATE > 5,000 mg/kg
Calcium Carbonate	Dermal	Rat	LD50 > 2,000 mg/kg
Calcium Carbonate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 3.0 mg/l
Calcium Carbonate	Ingestion	Rat	LD50 6,450 mg/kg
Polymer NJTS Reg. No. 04499600-7314	Ingestion	Rat	LD50 > 2,000 mg/kg
ZIinc Borate 2335	Dermal	Rabbit	LD50 > 10,000 mg/kg
ZIinc Borate 2335	Ingestion	Rat	LD50 > 10,000 mg/kg
Sodium Silicate	Dermal	Rabbit	LD50 > 4,640 mg/kg
Sodium Silicate	Ingestion	Rat	LD50 500 mg/kg
Fiberglass	Dermal		LD50 estimated to be > 5,000 mg/kg
Fiberglass	Ingestion		LD50 estimated to be 2,000 - 5,000 mg/kg
Quartz Silica	Dermal		LD50 estimated to be > 5,000 mg/kg

Quartz Silica	Ingestion		LD50 estimated to be > 5,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Calcium Carbonate	Rabbit	No significant irritation
Polymer NJTS Reg. No. 04499600-7314	Rabbit	Minimal irritation
Sodium Silicate	Rabbit	Corrosive
Fiberglass		No significant irritation
Quartz Silica		No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
Calcium Carbonate	Rabbit	No significant irritation
Polymer NJTS Reg. No. 04499600-7314		Mild irritant
Sodium Silicate	Rabbit	Corrosive
Fiberglass		No significant irritation

Skin Sensitization

Name	Species	Value
Sodium Silicate	Mouse	Not sensitizing

Respiratory Sensitization

Name	Species	Value

Germ Cell Mutagenicity

Name	Route	Value
Sodium Silicate	In Vitro	Not mutagenic
Sodium Silicate	In vivo	Not mutagenic
Fiberglass	In Vitro	Some positive data exist, but the data are not sufficient for classification
Quartz Silica	In Vitro	Some positive data exist, but the data are not sufficient for classification
Quartz Silica	In vivo	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
Fiberglass	Inhalation	Multiple animal species	Some positive data exist, but the data are not sufficient for classification
Quartz Silica	Inhalation	Human and animal	Carcinogenic

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
Calcium Carbonate	Ingestion	Not toxic to development	Rat	NOAEL 625 mg/kg/day	premating & during gestation
Sodium Silicate	Ingestion	Some positive developmental data exist, but the data are not sufficient for classification	Mouse	NOAEL 200 mg/kg/day	during gestation

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration

Calcium Carbonate	Inhalation	respiratory system	All data are negative	Rat	NOAEL 0.812 mg/l	90 minutes
Sodium Silicate	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Calcium Carbonate	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	occupational exposure
Sodium Silicate	Ingestion	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Dog	LOAEL 2,400 mg/kg/day	4 weeks
Sodium Silicate	Ingestion	endocrine system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 804 mg/kg/day	3 months
Sodium Silicate	Ingestion	blood	All data are negative	Rat	NOAEL 804 mg/kg/day	3 months
Sodium Silicate	Ingestion	heart | liver	All data are negative	Rat	NOAEL 1,259 mg/kg/day	8 weeks
Fiberglass	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL not available	occupational exposure
Quartz Silica	Inhalation	silicosis	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	occupational exposure

Aspiration Hazard

Name	Value

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

Ecotoxicological information

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

Chemical fate information

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

SECTION 13: Disposal considerations

13.1. Disposal methods

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Dispose of waste product in a permitted industrial waste facility. As a disposal alternative, incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

EPA Hazardous Waste Number (RCRA): Not regulated

SECTION 14: Transport Information

For Transport Information, please visit **http://3M.com/Transportinfo** or call 1-800-364-3577 or 651-737-6501.

SECTION 15: Regulatory information

15.1. US Federal Regulations

Contact 3M for more information.

311/312 Hazard Categories:

Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - Yes

Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

Ingredient	C.A.S. No	% by Wt
ZIinc Borate 2335 (ZINC COMPOUNDS)	138265-88-0	3 - 7

15.2. State Regulations

Contact 3M for more information.

California Proposition 65

Ingredient	C.A.S. No.	Classification
SILICA, CRYSTALLINE (AIRBORNE PARTICLES OF RESPIRABLE SIZE)	None	Carcinogen
GLASS FILAMENTS	None	Carcinogen
ACETALDEHYDE	75-07-0	Carcinogen

WARNING: This product contains a chemical known to the State of California to cause cancer.

15.3. Chemical Inventories

The components of this material are in compliance with the provisions of Australia National Industrial Chemical Notification and Assessment Scheme (NICNAS). Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the new substance notification requirements of CEPA.

The components of this material are in compliance with the China "Measures on Environmental Management of New Chemical Substance". Certain restrictions may apply. Contact the selling division for additional information.

The components of this material are in compliance with the provisions of the Korean Toxic Chemical Control Law. Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the chemical notification requirements of TSCA.

This product complies with the New Zealand Hazardous Substances and New Organisms Act (1996).

Contact 3M for more information.

15.4. International Regulations

Contact 3M for more information.

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: Other information

NFPA Hazard Classification
Health: 1 **Flammability:** 1 **Instability:** 0 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

Document Group:	19-9776-6	**Version Number:**	8.00
Issue Date:	08/13/14	**Supercedes Date:**	08/13/14

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3M USA SDSs are available at www.3M.com

Safety Data Sheet

Document Group:	23-6572-4	**Version Number:**	6.00
Issue Date:	08/14/14	**Supercedes Date:**	02/07/11

SECTION 1: Identification

1.1. Product identifier
3M(TM) Fire Barrier MP+ Stick

Product Identification Numbers
98-0400-5454-0

1.2. Recommended use and restrictions on use

Recommended use
Passive fire barrier product for industrial applications

1.3. Supplier's details

MANUFACTURER:	3M
DIVISION:	Industrial Adhesives and Tapes Division
ADDRESS:	3M Center, St. Paul, MN 55144-1000, USA
Telephone:	1-888-3M HELPS (1-888-364-3577)

1.4. Emergency telephone number
1-800-364-3577 or (651) 737-6501 (24 hours)

SECTION 2: Hazard identification

2.1. Hazard classification
Serious Eye Damage/Irritation: Category 2A.
Skin Sensitizer: Category 1.

2.2. Label elements
Signal word
Warning

Symbols
Exclamation mark |

Pictograms

Hazard Statements
Causes serious eye irritation.
May cause an allergic skin reaction.

Precautionary Statements
General:
Keep out of reach of children.

Prevention:
Avoid breathing dust/fume/gas/mist/vapors/spray.
Wear protective gloves and eye/face protection.
Wash thoroughly after handling.
Contaminated work clothing must not be allowed out of the workplace.

Response:
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/attention.
Wash contaminated clothing before reuse.

Disposal:
Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

2.3. Hazards not otherwise classified
None.

2% of the mixture consists of ingredients of unknown acute oral toxicity.
7% of the mixture consists of ingredients of unknown acute dermal toxicity.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Sodium Silicate	1344-09-8	10 - 30 Trade Secret *
Polymer NJTS Reg. No. 04499600-7315	Trade Secret*	10 - 30 Trade Secret *
Petrolatum	8009-03-8	10 - 30 Trade Secret *
Zinc Borate	138265-88-0	10 - 30 Trade Secret *
Melamine Phosphate	41583-09-9	7 - 13 Trade Secret *
Polybutylene	9003-29-6	7 - 13 Trade Secret *
Glass Wool	65997-17-3	3 - 7 Trade Secret *
Butadiene-Styrene-Meta-Divinylbenzene Polymer	26471-45-4	3 - 7 Trade Secret *
Amorphous Silica	112945-52-5	1 - 5 Trade Secret *
Rayon Fiber	None	< 5 Trade Secret *
Water	7732-18-5	1 - 5 Trade Secret *
Alpha-Methylstyrene-Isoamylene-Piperylene Polymer	62258-49-5	< 2 Trade Secret *
4,4'-Isopropylidenediphenol-Epichlorohydrin Polymer	25068-38-6	< 2 Trade Secret *
Rosin	8050-09-7	< 1 Trade Secret *

NJTS or NJTSRN: New Jersey Trade Secret Registry Number.

*The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Remove person to fresh air. If you feel unwell, get medical attention.

Skin Contact:
Immediately wash with soap and water. Remove contaminated clothing and wash before reuse. If signs/symptoms develop, get medical attention.

Eye Contact:
Immediately flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. Get medical attention.

If Swallowed:
Rinse mouth. If you feel unwell, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed
See Section 11.1. Information on toxicological effects.

4.3. Indication of any immediate medical attention and special treatment required
Not applicable

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media
Use a fire fighting agent suitable for the surrounding fire.

5.2. Special hazards arising from the substance or mixture
None inherent in this product.

5.3. Special protective actions for fire-fighters
No special protective actions for fire-fighters are anticipated.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Ventilate the area with fresh air. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

6.2. Environmental precautions
Avoid release to the environment.

6.3. Methods and material for containment and cleaning up
Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue. Seal the container. Dispose of collected material as soon as possible.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Keep out of reach of children. Avoid breathing dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage including any incompatibilities
Store away from areas where product may come into contact with food or pharmaceuticals.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Ingredient	C.A.S. No.	Agency	Limit type	Additional Comments
SILICA, AMORPHOUS	112945-52-5	OSHA	TWA concentration:0.8 mg/m3;TWA:20 millions of particles/cu. ft.	
Glass Wool	65997-17-3	Manufacturer determined	TWA(as dust):10 mg/m3	
MINERAL OILS, HIGHLY-REFINED OILS	8009-03-8	ACGIH	TWA(inhalable fraction):5 mg/m3	A4: Not class. as human carcin
Paraffin oil	8009-03-8	OSHA	TWA(as mist):5 mg/m3	
Rosin	8050-09-7	ACGIH	Limit value not established:	Cntrl all exposr-low as possib, Dermal/Respiratory Sensitizer

ACGIH : American Conference of Governmental Industrial Hygienists
AIHA : American Industrial Hygiene Association
CMRG : Chemical Manufacturer's Recommended Guidelines
OSHA : United States Department of Labor - Occupational Safety and Health Administration
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

8.2. Exposure controls

8.2.1. Engineering controls
Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:
Indirect Vented Goggles

Skin/hand protection
Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective

clothing.
Gloves made from the following material(s) are recommended: Polymer laminate

Select and use body protection to prevent contact based on the results of an exposure assessment. The following protective clothing material(s) are recommended: Apron - polymer laminate

Respiratory protection

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:
Half facepiece or full facepiece air-purifying respirator suitable for particulates

For questions about suitability for a specific application, consult with your respirator manufacturer.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General Physical Form:	Solid
Specific Physical Form:	Putty
Odor, Color, Grade:	Red putty with negligible odor
Odor threshold	*No Data Available*
Melting point	*Not Applicable*
Boiling Point	*Not Applicable*
Flash Point	Flash point > 93 °C (200 °F)
Flammability (solid, gas)	Not Classified
Flammable Limits(LEL)	*Not Applicable*
Flammable Limits(UEL)	*Not Applicable*
Specific Gravity	1.25 [*Ref Std:* WATER=1]
Solubility In Water	*No Data Available*
Solubility- non-water	*No Data Available*
Partition coefficient: n-octanol/ water	*No Data Available*
Autoignition temperature	*Not Applicable*
Decomposition temperature	*No Data Available*
Volatile Organic Compounds	< 1 % weight
VOC Less H2O & Exempt Solvents	< 1 g/l

SECTION 10: Stability and reactivity

10.1. Reactivity
This material is considered to be non reactive under normal use conditions.

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4. Conditions to avoid
None known.

10.5. Incompatible materials
None known.

10.6. Hazardous decomposition products

Substance	Condition
Aldehydes	Not Specified
Carbon monoxide	Not Specified
Carbon dioxide	Not Specified

SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1. Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation:
Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Skin Contact:
Mild Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, and dryness. Allergic Skin Reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching.

Eye Contact:
Severe Eye Irritation: Signs/symptoms may include significant redness, swelling, pain, tearing, cloudy appearance of the cornea, and impaired vision.

Ingestion:
May be harmful if swallowed.
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

Toxicological Data
If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Overall product	Dermal		No data available; calculated ATE > 5,000 mg/kg
Overall product	Ingestion		No data available; calculated ATE 2,000 - 5,000 mg/kg
Zinc Borate	Dermal	Rabbit	LD50 > 10,000 mg/kg
Zinc Borate	Ingestion	Rat	LD50 > 10,000 mg/kg
Sodium Silicate	Dermal	Rabbit	LD50 > 4,640 mg/kg
Sodium Silicate	Ingestion	Rat	LD50 500 mg/kg
Petrolatum	Dermal		LD50 estimated to be > 5,000 mg/kg
Petrolatum	Ingestion	Rat	LD50 > 5,000 mg/kg
Polymer NJTS Reg. No. 04499600-7315	Dermal	Rabbit	LD50 > 2,000 mg/kg
Polymer NJTS Reg. No. 04499600-7315	Ingestion	Rat	LD50 > 5,000 mg/kg
Polybutylene	Dermal	Rat	LD50 > 10,250 mg/kg
Polybutylene	Ingestion	Rat	LD50 > 34,600 mg/kg
Melamine Phosphate	Dermal		LD50 estimated to be 2,000 - 5,000 mg/kg

Melamine Phosphate	Ingestion	Rat	LD50 > 4,000 mg/kg
Glass Wool	Dermal		LD50 estimated to be > 5,000 mg/kg
Glass Wool	Ingestion		LD50 estimated to be 2,000 - 5,000 mg/kg
Butadiene-Styrene-Meta-Divinylbenzene Polymer	Ingestion		LD50 estimated to be 2,000 - 5,000 mg/kg
Amorphous Silica	Dermal	Rabbit	LD50 > 5,000 mg/kg
Amorphous Silica	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 0.691 mg/l
Amorphous Silica	Ingestion	Rat	LD50 > 5,110 mg/kg
4,4'-Isopropylidenediphenol-Epichlorohydrin Polymer	Dermal	Rat	LD50 > 1,600 mg/kg
4,4'-Isopropylidenediphenol-Epichlorohydrin Polymer	Ingestion	Rat	LD50 > 1,000 mg/kg
Alpha-Methylstyrene-Isoamylene-Piperylene Polymer	Ingestion	Rat	LD50 > 40,000 mg/kg
Rosin	Dermal	Rabbit	LD50 > 2,500 mg/kg
Rosin	Ingestion	Rat	LD50 7,600 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Sodium Silicate	Rabbit	Corrosive
Polymer NJTS Reg. No. 04499600-7315		No significant irritation
Polybutylene	Rabbit	Minimal irritation
Glass Wool		No significant irritation
Butadiene-Styrene-Meta-Divinylbenzene Polymer		Minimal irritation
Amorphous Silica	Rabbit	No significant irritation
4,4'-Isopropylidenediphenol-Epichlorohydrin Polymer	Rabbit	Mild irritant
Rosin	Rabbit	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
Sodium Silicate	Rabbit	Corrosive
Polybutylene	Rabbit	Mild irritant
Glass Wool		No significant irritation
Amorphous Silica	Rabbit	No significant irritation
4,4'-Isopropylidenediphenol-Epichlorohydrin Polymer	Rabbit	Moderate irritant
Rosin	Rabbit	Mild irritant

Skin Sensitization

Name	Species	Value
Sodium Silicate	Mouse	Not sensitizing
Amorphous Silica	Human and animal	Not sensitizing
4,4'-Isopropylidenediphenol-Epichlorohydrin Polymer	Human and animal	Sensitizing
Rosin	Guinea pig	Sensitizing

Respiratory Sensitization

Name	Species	Value
4,4'-Isopropylidenediphenol-Epichlorohydrin Polymer	Human	Some positive data exist, but the data are not sufficient for classification
Rosin	Human	Some positive data exist, but the data are not sufficient for classification

Germ Cell Mutagenicity

Name	Route	Value
Sodium Silicate	In Vitro	Not mutagenic
Sodium Silicate	In vivo	Not mutagenic
Glass Wool	In Vitro	Some positive data exist, but the data are not sufficient for classification
Amorphous Silica	In Vitro	Not mutagenic
4,4'-Isopropylidenediphenol-Epichlorohydrin Polymer	In vivo	Not mutagenic
4,4'-Isopropylidenediphenol-Epichlorohydrin Polymer	In Vitro	Some positive data exist, but the data are not

		sufficient for classification

Carcinogenicity

Name	Route	Species	Value
Glass Wool	Inhalation	Multiple animal species	Some positive data exist, but the data are not sufficient for classification
Amorphous Silica	Not Specified	Mouse	Some positive data exist, but the data are not sufficient for classification
4,4'-Isopropylidenediphenol-Epichlorohydrin Polymer	Dermal	Mouse	Some positive data exist, but the data are not sufficient for classification

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
Sodium Silicate	Ingestion	Some positive developmental data exist, but the data are not sufficient for classification	Mouse	NOAEL 200 mg/kg/day	during gestation
Amorphous Silica	Ingestion	Not toxic to female reproduction	Rat	NOAEL 509 mg/kg/day	1 generation
Amorphous Silica	Ingestion	Not toxic to male reproduction	Rat	NOAEL 497 mg/kg/day	1 generation
Amorphous Silica	Ingestion	Not toxic to development	Rat	NOAEL 1,350 mg/kg/day	during organogenesis
4,4'-Isopropylidenediphenol-Epichlorohydrin Polymer	Ingestion	Not toxic to female reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
4,4'-Isopropylidenediphenol-Epichlorohydrin Polymer	Ingestion	Not toxic to male reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
4,4'-Isopropylidenediphenol-Epichlorohydrin Polymer	Dermal	Not toxic to development	Rabbit	NOAEL 300 mg/kg/day	during organogenesis
4,4'-Isopropylidenediphenol-Epichlorohydrin Polymer	Ingestion	Not toxic to development	Rat	NOAEL 750 mg/kg/day	2 generation

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Sodium Silicate	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Sodium Silicate	Ingestion	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Dog	LOAEL 2,400 mg/kg/day	4 weeks
Sodium Silicate	Ingestion	endocrine system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 804 mg/kg/day	3 months
Sodium Silicate	Ingestion	blood	All data are negative	Rat	NOAEL 804 mg/kg/day	3 months
Sodium Silicate	Ingestion	heart | liver	All data are negative	Rat	NOAEL 1,259 mg/kg/day	8 weeks
Polybutylene	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 0.07 mg/l	2 weeks
Polybutylene	Inhalation	liver	Some positive data exist, but the data are not sufficient for	Rat	NOAEL 0.7 mg/l	2 weeks

			classification			
Glass Wool	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL not available	occupational exposure
Amorphous Silica	Inhalation	respiratory system | silicosis	All data are negative	Human	NOAEL Not available	occupational exposure
4,4'-Isopropylidenediphenol-Epichlorohydrin Polymer	Dermal	liver	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1,000 mg/kg/day	2 years
4,4'-Isopropylidenediphenol-Epichlorohydrin Polymer	Dermal	nervous system	All data are negative	Rat	NOAEL 1,000 mg/kg/day	13 weeks
4,4'-Isopropylidenediphenol-Epichlorohydrin Polymer	Ingestion	auditory system | heart | endocrine system | hematopoietic system | liver | eyes | kidney and/or bladder	All data are negative	Rat	NOAEL 1,000 mg/kg/day	28 days

Aspiration Hazard

Name	Value

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

Ecotoxicological information

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

Chemical fate information

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

SECTION 13: Disposal considerations

13.1. Disposal methods

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. As a disposal alternative, utilize an acceptable permitted waste disposal facility. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

EPA Hazardous Waste Number (RCRA): D007 (Chromium)

SECTION 14: Transport Information

For Transport Information, please visit **http://3M.com/Transportinfo** or call 1-800-364-3577 or 651-737-6501.

SECTION 15: Regulatory information

15.1. US Federal Regulations
Contact 3M for more information.

311/312 Hazard Categories:

Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - No

Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

Ingredient	C.A.S. No	% by Wt
Zinc Borate (ZINC COMPOUNDS)	138265-88-0	10 - 30

15.2. State Regulations
Contact 3M for more information.

15.3. Chemical Inventories
The components of this material are in compliance with the China "Measures on Environmental Management of New Chemical Substance". Certain restrictions may apply. Contact the selling division for additional information.

The components of this material are in compliance with the provisions of the Korean Toxic Chemical Control Law. Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the chemical notification requirements of TSCA.

Contact 3M for more information.

15.4. International Regulations
Contact 3M for more information.

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: Other information

NFPA Hazard Classification
Health: 2 **Flammability:** 1 **Instability:** 0 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

Document Group:	23-6572-4	**Version Number:**	6.00
Issue Date:	08/14/14	**Supercedes Date:**	02/07/11

DISCLAIMER: The information in this Safety Data Sheet (SDS) is believed to be correct as of the date issued. 3M MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to

determine whether it is fit for a particular purpose and suitable for user's method of use or application.

3M provides information in electronic form as a service to its customers. Due to the remote possibility that electronic transfer may have resulted in errors, omissions or alterations in this information, 3M makes no representations as to its completeness or accuracy. In addition, information obtained from a database may not be as current as the information in the SDS available directly from 3M

3M USA SDSs are available at www.3M.com

Material Safety Data Sheet

This material safety data sheet (MSDS) is provided as a courtesy in response to a customer request. This product is not regulated under, and a MSDS is not required for this product by the OSHA Hazard Communication Standard (29 CFR 1910.1200) because, when used as recommended or under ordinary conditions, it should not present a health and safety hazard. However, use or processing of the product not in accordance with the product's recommendations or not under ordinary conditions may affect the performance of the product and may present potential health and safety hazards.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: 3M™ Fire Barrier Pillow and 3M™ Fire Barrier Self-Locking Pillow
MANUFACTURER: 3M
DIVISION: Building & Commercial Services Division

ADDRESS: 3M Center
St. Paul, MN 55144-1000

EMERGENCY PHONE: 1-800-364-3577 or (651) 737-6501 (24 hours)

Issue Date: 01/31/2008
Supercedes Date: 06/07/2006

Document Group: 16-3772-7

Product Use:
Intended Use: Fire Protection

SECTION 2: INGREDIENTS

Ingredient	C.A.S. No.	% by Wt
Expantrol Flexible Intumescent Strips	Mixture	40 - 60
Fiber Mineral Wool	Mixture	35 - 55
Adhesive	Mixture	1 - 3
Plastic Film	9002-88-4	1 - 3
Hook & Loop Fastner	Mixture	0 - 3
Tape	Mixture	0 - 2

SECTION 3: HAZARDS IDENTIFICATION

3.1 EMERGENCY OVERVIEW

Odor, Color, Grade: Mineral fiber pillow with intumescent covering in a red plastic pillow.
General Physical Form: Solid

Immediate health, physical, and environmental hazards: The environmental properties of this product present a low environmental hazard. This product, when used under reasonable conditions and in accordance with the 3M directions for use, should not present a health hazard. However, use or processing of the product in a manner not in accordance with the product's directions for use may affect the performance of the product and may present potential health and safety hazards.

3.2 POTENTIAL HEALTH EFFECTS

Eye Contact:
No health effects are expected.

Skin Contact:
No health effects are expected.

Inhalation:
No health effects are expected.

Ingestion:
No health effects are expected.

3.3 POTENTIAL ENVIRONMENTAL EFFECTS

This substance does not leach metals or other RCRA (Resource Conservation and Recovery Act) listed TCLP (Toxic Characteristic Leaching Procedure) hazardous substances at concentrations that would make the product a hazardous waste.

SECTION 4: FIRST AID MEASURES

4.1 FIRST AID PROCEDURES

The following first aid recommendations are based on an assumption that appropriate personal and industrial hygiene practices are followed.

Eye Contact: No need for first aid is anticipated.

Skin Contact: No need for first aid is anticipated.

Inhalation: No need for first aid is anticipated.

If Swallowed: No need for first aid is anticipated.

SECTION 5: FIRE FIGHTING MEASURES

5.1 FLAMMABLE PROPERTIES

Autoignition temperature	*No Data Available*
Flash Point	*No Data Available*
Flammable Limits - LEL	*No Data Available*
Flammable Limits - UEL	*No Data Available*
OSHA Flammability Classification:	Not Applicable

5.2 EXTINGUISHING MEDIA
Material will not burn.

5.3 PROTECTION OF FIRE FIGHTERS

Special Fire Fighting Procedures: Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA).

Unusual Fire and Explosion Hazards: No unusual fire or explosion hazards are anticipated.

Note: See STABILITY AND REACTIVITY (SECTION 10) for hazardous combustion and thermal decomposition information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Not applicable.

SECTION 7: HANDLING AND STORAGE

7.1 HANDLING
This product is considered to be an article which does not release or otherwise result in exposure to a hazardous chemical under normal use conditions.

7.2 STORAGE
Not applicable.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 ENGINEERING CONTROLS
Not applicable.

8.2 PERSONAL PROTECTIVE EQUIPMENT (PPE)

8.2.1 Eye/Face Protection
Not applicable.

8.2.2 Skin Protection
Not applicable. Gloves are not required.

8.2.3 Respiratory Protection
Under normal use conditions, airborne exposures are not expected to be significant enough to require respiratory protection.

8.2.4 Prevention of Swallowing
Not applicable.

8.3 EXPOSURE GUIDELINES

None Established

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Odor, Color, Grade:	Mineral fiber pillow with intumescent covering in a red plastic pillow.
General Physical Form:	Solid
Autoignition temperature	*No Data Available*
Flash Point	*No Data Available*
Flammable Limits - LEL	*No Data Available*
Flammable Limits - UEL	*No Data Available*
Specific Gravity	*No Data Available*
Solubility in Water	Nil
Percent volatile	0 %
VOC Less H2O & Exempt Solvents	0 g/l

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable.

Materials and Conditions to Avoid: None known

Hazardous Polymerization: Hazardous polymerization will not occur.

Hazardous Decomposition or By-Products

Substance	Condition
Carbon monoxide	Not Specified
Carbon dioxide	Not Specified

Hazardous Decomposition: Under recommended usage conditions, hazardous decomposition products are not expected. Hazardous decomposition products may occur as a result of oxidation, heating, or reaction with another material.

SECTION 11: TOXICOLOGICAL INFORMATION

Please contact the address listed on the first page of the MSDS for Toxicological Information on this material and/or its components.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

Not applicable.

CHEMICAL FATE INFORMATION

Not applicable.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Method: Dispose of waste product in a sanitary landfill. As a disposal alternative, incinerate in an industrial or commercial facility.

EPA Hazardous Waste Number (RCRA): Not regulated

Since regulations vary, consult applicable regulations or authorities before disposal.

SECTION 14:TRANSPORT INFORMATION

ID Number(s):
98-0400-5421-9, 98-0400-5422-7, 98-0400-5423-5, 98-0400-5472-2, 98-0400-5473-0, 98-0400-5474-8

Please contact the emergency numbers listed on the first page of the MSDS for Transportation Information for this material.

SECTION 15: REGULATORY INFORMATION

US FEDERAL REGULATIONS
Contact 3M for more information.

311/312 Hazard Categories:
Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - No Delayed Hazard - No

STATE REGULATIONS
Contact 3M for more information.

CHEMICAL INVENTORIES
This product is an article as defined by TSCA regulations, and is exempt from TSCA Inventory listing requirements.

Contact 3M for more information.

INTERNATIONAL REGULATIONS
Contact 3M for more information.

ADDITIONAL INFORMATION
Product is RoHS Compliant

This MSDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: OTHER INFORMATION

NFPA Hazard Classification

Health: 0 **Flammability:** 0 **Reactivity:** 0 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

HMIS Hazard Classification

Health: 0 **Flammability:** 0 **Reactivity:** 0 **Protection:** E

Hazardous Material Identification System (HMIS®) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint and Coatings Association (NPCA).

Reason for Reissue: The MSDS has been revised because 3M has adopted the 16-section ANSI/ISO format. The potential hazards of the product have not changed. We encourage you to reread the MSDS and review the information.

Revision Changes:
Section 1: Product name was modified.
Section 1: Product use information was modified.
Section 1: Division name was modified.
Copyright was modified.
Page Heading: Product name was modified.
Section 9: Property description for optional properties was modified.
Section 14: ID Number Heading Template 1 was added.
Section 14: ID Number(s) Template 1 was added.
Section 2: Ingredient table was added.
Section 8: Exposure guidelines information - none - was added.

3M MSDSs are available at www.3M.com

3M
Fire Protection Products

Trained Installer

Name: Michael Goodrich Company: HVAC Services, Inc.

has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

☐ Construction Joints ☒ Penetration Seal
☐ Flexible Wrap ☐ Telecom
☐ Woodframe Construction

7/14/2017
Date Training Completed

Training must be renewed every three years.
See reverse side for important information.

Timothy J. Lennon
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Matt Allen Company: HVAC Services, Inc.

has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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☐ Woodframe Construction

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Timothy J. Lennon
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Hunter Mitchell Company: HVAC Services, Inc.

has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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Timothy J. Lennon
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Eric Rosengren Company: HVAC Services, Inc.

has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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Instructor Signature

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Fire Protection Products

Trained Installer

Name: Rick Lovejoy Company: HVAC Services, Inc.

has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Brady Grass Company: HVAC Services, Inc.

has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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Instructor Signature

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Fire Protection Products

Trained Installer

Name: Todd Applebee Company: HVAC Services, Inc.

has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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Instructor Signature

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Fire Protection Products

Trained Installer

Name: Brent Grass Company: HVAC Services, Inc.

has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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Timothy J. Lennon
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Charlie Durost
Company: HVAC Services, Inc.
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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- ☐ Flexible Wrap
- ☒ Penetration Seal
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- ☐ Woodframe Construction

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Timothy J. Lennan
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Colby Robinson
Company: HVAC Services, Inc.
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

- ☐ Construction Joints
- ☐ Flexible Wrap
- ☒ Penetration Seal
- ☐ Telecom
- ☐ Woodframe Construction

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Timothy J. Lennan
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Eric Rosengren
Company: HVAC Services, Inc.
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Hunter Mitchell
Company: HVAC Services, Inc.
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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- ☐ Woodframe Construction

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Instructor Signature

3M
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Trained Installer

Name: Brady Grass
Company: HVAC Services, Inc.
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Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Jacob Nelson
Company: HVAC Services, Inc.
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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Instructor Signature

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Fire Protection Products

Trained Installer

Name: Matt Allen
Company: HVAC Services, Inc.
has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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- ☐ Woodframe Construction

7/14/2017
Date Training Completed

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See reverse side for important information.

Timothy J. Lennan
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: David Bridges Company: HVAC Services, Inc.

has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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7/14/2017
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Timothy J. Lennan
Instructor Signature

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Fire Protection Products

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Timothy J. Lennan
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Rick Lovejoy Company: HVAC Services, Inc.

has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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- ☐ Telecom
- ☐ Woodframe Construction

7/14/2017
Date Training Completed

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Timothy J. Lennan
Instructor Signature

3M
Fire Protection Products

Trained Installer

Name: Travis Fisher Company: HVAC Services, Inc.

has successfully completed training and is hereby **Certified 3M™ Trained** in product application and proper installation procedures for the following firestopping systems:

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- ☒ Penetration Seal
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- ☐ Woodframe Construction

7/14/2017
Date Training Completed

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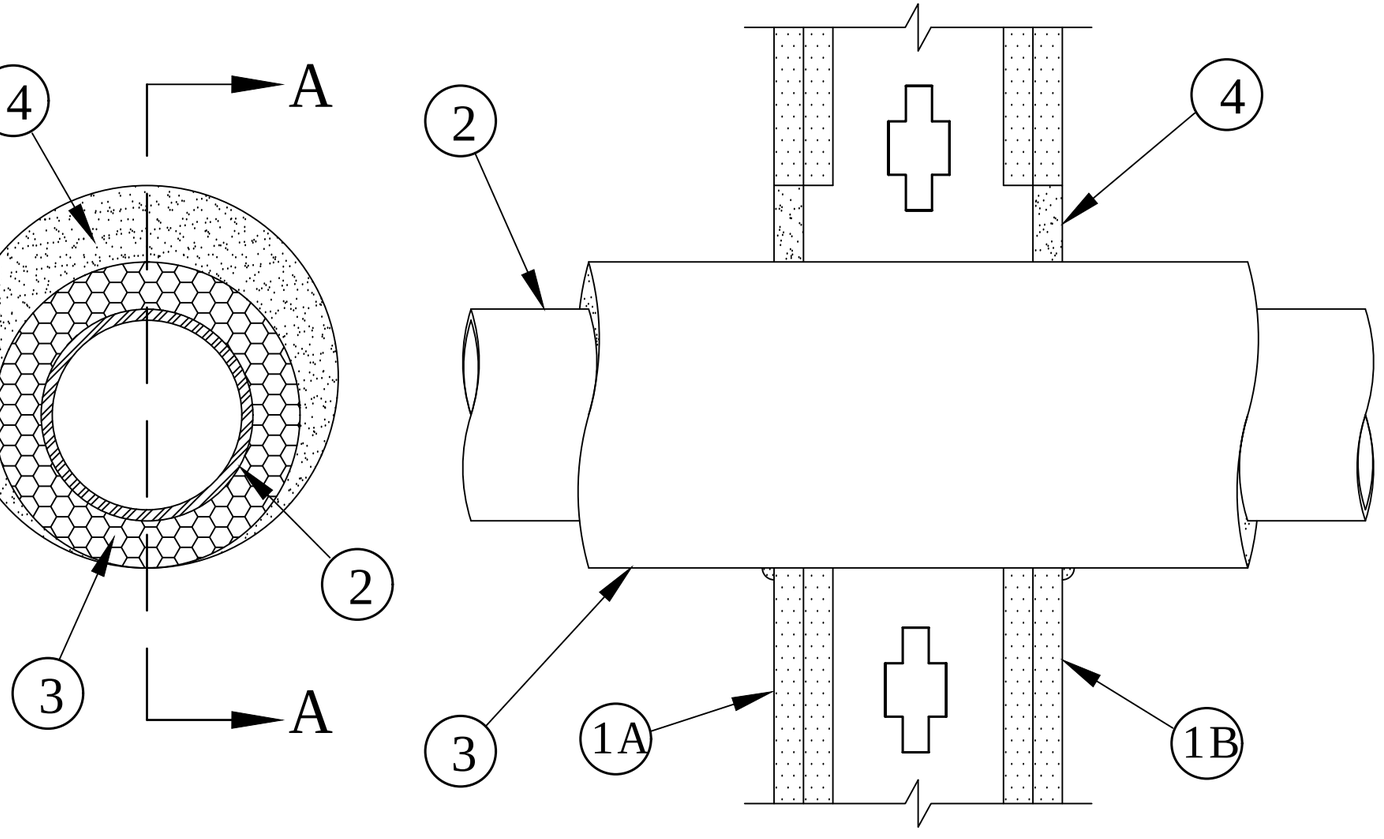
Timothy J. Lennan
Instructor Signature

* NOTE
THIS MATERIAL WAS EXTRACTED BY 3M FIRE PROTECTION PRODUCTS
FROM THE 2004 EDITION OF THE UL FIRE RESISTANCE DIRECTORY.

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

System No.W-L-5168
May 19, 2005
F Ratings - 1 & 2 Hr (See Item 1)
T Ratings - 0, 1/2, 3/4, 1-1/4 and 1-1/2 Hr (See Item 3)



SECTION A-A

1. Wall Assembly - The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400 or V400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 in. by 4 in. (51 mm by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide spaced max 24 in. (610 mm) OC.
B. Gypsum Board* - The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 12-1/2 in. (318 mm).

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. Through Penetrants - One metallic pipe or tubing installed concentrically or eccentrically within opening. Penetrant to be rigidly supported on both sides of wall. The following types and sizes of penetrants may be used:

A. Steel Pipe - Nom 8 in. (203 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe - Nom 8 in. (203 mm) diam (or smaller) cast or ductile iron pipe.
C. Copper Tubing - Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.
D. Copper Pipe - Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. Pipe Covering* - Nom 1 in., 1-1/2 in. or 2 in. (25 mm, 38 mm or 51 mm) thick hollow cylindrical heavy density glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied SSL tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. Annular space between pipe covering and periphery of opening to be min 0 in. (point contact) to max 1-7/8 in. (0 mm to max 48 mm).

See Pipe and Equipment Covering-Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

The hourly T Rating is 1-1/4 Hr for pipe coverings of nom 1 in. and 1-1/2 in. (25 mm and 38 mm) thick for 2 Hr rated assemblies.
The hourly T Rating is 1-1/2 Hr for pipe coverings of nom 2 in. (51 mm) thick for 2 Hr rated assemblies.
The hourly T Rating is 1/2 Hr for pipe coverings of nom 1 in. and 1-1/2 in. (25 mm and 38 mm) thick for 1 Hr rated assemblies.
The hourly T Rating is 3/4 Hr for pipe coverings of nom 2 in. (51 mm) thick for 1 Hr rated assemblies.

4. Fill,Void or Cavity Material* - Caulk or Sealant - Min 5/8 in. (16 mm) thickness of caulk applied within annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of caulk applied to gypsum board/pipe covering interface at point contact location on both sides of wall.

3M COMPANY - CP 25WB+, IC 15WB+ caulk or FB-3000 WT sealant

*Bearing the UL Classification Marking

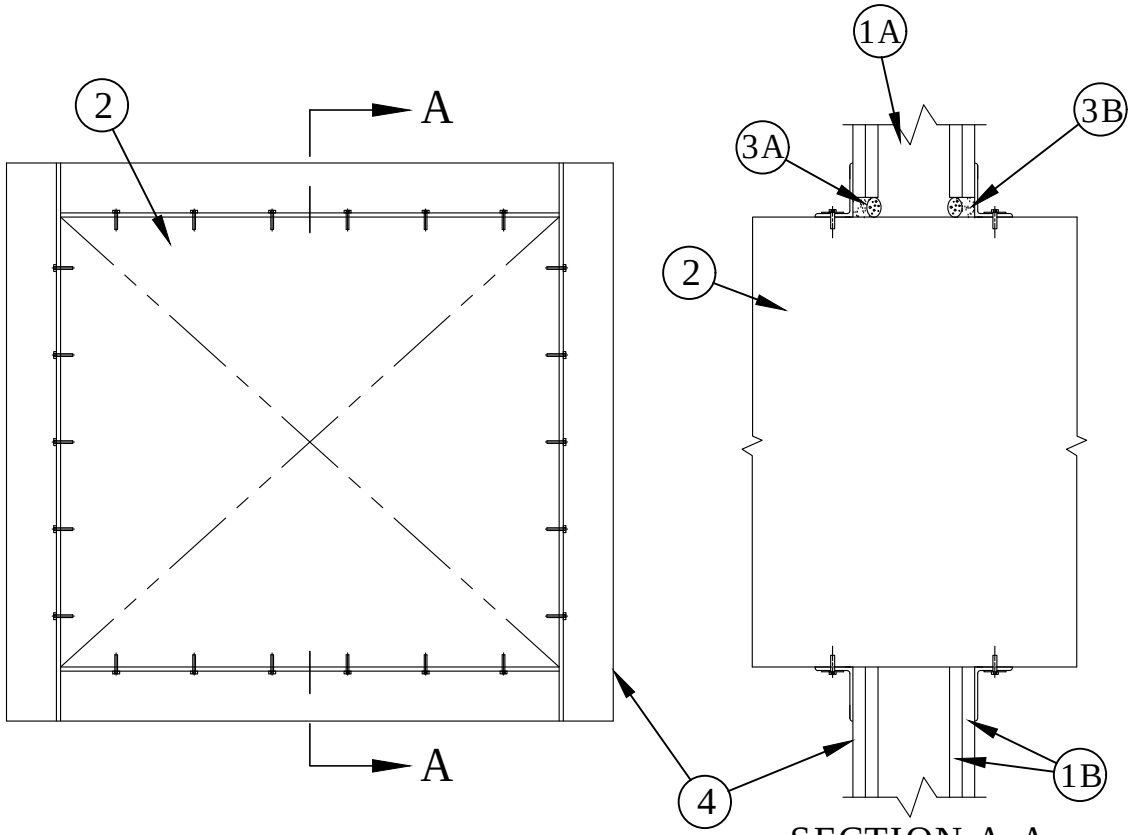
CONSULT CURRENT INDEPENDENT LABORATORIES (UL) FOR SYSTEMS OR DESIGN DETAILS.

PROJECT		SHT 1 of 1 WL5168.DWG	SIGNATURE DATE
SYSTEM/DESIGN NO. W-L-5168	DATE 05-19-2005	NOT FOR USE AS CONSTRUCTION DOCUMENT. DRAWING NOT TO SCALE.	All statements, technical information recomendations contained herein are based on tests we believe to be reliable. However since the conditions of use and application are beyond our control, 3M shall not be liable for any damage direct or consequential resulting from the use of this material or design. 3M's only warranty shall be to replace our products proved to be defective.
3M Fire Protection Products			

* NOTE
THIS MATERIAL WAS EXTRACTED BY 3M FIRE PROTECTION PRODUCTS
FROM THE 2004 EDITION OF THE UL FIRE RESISTANCE DIRECTORY.

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

System No.W-L-7008
June 15, 2005
F Rating - 1 & 2 Hr (See Item 1)
T Ratings - 0 Hr



SECTION A-A

1. Wall Assembly - The 1 and 2 hr fire rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs - Wall framing shall consist of steel channel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. Additional 3-1/2 in. (89 mm) wide steel studs shall be used to completely frame opening.

B. Gypsum Board* - Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Design. Max size of opening to be 1216 sq in. (188.5 cm2) with a max dimension of 38 in. (965 mm).

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. Through Penetrant - Nom 36 by 30 in. (914 by 762 mm) (or smaller) No. 24 gauge (or heavier) galv steel duct to be installed either concentrically or eccentrically within the firestop system. An annular space of min 0 in. (0 mm) (point contact) to max 2 in. (51 mm) is required within the firestop system. Steel duct to be rigidly supported on both sides of floor or wall assembly.

3. Firestop System - The details of the firestop system shall be as follows:

A. Packing Material (Optional) - Polyethylene backer rod, mineral wool batt insulation or fiberglass batt insulation friction-fit into annular space for 2 hr rated wall assemblies only. Packing material to be recessed from both surfaces of wall to accommodate the required thickness of fill material (Item 3B).

B. Fill,Void or Cavity Material* - Caulk or Sealant - Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At the point contact location between duct and wallboard, a min 1/4 in. (6 mm) diam bead of sealant shall be applied at the wallboard/duct interface on both surfaces of wall assembly.

3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant

C. Retaining Angles - Min 16 gauge galv steel angles sized to lap duct a min of 2 in. (51 mm) and lap wall surfaces of a min of 1 in. (25 mm). Angles attached to duct on both sides of wall with min 1/2 in. (13 mm) long, No. 10 (or larger) sheet metal screws spaced a max of 1 in. (25 mm) from each end of duct and spaced a max of 6 in. (152 mm) OC.

*Bearing the UL Classification Marking

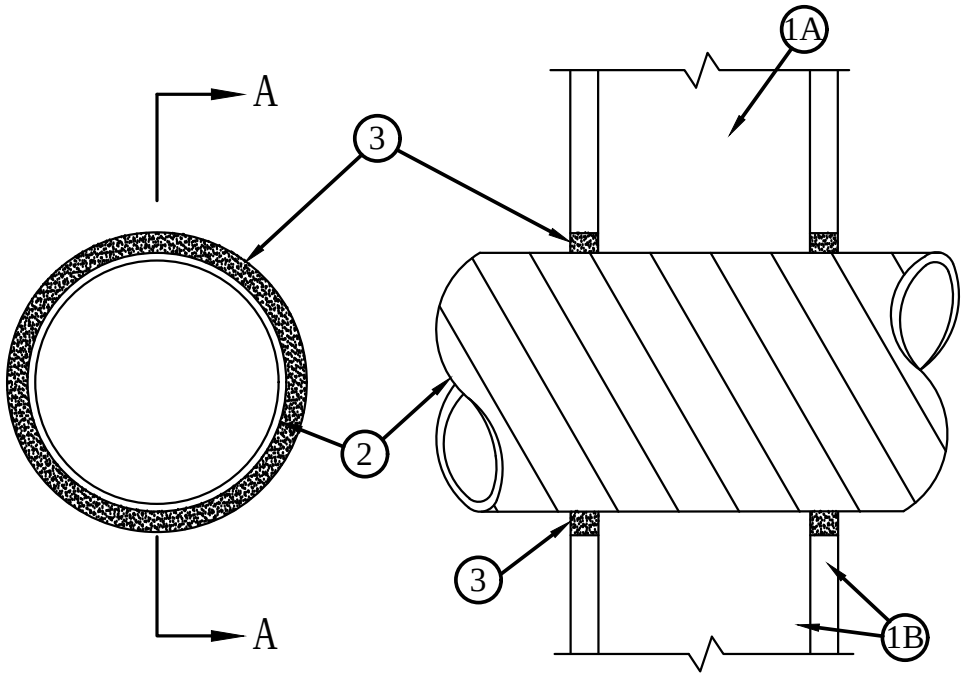
CONSULT CURRENT INDEPENDENT LABORATORIES (UL) FOR SYSTEMS OR DESIGN DETAILS.

PROJECT		SHT 1 of 1 WL7008.DWG	SIGNATURE DATE
SYSTEM/DESIGN NO. W-L-7008	DATE 06-15-2005	NOT FOR USE AS CONSTRUCTION DOCUMENT. DRAWING NOT TO SCALE.	All statements, technical information recomendations contained herein are based on tests we believe to be reliable. However since the conditions of use and application are beyond our control, 3M shall not be liable for any damage direct or consequential resulting from the use of this material or design. 3M's only warranty shall be to replace our products proved to be defective.
3M Fire Protection Products			

* NOTE
THIS MATERIAL WAS EXTRACTED BY 3M FIRE PROTECTION PRODUCTS
FROM THE 2004 EDITION OF THE UL FIRE RESISTANCE DIRECTORY

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

System No.W-L-7045
September 07, 2004
F Rating - 1 Hr
T Rating - 0 Hr



SECTION A-A

1. Wall Assembly - The 1 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features.

A. Studs - Wall framing shall consist of min 3-1/2 in. wide steel studs. Steel studs to be spaced a max 24 in. OC.
B. Gypsum Board* - One layer of min 5/8 in. thick gypsum board, as specified in the individual Wall and partition Design. Max diam of opening is 19-1/2 in.

2. Steel Duct - Nom 18 in. (or smaller) No. 24 gauge (or heavier) spiral wound steel duct to be installed concentrically with a 3/4 in. annular space. Duct to be rigidly supported on both sides of wall assembly.

3. Fill,Void or Cavity Material* - Caulk or Sealant - Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly.

3M COMPANY - CP-25 WB+ caulk or FB-3000 WT sealant

*Bearing the UL Classification Mark

CONSULT CURRENT INDEPENDENT LABORATORIES (UL, OPL) FOR SYSTEMS OR DESIGN DETAILS

PROJECT		SHT 1 of 1	SIGNATURE DATE
		WL7045.DWG	
SYSTEM/DESIGN NO. W-L-7045	DATE	NOT FOR USE AS CONSTRUCTION DOCUMENT. DRAWING NOT TO SCALE	All statements, technical information and recommendations contained herein are based on tests we believe reliable, however, since the conditions of use and application are beyond our control, 3M shall not be liable for any damage, direct or consequential, resulting from the use of this material or design. 3M's only warranty shall be to replace any of our products proved to be defective
3M FIRE PROTECTION PRODUCTS			

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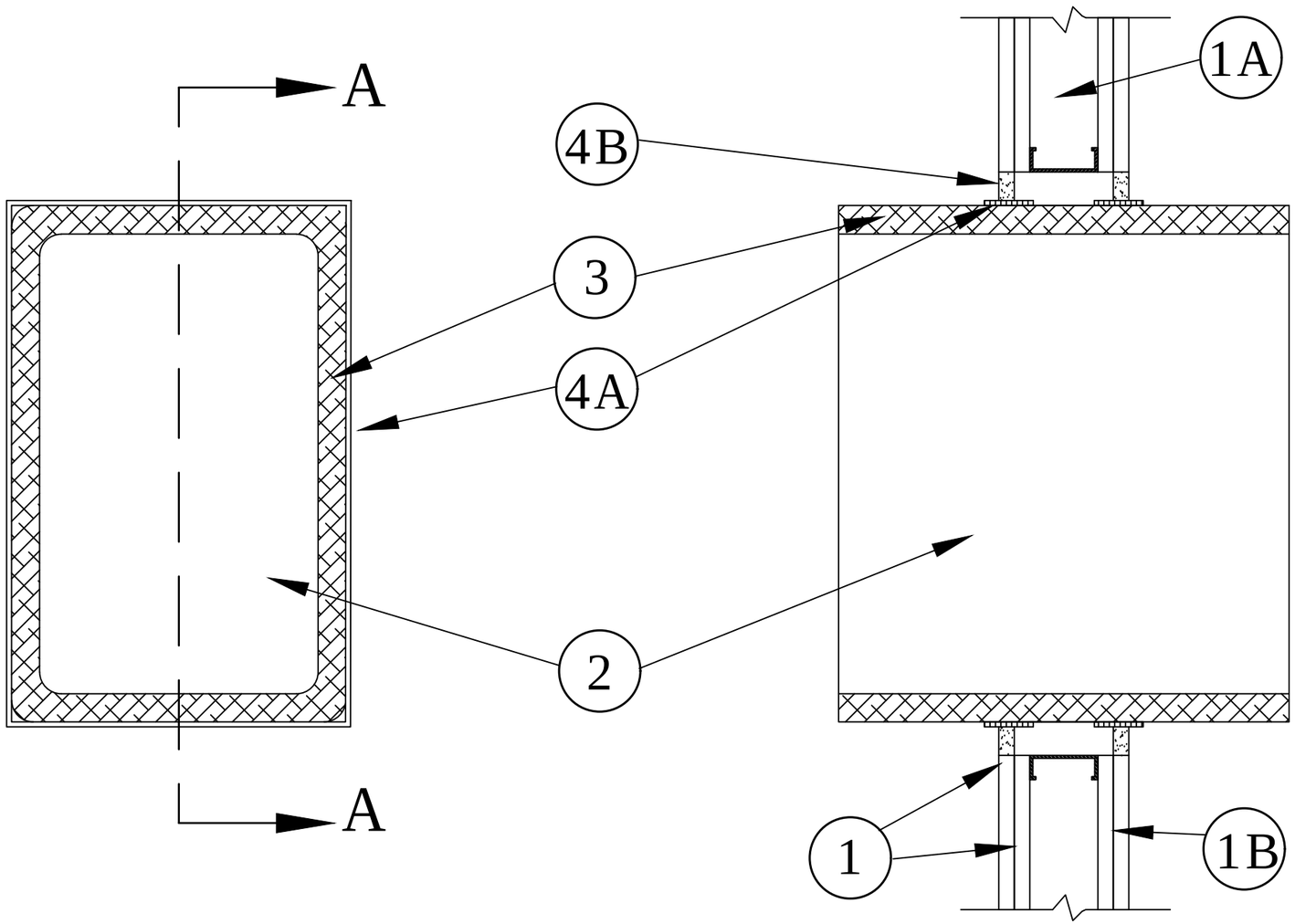
FROM THE 2006 EDITION OF THE UL FIRE RESISTANCE DIRECTORY.

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

System No.W-L-7051
October 02, 2006
F Rating - 1 and 2 Hr (See Item 1)
T Rating - 3/4 and 2 Hr (See Item 1)



SECTION A-A

1. Wall Assembly - The 1 and 2 hr fire rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features.

A. Studs - Wall framing shall consist of min 3-1/2 in. (89 mm) wide steel studs spaced a max 24 in. (610 mm) OC. Additional min 3-1/2 in. (89 mm) wide steel studs shall be used to completely frame the opening.
B. Gypsum Board* - Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max size of opening is 35 in. by 29 in. (889 mm by 737 mm) opening.

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
The hourly T Rating is 3/4 and 2 Hr for 1 and 2 Hr rated assemblies, respectively.

2. Steel Air Duct - Nom 30 in. by 24 in. (762 mm by 610 mm) min 24 gauge (or heavier) galv steel air duct to be installed either concentrically or eccentrically within the opening. Duct to be rigidly supported on both sides of wall assembly.

3. Duct Insulation* - Nom 1-1/2 in. (38 mm) thick glass fiber blanket insulation jacketed on the outside with foil-scrim-kraft facing. Longitudinal and transverse joints sealed with foil-scrim kraft tape. A nominal 1 in. (25 mm) annular space shall be maintained between the insulated duct and the periphery of the opening.

See Batts and Blankets (BKNV) category in the Building Materials Directory for names of manufacturers. Any batts and blankets material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

4. Firestop System - The firestop system shall consist of the following:

A. Wrap Strip - One layer of nom 1/8 in. (3.2 mm) thick intumescent material supplied in 2 in. (51 mm) wide strips tightly wrapped around duct insulation and held in place with 2 in. (51 mm) wide min 3 mil foil tape. Wrap strip slid into annulus on both sides of wall such that wrap strips extend approx 1/2 in. (13 mm) beyond both surfaces of wall. Exposed portion of wrap strip to be completely covered with min 3 mil foil tape.

3M COMPANY - Ultra GS

B. Fill,Void or Cavity Material* - Caulk or Sealant - Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly.

3M COMPANY - CP 25WB+, IC 15WB+ caulk or FB-3000 WT sealant

*Bearing the UL Classification Mark

CONSULT CURRENT INDEPENDENT LABORATORIES (UL) FOR SYSTEMS OR DESIGN DETAILS.

PROJECT		SHT 1 of 1 WL7051.DWG	SIGNATURE DATE
SYSTEM/DESIGN NO. W-L-7051	DATE 10-02-2006	NOT FOR USE AS CONSTRUCTION DOCUMENT. DRAWING NOT TO SCALE.	All statements, technical information recomendations contained herein are based on tests we believe to be reliable. However since the conditions of use and application are beyond our control, 3M shall not be liable for any damage direct or consequential resulting from the use of this material or design. 3M's only warranty shall be to replace our products proved to be defective.
3M Fire Protection Products			

* NOTE
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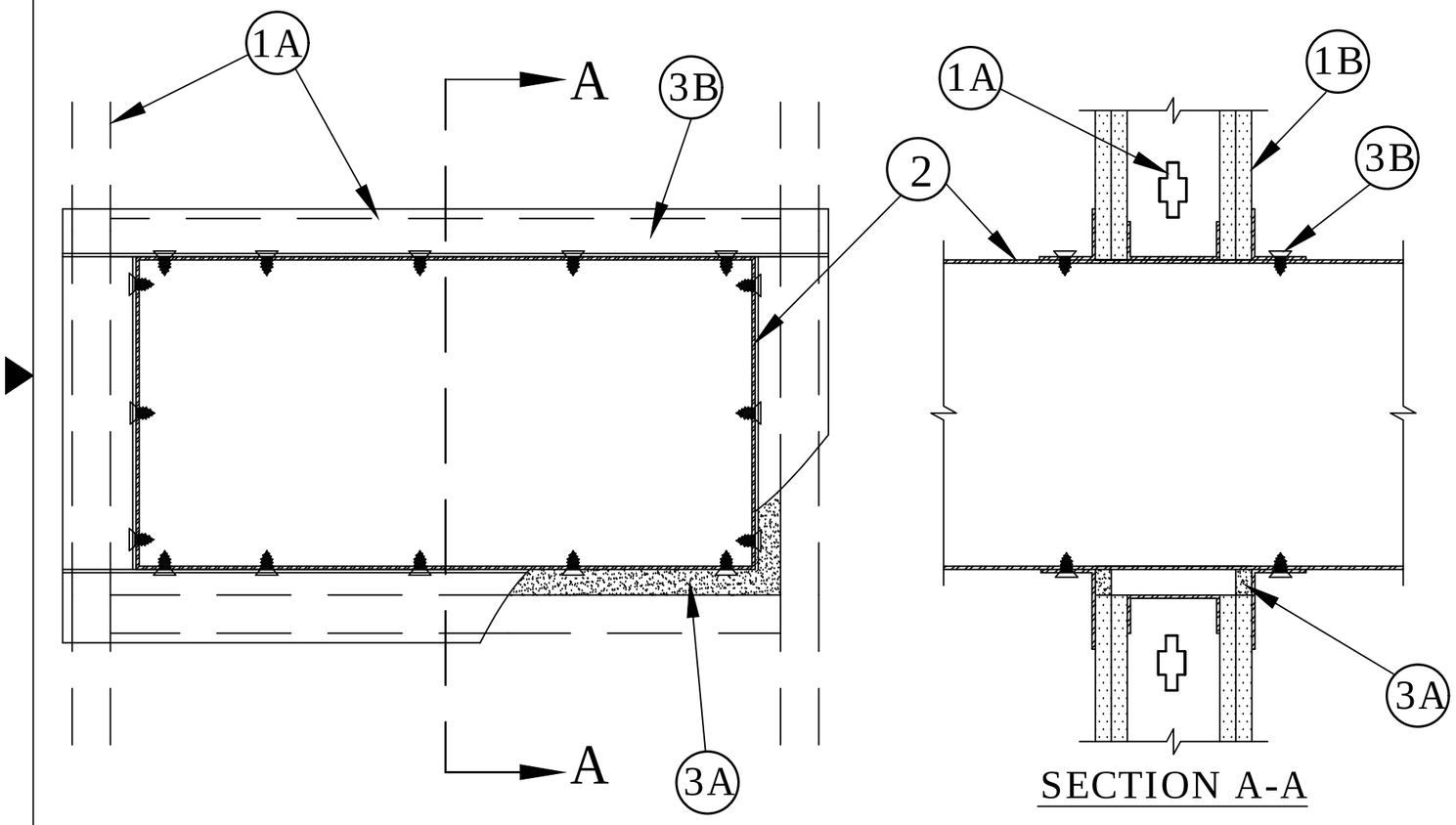
FROM THE 2004 EDITION OF THE UL FIRE RESISTANCE DIRECTORY.

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

System No.W-L-7091
May 19, 2005
F Ratings - 1 & 2 Hr (See Item 1)
T Rating - 0 Hr



SECTION A-A

1. Wall Assembly - The 1 or 2 hr fire rated gypsum board/steel stud wall assembly shall be constructed of the materials and in the manner described in the individual U400 or V400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs - Wall framing shall consist of steel channel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. Additional 3-1/2 in. (89 mm) wide steel studs shall be used to completely frame opening.
B. Gypsum Board* - Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Design. Max size of opening to be 640 sq in. (4129 cm2) with a max dimension of 32 in. (813 mm)

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. Steel Duct - Nom 30 in. by 18 in. (762 mm by 457 mm) (or smaller) No. 24 gauge (or heavier) galv steel duct installed concentrically or eccentrically within opening. Annular space between duct and periphery of opening to be min 0 in. (point contact) to max 2 in. (0 mm to max 51 mm). Duct to be rigidly supported on both sides of wall assembly.

3. Firestop System - The firestop system shall consist of the following:

A. Fill,Void or Cavity Material* - Caulk or Sealant - Min 5/8 in. (16 mm) thickness of caulk applied within annulus, flush with both surfaces of wall.

3M COMPANY - CP 25WB+, IC 15WB+ caulk or FB-3000 WT sealant

B. Retaining Angles - Min 16 gauge galv steel angles sized to lap duct a min of 2 in. (51 mm) and lap wall surfaces a min of 1 in. (25 mm). Angles attached to duct on both sides of wall with min 1/2 in. (13 mm) long, No. 10 (or larger) sheet metal screws spaced a max 1 in. (25 mm) from each end and spaced a max 6 in. (152 mm) OC.

*Bearing the UL Classification Marking

CONSULT CURRENT INDEPENDENT LABORATORIES (UL) FOR SYSTEMS OR DESIGN DETAILS.

PROJECT		SHT 1 of 1 WL7091.DWG	SIGNATURE DATE
SYSTEM/DESIGN NO. W-L-7091	DATE 05-19-2005	NOT FOR USE AS CONSTRUCTION DOCUMENT. DRAWING NOT TO SCALE.	All statements, technical information recomendations contained herein are based on tests we believe to be reliable. However since the conditions of use and application are beyond our control, 3M shall not be liable for any damage direct or consequential resulting from the use of this material or design. 3M's only warranty shall be to replace our products proved to be defective.
3M Fire Protection Products			

* NOTE
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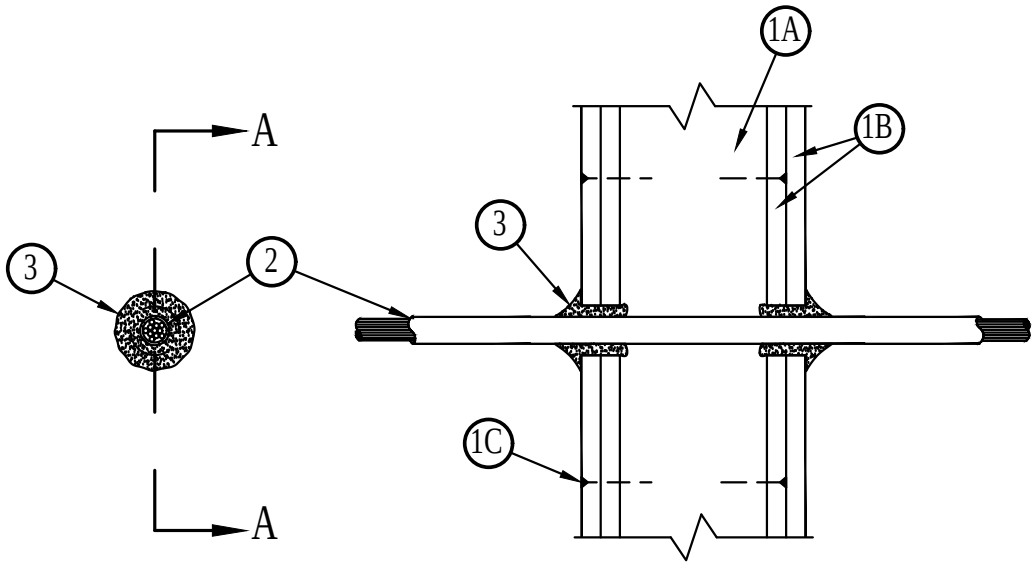
FROM THE 2004 EDITION OF THE UL FIRE RESISTANCE DIRECTORY

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

System No.W-L-3001
September 07, 2004
(Formerly System No. 149)
F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 3/4, 1, 1-1/2 and 2 Hr (See Item 2)
L Rating At Ambient - 15 CFM/sq ft (See Item 3)
L Rating At 400 F - less than 1 CFM/sq ft (See Item 3)



SECTION A-A

1. Wall Assembly - The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-5/8 in. wide by 1-3/8 in. deep channels spaced max 24 in OC.

B. Gypsum Board* - Nom 1/2 or 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers and sheet orientation shall be as specified in the individual Wall or Partition Design. Diam of circular through opening to be 3/8 in. to 5/8 in. larger than outside diam of cable or cable bundle.

C. Fasteners - When wood stud framing is employed gypsum wallboard layers attached to studs with cement coated nails as specified in the individual Wall or Partition Design. When steel channel stud framing is employed, gypsum wallboard attached to studs with Type S self-drilling, self-tapping bugle-head steel screws as specified in the individual Wall or Partition Design.

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. Cables - Individual cable or max 1 in. diam cable bundle installed in through opening with an annular space of min 0 in. (point contact) to max 3/4 in. Cable to be rigidly supported on both sides of wall assembly. The following types and sizes of cables may be used:

A. Max 150 pair No. 24 AWG copper conductor telephone cable with polyvinyl chloride (PVC insulation and jacket materials. When max 25 pair telephone cable is used,

T Rating is 2 hr.When 50 to 150 pair telephone cable is used in 1 hr fire rated wall,
T Rating is 3/4 hr.When 50 to 150 pair telephone cable is used in 2 hr fire rated wall, T Rating is 1 hr.

B. Max No. 10 AWG multiple copper conductor Type NM ("Romex") nonmetallic sheathed cable with PVC insulation and jacket materials.
When Type NM cable is used, max T Rating is 1-1/2 hr.

C. Multiple fiber optical communication cable jacketed with PVC and having a max outside diam of 5/8 in.
When fiber optic cable is used, max T Rating is 2 hr.

D. Max 12 AWG multi conductor (max seven conductors) power/control cable with cross-linked polyethylene (XLPE) insulation and XLPE or PVC jacket materials.
When multi conductor power/control cable is used, max T Rating is 2 hr.

E. Max four conductor with ground No. 2 AWG (or smaller) aluminum SER cables with polyvinyl chloride insulation and jacket materials.

3. Fill,Void or Cavity Materials* - Caulk, Sealant or Putty - Caulk or putty fill material installed to completely fill annular space between cable and gypsum wallboard on both sides of wall and with a min 1/4 in. diam bead of caulk or putty applied to perimeter of cable(s) at its egress from each side of the wall.

3M COMPANY - MP+ Stix putty, CP 25WB+ caulk, FB-3000 WT sealant or Cable Wrap putty
(Note: L Ratings apply only when CP 25WB+ caulk or FB-3000 WT sealant is used.)

*Bearing the UL Classification Mark

CONSULT CURRENT INDEPENDENT LABORATORIES (UL, OPL) FOR SYSTEMS OR DESIGN DETAILS

PROJECT		SHT 1 of 1	SIGNATURE DATE
		WL3001.DWG	
SYSTEM/DESIGN NO. W-L-3001	DATE	NOT FOR USE AS CONSTRUCTION DOCUMENT. DRAWING NOT TO SCALE	All statements, technical information and recommendations contained herein are based on tests we believe reliable, however, since the conditions of use and application are beyond our control, 3M shall not be liable for any damage, direct or consequential, resulting from the use of this material or design. 3M's only warranty shall be to replace any of our products proved to be defective
3M FIRE PROTECTION PRODUCTS			

* NOTE
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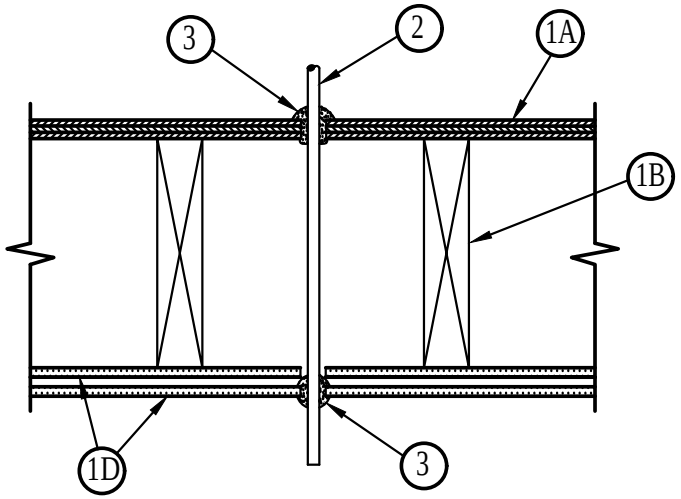
FROM THE 2004 EDITION OF THE UL FIRE RESISTANCE DIRECTORY

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

System No. F-C-3001
September 03, 2004
(Formerly System No. 168)
F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 1 and 2 Hr (See Item 1)



1. Floor-Ceiling Assembly - The 1 or 2 hr fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the UL Fire Resistance Directory. The 1 hr fire rated assembly shall be constructed as specified in Design No. L501, L512 or L537. The 2 hr fire rated assembly shall be constructed as specified in Design No. L505, L511 or L536.
The F and T Ratings of the firestop system are equal to the fire rating of the floor-ceiling assembly. The general construction details of the floor-ceiling assembly are summarized below:

A. Flooring System - Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max diam of opening is 1/2 in.
B. Wood Joists - Nom 2 by 10 in. lumber joists spaced 16 in. O.C. with nom 1 by 3 in. lumber bridging and with ends firestopped.
C. Furring Channels (Not Shown) - Resilient galv steel furring channels installed perpendicular to wood joists between first and second layers of wallboard (Item 1D) in 2 hr fire rated assembly. Furring channels spaced max 24 in. O.C.
D. Gypsum Board* - Nom 4 ft wide by 5/8 in. thick as specified in the individual Floor-Ceiling Design. First layer of wallboard nailed to wood joists. Second layer of wallboard (2 hr fire rated assembly only) screw-attached to furring channels. Max diam of opening is 1/2 in.

1.1 Chase Wall (Optional, not shown) - The through penetrants (Item No. 2) may be routed through a fire-rated single, double or staggered wood stud/gypsum wallboard chase wall having a fire rating consistent with that of the floor-ceiling assembly. The chase wall shall be constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs - Nom 2 by 6 in. or double nom 2 by 4 in. lumber studs.
B. Sole Plate - Nom 2 by 6 in. or parallel 2 by 4 in. lumber plates, tightly butted.
C. Top Plate - The double top plate shall consist of two nom 2 by 6 in. or two sets of parallel 2 by 4 in. lumber plates, tightly butted. Max diam of opening is 1/2 in.
D. Gypsum Board* - Thickness, type, number of layers and fasteners shall be as specified in individual Wall and Partition Design.

2. Cable - Max 25 pair No. 24 AWG copper conductor telephone cable or max two-conductor with ground No. 12 or No. 14 AWG Type NM nonmetallic sheath copper conductor cable. Cable insulation and jacket material to be polyvinyl chloride (PVC). Max one cable to be installed in nom 1/2 in. diam opening. Cable to be rigidly supported on both sides of floor assembly.

3. Fill,Void or Cavity Materials* - Caulk or Sealant- Min 3/4 in. thickness of fill material applied within the annulus, flush with top surface of floor or sole plate. Min 5/8 in. or 1-1/4 in. thickness of fill material, for 1 and 2 hr rated assemblies, respectively, applied within the annulus, flush with bottom surface of ceiling or top plate. An additional min 1/4 in. crown of fill material applied to perimeter of penetrant at its egress from the top of flooring and underside of ceiling or from top of sole plate and underside of top plate.

3M COMPANY - CP 25WB+ caulk or FB-3000 WT sealant

*Bearing the UL Classification Marking

CONSULT CURRENT INDEPENDENT LABORATORIES (UL, OPL) FOR SYSTEMS OR DESIGN DETAILS

PROJECT		SHT 1 of 1 FC3001.DWG	SIGNATURE DATE
SYSTEM/DESIGN NO. F-C-3001	DATE	NOT FOR USE AS CONSTRUCTION DOCUMENT. DRAWING NOT TO SCALE	All statements, technical information and recommendations contained herein are based on tests we believe reliable, however, since the conditions of use and application are beyond our control, 3M shall not be liable for any damage, direct or consequential, resulting from the use of this material or design. 3M's only warranty shall be to replace any of our products proved to be defective
3M FIRE PROTECTION PRODUCTS			