

# FIRESTOP SUBMITTAL PACKAGE

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**PROJECT:**

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**SUBMITTED BY:**



# Mechanical

## Concrete Floors

SYSTEM	DESCRIPTION	PRODUCT(S)
<b>C-AJ-1240</b>	Max. 30 in. steel, iron or 6-in. copper. Optional steel sleeve.	SSS Sealant
<b>C-AJ-1080</b>	Max. 30 in. steel, iron or 6-in. copper. Caulk only.	SSS Sealant
<b>C-AJ-2140</b>	One or more 2 in. PVC or CPVC pipes. Optional sleeve. Caulk only.	SSS Sealant
<b>C-AJ-2297</b>	Max. 6 in. PVC, CPVC or ABS pipe.	SSC, WS Collar
<b>C-AJ-5079</b>	Max. 4 in. steel, iron or copper with up to 3/4 in. AB/PVC.	SSS Sealant
<b>C-AJ-5087</b>	Max. 24 in. steel, iron or 6 in. copper with 2 in. fiberglass.	SSS Sealant
<b>C-AJ-5103</b>	Max. 16 in. steel, iron or 6 in. copper with 3 in. cellular glass.	SSS Sealant
<b>C-AJ-7023</b>	Round steel duct (28 or 30 GA min).	SSS Sealant
<b>C-AJ-7027</b>	Rectangular steel duct (24 GA min).	SSS Sealant
<b>C-AJ-8054</b>	Air Conditioner Line Set.	SSS Sealant
<b>C-AJ-8113</b>	Multiple bare or insulated metallic pipes or bare nonmetallic pipes.	SSS Sealant

## Masonry Walls

SYSTEM	DESCRIPTION	PRODUCT(S)
<b>C-AJ-1080</b>	Max. 30 in. steel, iron or 6-in. copper. Caulk only.	SSS Sealant
<b>C-AJ-2140</b>	One or more 2 in. PVC or CPVC pipes. Optional sleeve. Caulk only.	SSS Sealant
<b>C-AJ-2297</b>	Max. 6 in. PVC, CPVC or ABS pipe.	SSC, WS Collar
<b>W-J-5005</b>	Max. 12 in. steel, iron or 4 in. copper with 2 in. fiberglass. Caulk only.	SSS Sealant
<b>W-J-5011</b>	Max. 16 in. steel, iron, 6 in. copper with 3 in. cellular glass. Caulk only.	SSS Sealant
<b>W-J-5012</b>	Max. 4 in. steel, iron or copper with 1 in. AB/PVC. Caulk only.	SSS Sealant
<b>W-J-7005</b>	Max 24 in. round steel duct. Caulk only.	SSS Sealant
<b>W-J-7007</b>	Max. 100 by 100 sq in. steel duct. Caulk only.	SSS Sealant
<b>W-J-8006</b>	Air Conditioner Line Set. Caulk only.	SSS Sealant

## Gypsum Board Walls

SYSTEM	DESCRIPTION	PRODUCT(S)
<b>W-L-1049</b>	Max 24 in. steel, iron or 6 in. copper. Caulk only.	SSS Sealant
<b>W-L-2100</b>	Max. 2 in. PVC or CPVC pipe or 1-1/2 in. ABS. Caulk only.	SSS Sealant
<b>W-L-2144</b>	One or more 1 in. PVC, CPVC, PEX. Caulk only.	SSS Sealant
<b>W-L-2243</b>	Max. 6 in. PVC, CPVC or ABS pipe.	SSC, WS Collar
<b>W-L-5014</b>	Max. 12 in. steel, iron or 4 in. copper with 2 in. fiberglass. Caulk only.	SSS Sealant
<b>W-L-5051</b>	Max. 16 in. steel, iron, 6 in. copper with 3 in. cellular glass. Caulk only.	SSS Sealant
<b>W-L-5054</b>	Max. 4 in. steel, iron or copper with 1 in. AB/PVC. Caulk only.	SSS Sealant
<b>W-L-7025</b>	Max. 100 by 100 sq in. steel duct. Caulk only.	SSS Sealant

**W-L-7026**  
**W-L-8011**

Max 24 in. round steel duct. Caulk only.  
Air Conditioner Line Set. Caulk only.

SSS Sealant  
SSS Sealant

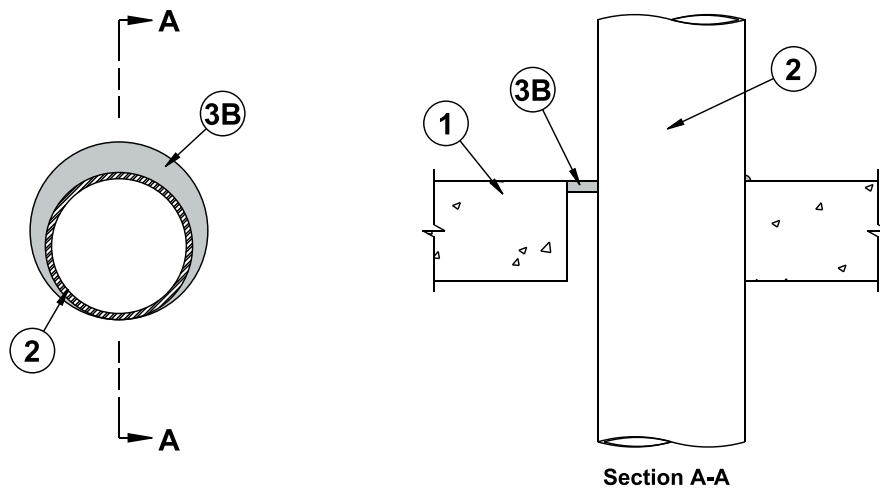
## General Certificate of Conformance

### Product Data Sheets

Series SSS Intumescent Sealant  
Series SSC Firestop Collar

### Material Safety Data Sheets

Series SSS Intumescent Sealant  
Series SSC Firestop Collar



**System No. C-AJ-1080**

F Rating — 3 Hr

T Rating — 0 Hr

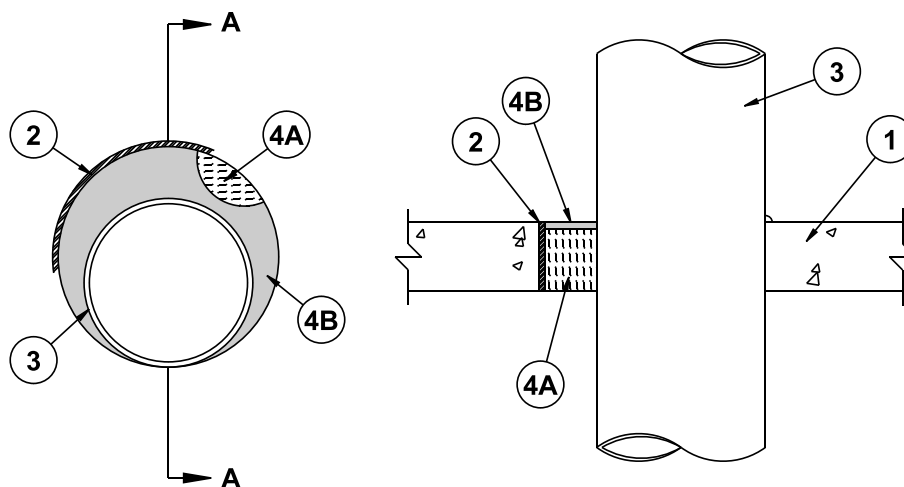
L Rating At Ambient — Less Than 1 CFM/sq ft

L Rating At 400 F — Less Than 1 CFM/sq ft

1. **Floor or Wall Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\*** Max diam of opening is 32 in.  
See **Concrete Block** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Through Penetrants** — One metallic pipe, conduit or tubing to be centered within the firestop system. The annular space shall range from min 0 in. (point contact) to max 2 in. 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. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 30 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Conduit** — Nom 4 in. diam (or smaller) electrical metallic tubing or nom 6 in. diam (or smaller) rigid galv steel conduit.
  - D. **Copper Tubing** — Nom 6 in. diam (or smaller) Type M (or heavier) copper tubing.
  - E. **Copper Pipe** — Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
3. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — (Optional, Not Shown) — Mineral wool batt insulation, polyethylene backer rod or glass fiber batt insulation friction fitted into annular space. Packing material to be recessed from top surface of floor or both surfaces of wall as required to accommodate the required thickness of fill material.
  - B. **Fill, Void or Cavity Material\*** — **Caulk** — Min 1/2 in. thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall. At point contact location, apply min 1/4 in. diam bead of sealant at the pipe/concrete interface on the top surface of the floor or both surfaces of wall.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102, 105, 120 or 129 Sealant

\*Bearing the UL Classification Mark



**System No. C-AJ-1240**

F Ratings — 2 and 3 Hr (See Item 4)

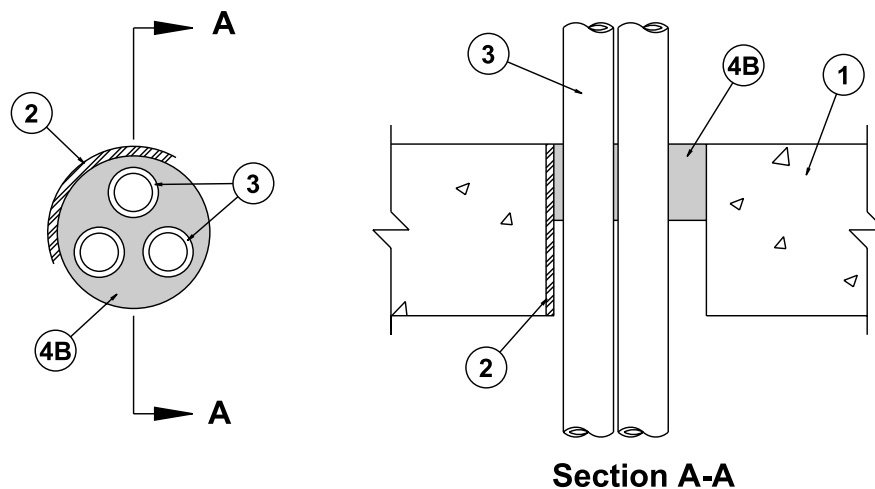
T Rating — 0 Hr

L Rating At Ambient — Less Than 1 CFM/sq ft

L Rating at 400 F — Less Than 1 CFM/sq ft

1. **Floor or Wall Assembly** — Min 2-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor or 2-3/4 in. lightweight or normal weight concrete wall. Wall may also be constructed of any UL Classified **Concrete Blocks\*** Floor may also be constructed of any UL Classified **Precast Concrete Units\*** Max diam of opening is 32 in. Max diam of opening in floors constructed of hollow-core precast concrete units is 7 in.  
See **Concrete Blocks** (CAZT) and **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
2. **Steel Sleeve** — (Optional) — Nom 32 in. diam (or smaller) Schedule 10 (or heavier) steel pipe sleeve cast or grouted into concrete flush with or extending max 3 in. from floor or wall surfaces.
3. **Through Penetrant** — 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 shall be min 0 in. (point contact) to max 2 in. 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. diam (or smaller) Schedule 10 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 30 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Conduit** — Nom 4 in. diam (or smaller) steel electrical metallic tubing or nom 6 in. diam steel conduit.
  - D. **Copper Tubing** — Nom 6 in. diam (or smaller) Type M (or heavier) copper tubing.
  - E. **Copper Pipe** — Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
- 3A. **Through Penetrating Product\*** — **Flexible Metal Piping** — As an alternate to Item 3, one nom 2 in. diam (or smaller) flexible steel pipe to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipe and the periphery of the opening shall be min 0 in. (point contact) to max 2 in. Pipe to be rigidly supported on both sides of floor or wall assembly.  
**OMEGA FLEX INC**  
**TITEFLEX CORP**  
**A BUNDY CO**  
**WARD MFG INC**
4. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — Min 2-1/4 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 1/4 in. thickness of fill material applied within the annulus, flush with top surface of floor or top of sleeve or with both surfaces of wall assembly or both ends of sleeve. At the point contact location between through penetrant and concrete, a min 1/4 in. diam bead of fill material shall be applied at the concrete/through penetrant interface on the top surface of floor and on both surfaces of wall. Fill material installed symmetrically in floors constructed of hollow-core precast concrete units.  
**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102, 105, 120 or 129 Sealant. SpecSeal LC 150, 151, 152 or 155 Sealant may be used for 2 hr F Rating only.

\*Bearing the UL Classification Mark



**Section A-A**

**System No. C-AJ-2140**

September 26, 2000

F Rating — 2 Hr

T Ratings — 0, 1, 1-1/2 and 2 Hr (See Item 4B )

L Rating At Ambient — Less Than 1 CFM/sq ft

L Rating At 400 F — Less Than 1 CFM/sq ft

1. **Floor or Wall Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor or min 5 in. thick reinforced lightweight or normal weight concrete wall. Floor may also be constructed of any min 6 in. thick UL Classified **Precast Concrete Units\***. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max diam of opening is 4 in.  
See **Concrete Block** (CAZT) and **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
2. **Metallic Sleeve** — (Optional) — Nom 4 in. diam (or smaller) Schedule 10 (or heavier) steel pipe cast or grouted into floor or wall, flush with floor or wall surfaces.
3. **Through Penetrants** — One or more pipes, conduits or tubing to be installed within the opening. The annular space between pipes, conduits or tubing and the periphery of the opening shall be a min of 1/4 in. to a max 13/16 in. The annular space between the pipes, conduits or tubing shall be a nom 1/4 in. Pipes, conduits or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of nonmetallic pipes, conduits or tubing may be used:
  - A. **Polyvinyl Chloride (PVC) Pipe** — Nom 2 in. 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. **Rigid Nonmetallic Conduit (RNC)+** — Nom 2 in. 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 2 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) systems.
  - D. **Electrical Nonmetallic Tubing (ENT)+** — Nom 2 in. diam (or smaller) PVC tubing installed in accordance with Article 331 of the National Electrical Code (NFPA No. 70).
  - E. **Optical Fiber Raceway (OFR)+** — Nom 1 in. diam (or smaller) optical fiber raceway formed from either polyvinylidene fluoride (PVDF) or polyvinyl chloride (PVC). Raceway to be installed in accordance with Article No. 770 of the National Electrical Code (NFPA No. 70). Multiple 62.5/48 micron fiber optical cables with PE or PVC jacket to be installed within each raceway.  
See **Optical Fiber Raceway** (QAZM) category in the Electrical Construction Materials Directory for names of manufacturers.
  - F. **Cross Linked Polyethylene (PEX) Tubing** — Nom 1 in. diam (or smaller) SDR 9 PEX tubing for use in closed (process or supply) piping systems.
4. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — (Not Shown, Optional) — Polyethylene backer rod, mineral wool batt insulation or fiberglass batt insulation friction fitted into annular space. Packing material to be recessed from top surface of floor or both surfaces of wall as required to accommodate the required thickness of fill material.
  - B. **Fill, Void or Cavity Material\* — Sealant** — Fill material applied within the annulus, flush with top surface of concrete floor or with both surfaces of wall. When floor is constructed of hollow-core precast concrete units, fill material to be installed symmetrically on both sides of floor, flush with floor surfaces. The T Rating of the firestop system is dependent upon the type and max diam of through penetrant, the absence or presence of a steel sleeve and the min thickness of the fill material, as tabulated below:

**(System No. C-AJ-2140 Continued)**

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Created or Revised: 09/01/01

Specified Technologies, Inc., Somerville, NJ (800) 992-1180

FOD-3048

(System No. C-AJ-2140 Continued)

Type Of Penetrant	Max Diam of Penetrant In.	Steel Sleeve	Piping System	Min Fill Mat'l Thkns In.	T Rating Hr
PVC, CPVC Pipe	2	Yes	Vented	2++	0
PVC, CPVC Pipe	2	No	Vented	2++	1
PVC, CPVC Pipe	2	Yes	Closed	2++	1
PVC, CPVC Pipe	2	No	Closed	2++	2
RNC	1	Yes	—	2	1
RNC	1	No	—	2	2
ENT	1	Yes	—	2	1
ENT	1	No	—	2	2
ENT	2	No	—	1	1-1/2
OFR	1	Yes	—	2	1
OFR	1	No	—	2	2
OFR	1	No	—	1-1/2	0
PEX Tubing	1	Yes	Closed	2	1
PEX Tubing	1	No	Closed	2	2
PEX Tubing	1	No	Closed	1+++	2

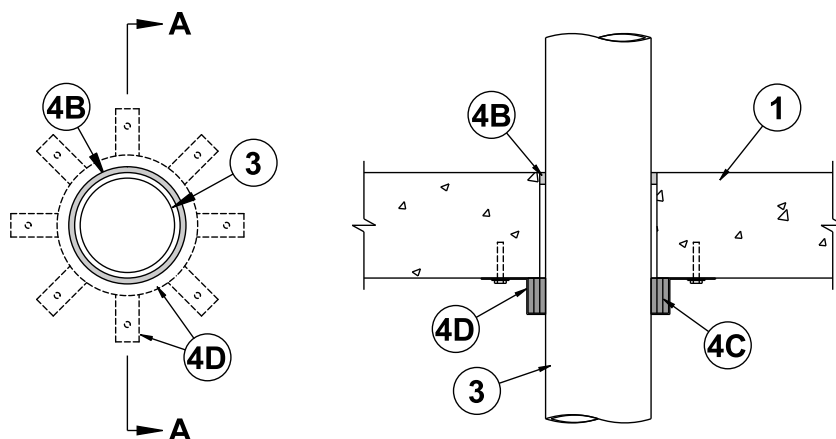
**++-When vented PVC or CPVC pipes are used in hollow-core precast concrete floor, the fill material thickness installed at both the top and bottom surfaces of the floor may be reduced to 1 in.**

**+++When min 1 in. depth of fill material is used, a min 1 in depth of tightly-packed mineral wool batt packing material is required to be used as a form within the annular space.**

**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102 or 105 Sealant

+Bearing the UL Listing Mark

\*Bearing the UL Classification Marking



**Section A-A**

**System No. C-AJ-2297**

F Rating — 2 Hr

T Ratings — 0, 1 and 2 Hr (See Item 4C)

1. **Floor or Wall Assembly** — Lightweight or normal weight (100-150 pcf) concrete. Except as footnoted in the table under Item 4C, min thickness of concrete floor or wall assembly is 4-1/2 in. Floor may also be constructed of any min 6 in. thick hollow-core **Precast Concrete Units**. Wall may also be constructed of any UL Classified **Concrete Blocks**. Diam of opening to be min 1/8 in. to max 1-1/2 in. larger than outside diam of pipe or conduit.

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

2. **Steel Sleeve** — (Optional, Not Shown) — Nom 5 in. diam (or smaller) Schedule 10 (or heavier) steel pipe cast or grouted into min 4-1/2 in. thick floor or wall assembly, flush with floor or wall surfaces.
3. **Through Penetrant** — One nonmetallic pipe or conduit to be installed eccentrically or concentrically within the firestop system. Pipe or conduit to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of nonmetallic pipes or conduits may be used:
  - A. **Polyvinyl Chloride (PVC) Pipe** — Nom 6 in. diam (or smaller) solid or cellular core Schedule 40 polyvinyl chloride (PVC) pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
  - B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** — Nom 6 in. diam (or smaller) SDR 13.5 chlorinated polyvinyl chloride (CPVC) pipe for use in closed (process or supply) piping systems.
  - C. **Rigid Nonmetallic Conduit** — Nom 6 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70).
  - D. **Acrylonitrile Butadiene Styrene (ABS) Pipe** — Nom 6 in. diam (or smaller) solid or cellular core Schedule 40 acrylonitrile butadiene styrene (ABS) pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

4. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — (Not Shown) — When required, min 4 pcf mineral wool batt insulation compressed and installed to the thickness specified in the table under Item 4C. Packing material to be recessed from top surface of floor or both surfaces of wall as required to accommodate sealant (Item 4B).
  - B. **Fill, Void or Cavity Material\* — Sealant** — Fill material installed flush with top surface of floor or both surfaces of wall, as specified in the table under Item 4C.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal LCI Sealant

- C. **Fill, Void or Cavity Material\* — Wrap Strip** — Nom 1/4 in. thick by 1-1/2 in. wide (RED) or 3/16 in. by 2 in. wide (BLU) intumescent strips faced on both sides with a plastic film. Strips tightly wrapped around nonmetallic pipe with edges butted against the underside of the floor or both surfaces of the wall. The wrap strips may be installed with butted seams with butted seams in successive layers aligned or offset or continuously wrapped around through penetrant. Wrap strips are temporarily held in place with masking tape. The min number of layers required is dependent upon the pipe type, nom pipe diam, floor or wall thickness and the hourly T Rating required, as shown in the following table:

Pipe Type	Max Pipe Diam, In	Min Concrete Thickness, In	Wrap Strip Type	Min No Of Wrap Strip Layer	T Rating, Hr Depth, In	Min Packing Material Depth, In	Min Fill Material	Max Annular Space, In
PVC, ccPVC, CPVC, RNC, ABS, ccABS	2	2-1/2	RED or BLU	1	1	NA	1/2	1/16
PVC, ccPVC, CPVC, RNC, ABS, ccABS	2	2-1/2	RED or BLU	1	1	2	1/2	3/4
PVC, ccPVC, CPVC, RNC, ABS, ccABS	4	2-1/2	RED or BLU	2	1	2	1/2	3/4
PVC, ccPVC, CPVC, RNC	2	4-1/2	RED or BLU	1	2	NA	1/4	1/4

**(System No. C-AJ-2297 Continued)**

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Created or Revised: 01/23/03

Specified Technologies, Inc., Somerville, NJ (800) 992-1180

FOD-3469



## (System No. C-AJ-2297 Continued)

Pipe Type	Max Pipe Diam, In	Min Concrete Thickness, In	Wrap Strip Type	Min No Of Wrap Strip Layer	T Rating, Hr Depth, In	Min Packing Material Depth, In	Min Fill Material	Max Annular Space, In
PVC, ccPVC, CPVC, RNC	3	4-1/2	RED or BLU	2	2	NA	1/4	1/4
PVC, ccPVC, CPVC, RNC	4	4-1/2	RED or BLU	3	2	NA	1/4	1/4
PVC, ccPVC, CPVC, RNC	6	4-1/2	RED	3(a)	0	NA	1/4	1/2
PVC, ccPVC, CPVC, RNC	6	4-1/2	BLU	3(a)	2	NA	1/4	3/16
ABS, ccABS	2	4-1/2	RED	1	0	NA	1/4	1/2
ABS, ccABS	2	4-1/2	BLU	1	2	NA	1/4	1/2
ABS, ccABS	3	4-1/2	RED	2	0	NA	1/4	1/2
ABS, ccABS	3	4-1/2	BLU	2	2	NA	1/4	1/2
ABS, ccABS	4	4-1/2	RED	3	0	NA	1/4	1/2
ABS, ccABS	4	4-1/2	BLU	3	2	NA	1/4	1/2

(a) For nom 6 in. pipe, two sets of three wrap strip layers are "stacked" to attain a 3 in. or 4 in. wrap strip width for RED or BLU wrap strip, respectively.

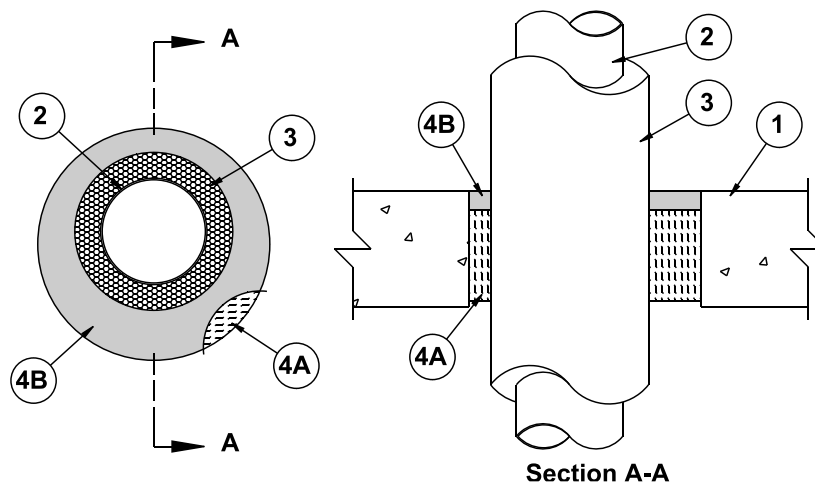
**SPECIFIED TECHNOLOGIES INC** — SpecSeal RED or BLU Wrap Strip

- D. **Steel Collar** — Nom 1-1/2, 2, 3 or 4 in. deep collar, dependent upon wrap strip width, with 1 in. wide by 2 in. long anchor tabs for attachment to concrete and min 3/4 in. wide retaining tabs tapering down to 1/4 in. wide and located opposite the anchor tabs. Steel collar, with anchor tabs bent outward 90 deg, wrapped tightly around wrap strip layers with min 1 in. overlap at seam. Retainer tabs to be bent 90 deg toward pipe to lock wrap strips in position. Anchor tabs to be pressed tightly against floor or wall surface(s), and collar to be secured in place with one 1/2 in. wide by 0.028 in. thick stainless steel hose clamp. Two band clamps are required for 3 in. high (or higher) collar on 6 in. pipe. As an alternate to the hose clamps on 1-1/2 and 2 in. deep collar, collar secured together by means of three No. 8 by 1/4 in. long steel screws. Collar to be secured to floor or wall surface(s) with 1/4 in. diam by min 1-1/4 in. long steel concrete screws in conjunction with min 1 in. diam steel fender washers. The number of fasteners is dependent upon the nom diam of the through penetrant. Min two fasteners, symmetrically located, are required for nom 1-1/2 in. through 2 in. diam through penetrants. Min three fasteners, symmetrically located, are required for nom 2-1/2 in. through 3 in. diam through penetrants. Min four fasteners, symmetrically located, are required for nom 3-1/2 in. through 4 in. diam through penetrants. Min six fasteners, symmetrically located, are required for nom 6 in. diam through penetrants.
- E. **Firestop Device\*** — (Not Shown) — As an alternate to Items C and D, a firestop device consisting of a galv steel collar lined with an intumescent material sized to fit the specific diam of the through penetrant may be used. Device shall be installed around through-penetrant in accordance with the accompanying installation instructions. Device incorporates anchor tabs for securement to bottom surface of floor or both surfaces of wall assembly by means of 1/4 in. diam by min 1-1/4 in. long steel concrete screws in conjunction with min 1 in. diam steel fender washers.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal Firestop Collar

+Bearing the UL Listing Mark

\*Bearing the UL Classification Mark



### System No. C-AJ-5079

F Ratings — 2 and 3 Hr (See Items 1A and 4)

T Rating — 1/2 Hr

1. **Floor or Wall Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor or min 5 in. thick reinforced lightweight or normal weight concrete wall. Floor 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 is 9 in. Max diam of opening in floor constructed of hollow-core precast concrete units is 7 in.

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

- 1A. **Steel Sleeve** — (Optional, Not Shown) — Nom 8 in. diam (or smaller) Schedule 10 (or heavier) steel pipe sleeve cast or grouted into concrete. Ends of steel sleeve to be installed flush with or projecting max 3 in. beyond floor or wall surfaces. When steel sleeve is used, F Rating is 2 hr.
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 floor or wall assembly. The following types and sizes of metallic pipes or tubing may be used:
  - A. **Steel Pipe** — Nom 4 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 4 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Tubing** — Nom 4 in. diam (or smaller) Type L (or heavier) copper tubing.
  - D. **Copper Pipe** — Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
3. **Tube Insulation — Plastics+** — Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The min annular space between the tube insulation and the edge of the opening is 1/4 in. See Item 4 for max annular space specifications.
 

See **Plastics+** (QMFZ2) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
4. **Firestop System** — The F Rating of the firestop system is dependent upon the max diam of the through penetrant, the max annular space within the firestop system and the min fill material thickness, as tabulated below:

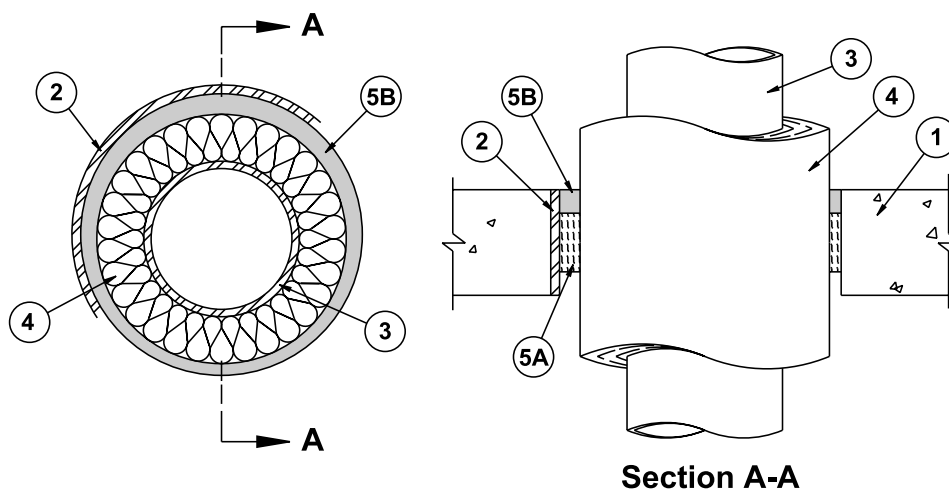
Max Diam of Through Penetrant In.	Max Annular Space In.	Min Fill Material Thkns In.	F Rating Hr
3	5/8	1	3
4	3-1/8	1/2	2

- A. **Packing Material** — Min 3-1/2 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 concrete floor or from both surfaces of wall as required to accommodate the required thickness of fill material. When floor is constructed of hollow-core precast concrete unit, packing material to be recessed from both surfaces of floor to accommodate the required thickness of fill material.
- B. **Fill, Void or Cavity Material\* — Sealant** — Min thickness of fill material applied within the annulus, flush with top surface of concrete floor or with both surfaces of wall. When floor is constructed of hollow-core precast concrete unit, fill material to be installed symmetrically on both sides of floor, flush with floor surfaces.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102, 105, 120 or 129 Sealant

+Bearing the UL Recognized Component Mark

\*Bearing the UL Classification Marking



**System No. C-AJ-5087**

December 01, 1999

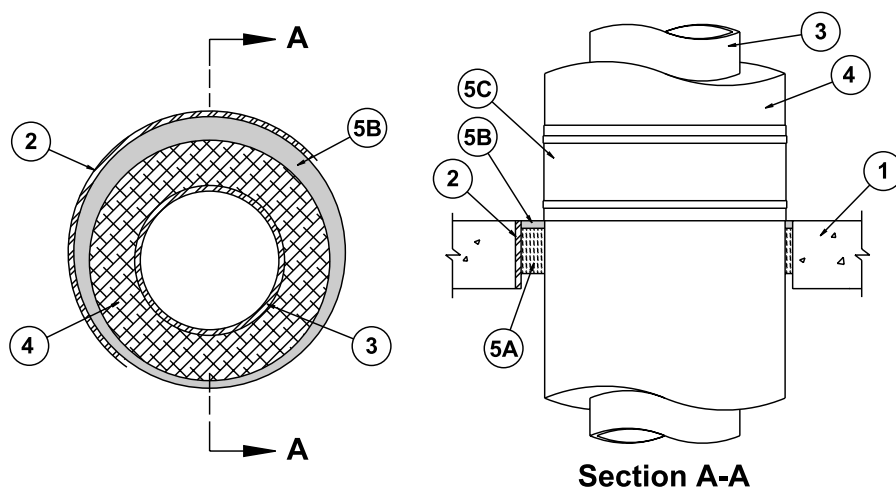
F Rating — 2 Hr

T Rating — 1 Hr

1. **Floor or Wall Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor or min 5 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete wall. Floor 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 is 30 in. Max diam of opening in floor constructed of hollow-core precast concrete units is 7 in.  
See **Concrete Blocks** (CAZT) and **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
2. **Steel Sleeve** — (Optional) — Nominal 30 in. diam (or smaller) Sch 10 (or heavier) steel pipe sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces.
3. **Through Penetrants** — One metallic pipe to be installed either concentrically or eccentrically within the firestop system. Pipe to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes may be used:
  - A. **Steel Pipe** — Nom 24 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 24 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Tubing** — Nom 6 in. diam (or smaller) Type M (or heavier) copper tubing.
  - D. **Copper Pipe** — Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
4. **Pipe Coverings** — One of the following types of pipe coverings shall be used:
  - A. **Pipe and Equipment Covering Materials\*** — Nom 2 in. thick hollow cylindrical heavy density (min 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. Annular space shall be min 1/2 in. thick to max 1-1/2 in. When the nom pipe diam is less than 2 in., annular space may be min 1/4 in.  
See **Pipe and Equipment Covering-Materials** (BRGU) category in 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.
  - B. **Pipe Covering Materials\*** — Nom 2 in. thick unfaced mineral fiber pipe insulation having a nom density of 3.5 pcf (or heavier) and sized to the outside diam of pipe or tube. Pipe insulation secured with min No. 8 AWG steel wire spaced max 12 in. OC.  
**OWENS CORNING HT INC, DIV OF**  
**OWENS CORNING** — High Temperature Pipe Insulation 1200, High Temperature Pipe Insulation BWT or High Temperature Pipe Insulation Thermaloc
  - C. **Sheathing Material\*** — Used in conjunction with Item 4B. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 4B) with the kraft side exposed. Longitudinal joints and transverse joints sealed with metal fasteners or butt tape. Annular space shall be min 1/2 in. thick to max 1-1/2 in. When the nom pipe diam is less than 2 in., annular space may be min 1/4 in.  
See **Sheathing Materials\*** — (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing 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 4 in. thickness of min 4 pcf mineral wool batt insulation compressed and firmly packed within annular space. 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 (Item 5B).
  - B. **Fill, Void or Cavity Material\* — Sealant** — Min 1/2 in. thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall. When min annular space is less than 1/2 in., fill material to be installed to min 1 in. thickness.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 102, 105, 120 or 129 Sealant

\*Bearing the UL Classification Marking



**Section A-A**

**System No. C-AJ-5103**

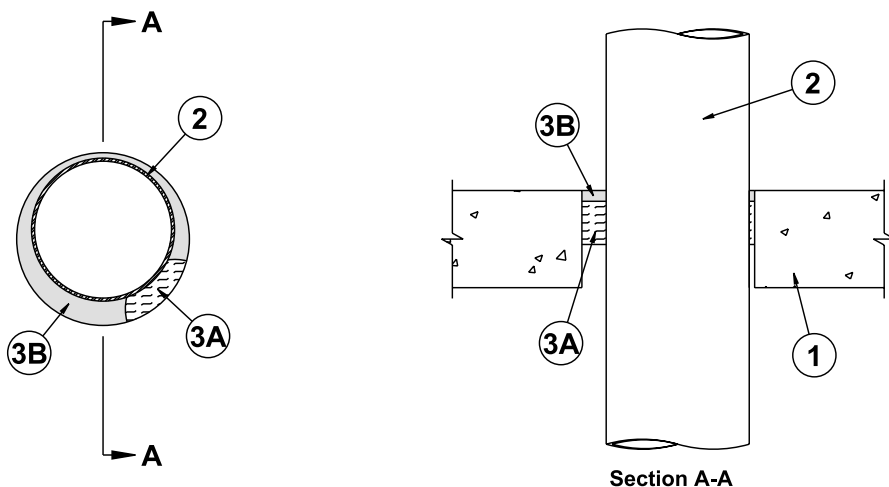
October 01, 1999

F Rating — 2 Hr

T Ratings — 1 and 2 Hr (See Item 2)

1. **Floor or Wall Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max diam of opening is 24 in.  
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Steel Sleeve** — (Optional) — Nominal 24 in. diam (or smaller) Sch 10 (or heavier) steel pipe sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces. **When steel sleeve is used, T Rating is 1 hr.**
3. **Through Penetrant** — One metallic pipe to be installed either concentrically or eccentrically within the firestop system. Pipe to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes may be used:
  - A. **Steel Pipe** — Nom 16 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 16 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Pipe** — Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
4. **Pipe Covering Materials\*** — **Cellular Glass Insulation** — Nom 3 in. thick cellular glass units sized to the outside diam of the through-penetrant and supplied in nom 24 in. long half sections or nom 18 in. long segments. Pipe insulation installed on pipe in accordance with the manufacturer's instructions. The annular space between insulated pipe and periphery of unsleeved opening shall be min 0 in. (point contact) to max 2 in.  
**When steel sleeve (Item 2) is used, the annular space between insulated pipe and steel sleeve shall be min 1/2 in. to max 2 in.**  
**PITTSBURGH CORNING CORP — FOAMGLAS**
5. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — Min 2 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 1/2 in. thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall assembly. At the point contact location between insulated through penetrant and concrete, a min 3/8 in. diam bead of fill material shall be applied at the concrete/insulated through penetrant interface on the top surface of floor and on both surfaces of wall.  
**SPECIFIED TECHNOLOGIES INC — SpecSeal 100, 101, 102 or 105 Sealant**
  - C. **Metal Jacket** — Min 12 in. long jacket formed of min 0.010 in. thick aluminum sheet cut to wrap tightly around the pipe insulation with a min 2 in. lap and secured using bands and seals of similar material. Bands to be located within 2 in. of each end of the jacket and spaced max 10 in. OC. Jacket to be installed with edge abutting surface of fill material (Item 5B) on top surface of floor or on each side of wall. Metal jacket to be used in addition to any other jacketing material which may be required on the pipe covering.

\*Bearing the UL Classification Mark



**System No. C-AJ-7023**

*January 06, 1999*

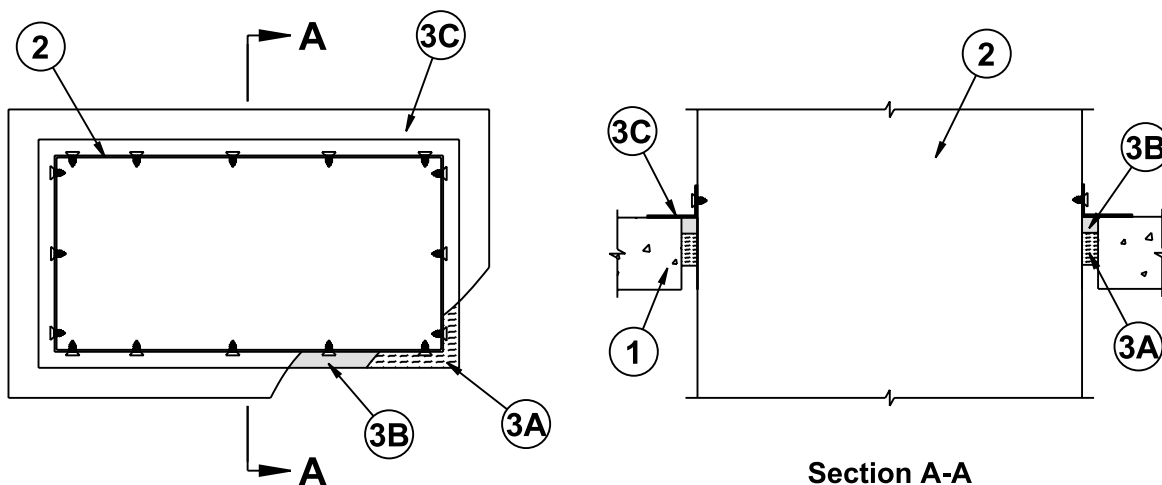
F Rating — 2 Hr

T Rating — 0 Hr

1. **Floor or Wall Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max diam of opening is 8 in.  
See **Concrete Block** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Steel Duct** — Nom 6 in. diam (or smaller) No. 28 gauge (or heavier) steel duct or nom 4 in. diam (or smaller) No. 30 gauge (or heavier) steel duct. One steel duct to be installed either concentrically or eccentrically within the firestop system. The annular space between the steel duct and the periphery of the opening shall be min 1/4 in. to a max 1-3/4 in. Steel duct to be rigidly supported on both sides of floor or wall assembly.
3. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — Min 2 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 1/2 in. thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall assembly.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102 or 105 Sealant

\*Bearing the UL Classification Marking



**System No. C-AJ-7027**

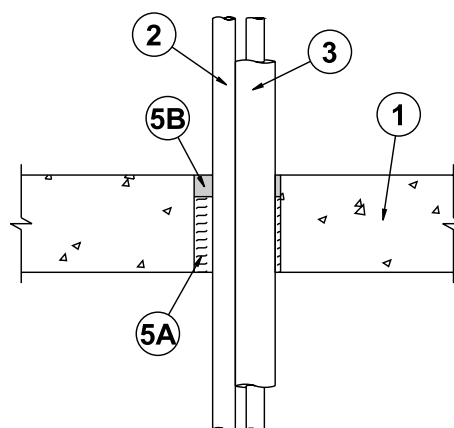
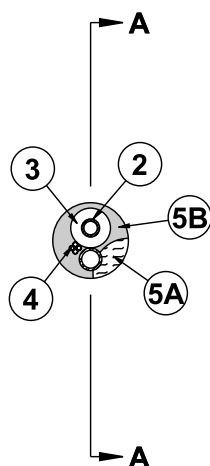
September 18, 1996

F Rating — 2 Hr

T Rating — 0 Hr

1. **Floor or Wall Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max area of opening is 364 sq in. with max dimensions of 26 in.  
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Steel Duct** — Nom 24 by 12 in. (or smaller) No. 24 gauge (or heavier) steel duct. One duct to be installed within the firestop system with a nom 1 in. annular space. Steel duct to be rigidly supported on both sides of floor or wall assembly.
3. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — Min 2 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 and from both surfaces of wall as required to accommodate the required thickness of fill material.
  - B. **Fill, Void or Cavity Material\* — Sealant** — Min 1 in. thickness of fill material applied within the annulus, flush with top surface of floor and both surfaces of wall.  
**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102 or 105 Sealant
  - C. **Steel Angle** — Min 2 in. wide by 2 in. high by 0.108 in. thick steel angle cut to fit the contour of the duct with a 1 in. lap on the top surface of floor or both surfaces of wall. Legs of angles secured to duct with min two No. 12 by 3/4 in. sheet metal screws per side, spaced a max 4 in. OC.

\*Bearing the UL Classification Marking



Section A-A

**System No. C-AJ-8054**

December 17, 1997

F Rating — 2 Hr

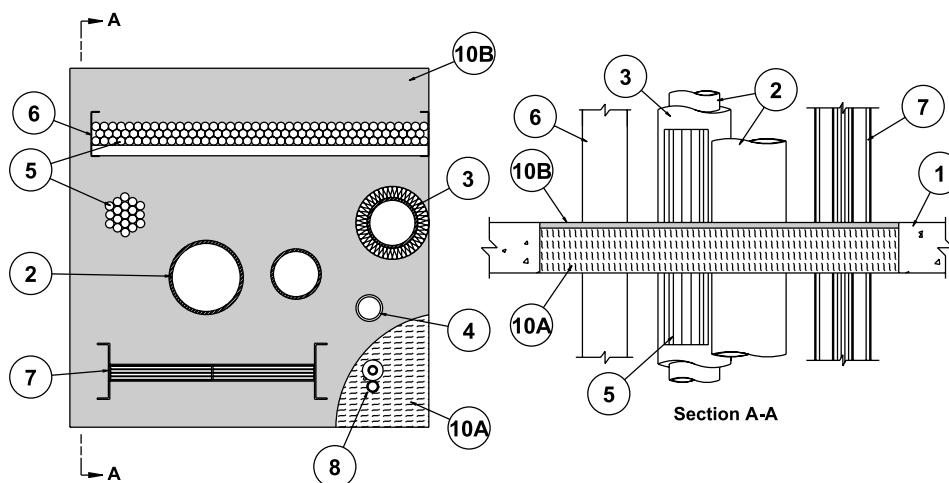
T Rating — 0 Hr

1. **Floor or Wall Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete floor or min 5 in. thick reinforced lightweight or normal weight concrete wall. Floor 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 is 3-1/2 in.  
See **Concrete Block** (CAZT) and **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.
2. **Through-Penetrants** — A max of two pipes, conduits or tubing to be installed within the opening. Of the two pipes, conduits or tubing, only one of the pipes, conduit or tubing shall have a nom diam greater than 1/2 in. The annular space between pipes, conduits or tubing and the periphery of the opening shall be min 1/4 in. to max 1-1/2 in. Pipes, conduits 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 3/4 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 3/4 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Conduit** — Nom 3/4 in. diam (or smaller) steel electrical metallic tubing or nom 3/4 in. diam (or smaller) steel conduit.
  - D. **Copper Tubing** — Nom 3/4 in. diam (or smaller) Type L (or heavier) copper tubing.
  - E. **Copper Pipe** — Nom 3/4 in. diam (or smaller) Regular (or heavier) copper pipe.
3. **Tube Insulation — Plastics+** — Nom 1/2 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The tube insulation may be installed on a max of one pipe or tubing. The annular space between insulated penetrating item and periphery of opening shall be min 1/2 in. to max 1 in. The annular space between pipes or tubing shall be a min 0 in. (point contact) to a max 1/2 in.  
See **Plastics+** (QMZZ2) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
4. **Cables** — Max four, 4 pair No. 18 AWG (or smaller) thermostat cable with polyvinyl chloride (PVC) insulation and jacket materials. Cables to be spaced a min 0 in. (point contact) to max 1/2 in. from the other penetrants. The annular space between the cable and the periphery of the opening shall be a min 1/2 in. to max 1 in. Cables to be rigidly supported on both sides of wall assembly.
5. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — Min 3 in. thickness of min 4 pcf mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be forced into interstices of through penetrants to max extent possible. Packing material to be recessed from top surface of concrete floor or from both surfaces of wall as required to accommodate the required thickness of fill material. When floor is constructed of hollow-core precast concrete unit, packing material to be recessed from both surfaces of floor to accommodate the required thickness of fill material.
  - B. **Fill, Void or Cavity Material\* — Sealant** — Min 1 in. thickness of fill material applied within the annulus, flush with top surface of concrete floor or with both surfaces of wall assembly. Fill material to be forced into interstices of through penetrants to max extent possible. When floor is constructed of hollow-core precast concrete unit, fill material to be installed symmetrically on both sides of floor, flush with floor surfaces.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102 or 105 Sealant

+Bearing the UL Recognized Component Mark

\*Bearing the UL Classification Marking



### System No. C-AJ-8113

November 30, 2001

F Rating — 2 Hr

T Ratings — 0, 1/4, 1/2, 3/4 and 2 Hr (See Items 2 through 9)

1. **Floor or Wall Assembly** — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max area of opening is 1024 sq in. with a max width or height of 32 in.  
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Metallic Penetrants** — One or more metallic pipes, conduits or tubes to be installed within the opening. Annulus between penetrants is min 0 in. (point contact) to max 5 in. Annulus between penetrants and periphery of opening is 0 in. (point contact) to max 6 in. Penetrants 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. <b>Steel Pipe</b> — Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.	
B. <b>Iron Pipe</b> — Nom 12 in. diam (or smaller) cast or ductile iron pipe.	
C. <b>Conduit</b> — Nom 6 in. diam (or smaller) rigid steel conduit, nom 4 in. diam (or smaller) electrical metallic tubing (EMT), or nom 4 in. diam (or smaller) steel <b>Flexible Metal Conduit#</b> .	
D. <b>Copper Pipe or Tube</b> — Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe or Type M (or heavier) copper tube.	

<b>Type of Metallic Penetrant</b>	<b>Max Diam of Through Penetrant, in.</b>	<b>T Rating, Hr</b>
Steel or Iron Pipe, Conduit	12	0
Copper Pipe or Tube	6	0
Steel or Iron Pipe, Conduit or EMT	4	1/4
Steel or Iron Pipe, Conduit or EMT	2	1/2
Steel or Iron Pipe, Conduit or EMT	1	3/4
3. **Pipe Insulation** — (Optional) — The following types of pipe insulations may be installed on one or more of the max 4 in. diam metallic pipes or tubes:
  - A. **Pipe and Equipment Covering Materials\*** — Nom 1 in. thick hollow cylindrical heavy density (min 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. **When Item 3A is used, T Rating is 3/4 Hr.**  
See **Pipe and Equipment Covering Materials** (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering 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.
  - B. **Pipe Covering Materials\*** — Nom 2 in. thick unfaced mineral fiber pipe insulation having a nom density of 3.5 pcf (or heavier) and sized to the outside diam of the pipe or tube. Pipe insulation secured with min 8 AWG steel wire spaced max 12 in. OC. **When Item 3B is used, T Rating is 2 Hr.**  
**OWENS CORNING HT INC DIV OF OWENS CORNING** — High Temperature Pipe Insulation 1200, High Temperature Pipe Insulation BWT and High Temperature Pipe Insulation Thermaloc
  - C. **Sheathing Material\*** — Use in conjunction with Item 3B. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 3B) with the kraft side exposed. Longitudinal and transverse joints sealed with metal fasteners or butt tape.  
See **Sheathing Materials** (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing 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.
  - D. **Tube Insulation — Plastics##** — Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. **When Item 3D is used, T Rating is 1/2 Hr.**  
See **Plastics** (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.

(System No. C-AJ-8113 Continued)

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Created or Revised: 12/03/01

Specified Technologies, Inc., Somerville, NJ (800) 992-1180

FOD-3512



**(System No. C-AJ-8113 Continued)**

- E. **Pipe Covering Materials\* — Cellular Glass Insulation** — Nom 2 to 3 in. thick cellular glass units sized to the outside diam of the pipe or tube and supplied in nom 24 in. long half sections or nom 18 in. long segments. Pipe insulation installed on pipe in accordance with the manufacturer's instructions. **When Item 3E is used, T Rating is 2 Hr.**  
**Pittsburgh Corning Corp. — FOAMGLAS**
- F. **Metal Jacket** — Used in conjunction with Item 3E. Min 12 in. long jacket formed from min 0.010 in. thick aluminum sheet cut to wrap tightly around the pipe insulation with a min 2 in. lap and secured using bands and seals of a similar material or min No. 18 AWG steel tie wire. Bands or steel tie wire to be located within 2 in. of each end of the jacket and spaced max 10 in. OC. Jacket installed with edge abutting surface of fill material (Item 9A) on top surface of floor or both surfaces of wall. Metal jacket to be used in addition to any other jacketing material which may be required on the pipe covering.
- G. **Pipe and Equipment Covering Materials\*** — Nom 2 to 3 in. thick hollow cylindrical calcium silicate (min 14 pcf) units sized to the outside diam of the pipe or tube. Pipe insulation secured with stainless steel bands or min 8 AWG stainless steel wire spaced max 12 in. OC. **When Item 3G is used, T Rating is 2 Hr.**
4. **Nonmetallic Penetrants** — One or more nonmetallic pipes, conduits or tubes to be installed within the opening. Annulus between penetrants and periphery of opening is min 1 in. to max 6 in. Separation between metallic and nonmetallic penetrants is min 6 in. Penetrants rigidly supported on both sides of floor or wall assembly. The following types and sizes of nonmetallic pipes, conduits or tubing may be used.
- A. **Polyvinyl Chloride (PVC) Pipe** — Nom 2 in. diam (or smaller) solid or cellular core Schedule 40 PVC pipe for use in closed (process or supply) piping systems.
- B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** — Nom 2 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) piping systems.
- C. **Rigid Nonmetallic Conduit+** — Nom 2 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70).
- D. **Electrical Nonmetallic Tubing (ENT)+** — Nom 2 in. diam (or smaller) corrugated wall ENT formed of polyvinyl chloride (PVC) installed in accordance with Article 331 of the National Electrical Code (NFPA 70).
- When Item 4 is used, the T Rating of the firestop system is 2 hr.**
5. **Cables** — Nom 4 in. diam (or smaller) tight bundle of cables. Annulus between cable bundle and periphery of opening is min 0 in. (point contact) to max 6 in. Separation between cable bundle and metallic or nonmetallic penetrants shall be min 6 in. Cable bundle rigidly supported on both sides of floor or wall assembly. The following types and sizes of cables may be used:
- A. Max 1/C — 1000 kcmil cable with polyvinyl chloride (PVC) or cross-linked polyethylene (XLPE) insulation and jacket.
- B. Max 7/C — No. 12 AWG cable with PVC-nylon insulation and PVC jacket.
- C. Max 400 pair — No. 24 AWG copper conductor telephone cable with PVC insulation and jacket.
- D. Max RG/U coaxial cables with fluorinated ethylene jacket and insulation.
- E. Multiple fiber optic cables with PVC insulation.
- F. **Through Penetrating Products\*** — Max 4/C with ground No. 2/O AWG Metal-Clad Cable+.
- AFC Cable Systems Inc.**
- When cables are used, T Rating is 1/2 hr.**
6. **Cable Tray** — Max 30 in. wide by max 6 in. deep open ladder cable tray with channel-shaped side rails formed from min 0.060 in. thick (No. 16 MSG) galv steel or min 0.060 in. thick aluminum with rungs spaced max 9 in. OC. A max of two cable trays may be installed within the opening with a min separation of 8 in. between trays. Annulus between the cable tray and the periphery of the opening is min 0 in. (point contact) to max 6 in. Separation between cable tray and metallic or nonmetallic penetrants is min 6 in. Cable trays to be rigidly supported on both sides of the floor or wall assembly. Aggregate cross-sectional area of cables in cable tray not to exceed 40 percent of the cross-sectional area of the cable tray based on a max 3 in. cable loading depth within tray. Any combination of the cable types specified in Item 5 may be used. **When cable tray is used, T Rating is 1/2 hr.**
7. **Busway+** — Nom 19 in. wide (or smaller) by 5 in. deep "I" shaped aluminum enclosure containing factory-mounted copper bars rated for 600 V, 5000 A or aluminum bars rated for 600 V, 4000 A. A max of two busways may be installed within the opening. The annular space between the busway and the periphery of the opening shall be a min 0 in. (point contact) to a max 5 in. Busways spaced min 6 in. from all other penetrants. Busway to be rigidly supported on both sides of floor or wall assembly. The busway shall bear the UL Listing Mark and shall be installed in accordance with all provisions of Article 364 of the National Electrical Code, NFPA 70. **When busway is used, the T Rating is 1/4 hr.**
8. **Air Conditioning (AC) Line Set** — One or more AC line sets installed within opening. Each AC line set consists of two pipes or tubes (Item 8A), tubing insulation (Item 8B) and a thermostat cable (Item 8C). The space between the AC line sets shall be min 2 in. The space between the AC line sets and the periphery of the opening shall be min 0 in. (point contact) to max 6 in. The AC line sets shall be spaced min 6 in. from uninsulated metallic penetrants and shall be rigidly supported on both sides of the floor or wall assembly.
- 8A. **Through Penetrant** — A max of two pipes or tubes to be installed in each AC line set. Of the two pipes or tubes, only one may have a nom diam greater than 1/2 in. The following types and sizes of through penetrants may be used:
- A. **Steel Pipe** — Nom 1 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.
- B. **Iron Pipe** — Nom 1 in. diam (or smaller) cast or ductile iron pipe.
- C. **Copper Pipe** — Nom 1 in. diam (or smaller) Regular (or heavier) copper pipe.
- D. **Copper Tube** — Nom 1 in. diam (or smaller) Type L (or heavier) copper tube.
- 8B. **Tube Insulation — Plastics#** — Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The tube insulation may be installed on one max 1/2 in. diam pipe or tube in each AC line set. The space between the insulated and uninsulated pipes or tubes within each AC line set shall be 0 in. (point contact).  
See **Plastics** (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers.  
Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 945VA may be used.

**(System No. C-AJ-8113 Continued)**

**(System No. C-AJ-8113 Continued)**

8C. **Cable** — One 4 pair No. 18 AWG (or smaller) thermostat cable with polyvinyl chloride (PVC) insulation and jacket materials may be installed with each AC line set.

**When Item 8 is used, the T Rating of the firestop system is 1/4 hr.**

9. **Steel Duct** — (Not Shown) — Nom 4 in. diameter (or smaller) No. 28 GA (or heavier) steel duct installed within opening when opening contains no cables or cable tray. A max of two steel ducts may be installed within the through-opening. Ducts to be spaced min 4 in. apart and min 8 in. from insulated penetrants and nonmetallic penetrants. Annulus between the steel duct and the periphery of the opening shall be min 0 in. (point contact) to max 6 in. Steel ducts to be rigidly supported on both sides of floor or wall assembly. **When steel duct is used, the T Rating is 0 hr.**

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

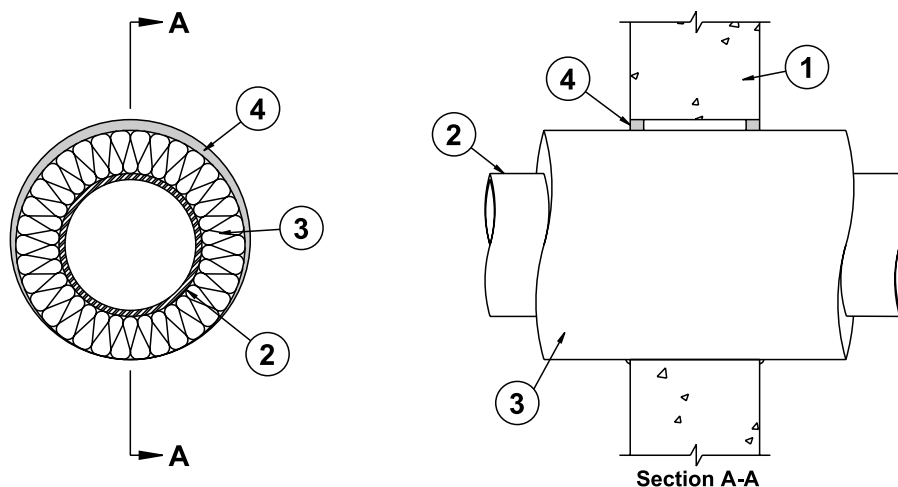
- A. **Packing Material** — Min 4 in. thickness of min 4 pcf mineral wool batt insulation tightly packed into opening. Packing material recessed from top surface of floor assembly or from both surfaces of wall or precast concrete units.
- B. **Fill, Void or Cavity Materials\*** — **Sealant** — Min 1/2 in. depth of fill material applied within the annulus, flush with top surface of floor assembly or with both surfaces of the wall assembly. Additional fill material forced into interstices of grouped cables and grouped cables within cable trays. At point contact location between through penetrant and concrete, a min 3/8 in. diam of fill material shall be applied at through penetrant/concrete interface on top surface of floor or both surfaces of the wall.

**Specified Technologies Inc.** — SpecSeal 100, 101, 102, 105, 120 or 129 Sealant

\* Bearing the UL Classification Marking

#Bearing the UL Recognized Components Mark

+Bearing the UL Listing Mark



**System No. W-J-5005**

December 02, 1997

F Rating — 2 Hr

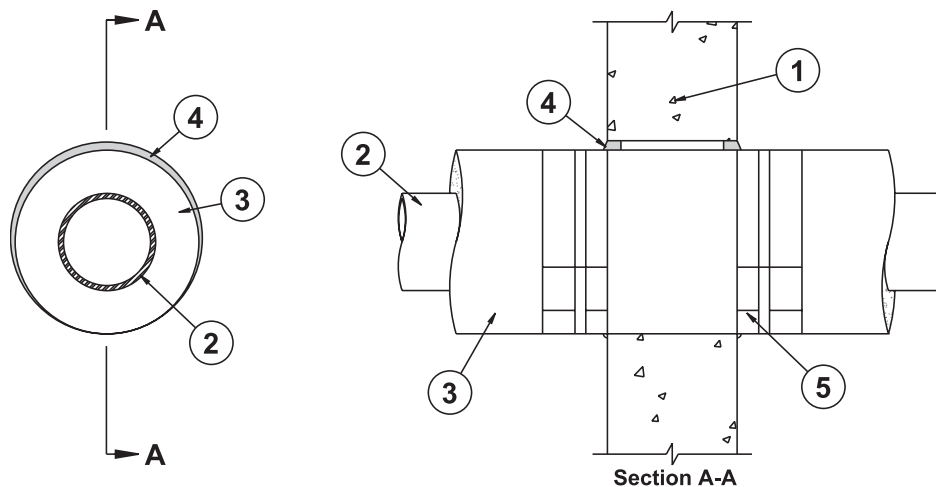
T Rating — 1 Hr

L Rating At Ambient — Less Than 1 CFM/sq ft

L Rating At 400 F — Less Than 1 CFM/sq ft

1. **Wall Assembly** — Min 6 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max diam of opening is 18 in.  
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 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** — Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 12 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Tubing** — Nom 4 in. (or smaller) Type L (or heavier) copper tube.
  - D. **Copper Pipe** — Nom 4 in. (or smaller) Regular (or heavier) copper pipe.
3. **Pipe Coverings\*** — One of the following types of pipe coverings shall be used:
  - A. **Pipe and Equipment Covering Materials\*** — Max 2 in. thick hollow cylindrical heavy density (min 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 between penetrating item and the edge of the through opening shall be min 0 in. (continuous point contact) to max 1-1/4 in.  
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.
  - B. **Pipe Covering Materials\*** — Max 2 in. thick unfaced mineral fiber pipe insulation having a nom density of 3.5 pcf (or heavier) and sized to the outside diam of pipe or tube. Pipe insulation secured with min 8 AWG steel wire spaced max 12 in. OC. The annular space between insulated penetrating item and the edge of the through opening shall be min 0 in. (continuous point contact) to max 1-1/4 in.  
**OWENS CORNING HT INC, DIV OF**  
**OWENS CORNING** — Paroc 1200, Paroc BWT or Paroc Thermaloc 1200
  - C. **Sheathing Material\*** — Used in conjunction with Item 3B. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 3B) with the kraft side exposed. Longitudinal joints and transverse joints sealed with metal fasteners or butt tape.  
See **Sheathing Materials** (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing 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. **Fill, Void or Cavity Material\*** — **Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall. At the point contact location between insulated through penetrant and concrete, a min 3/8 in. bead of fill material shall be applied to the concrete insulated through penetrant interface on both sides of the wall.  
**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102 and 105 Sealant

\*Bearing the UL Classification Marking



**System No. W-J-5011**

F Rating — 2 Hr

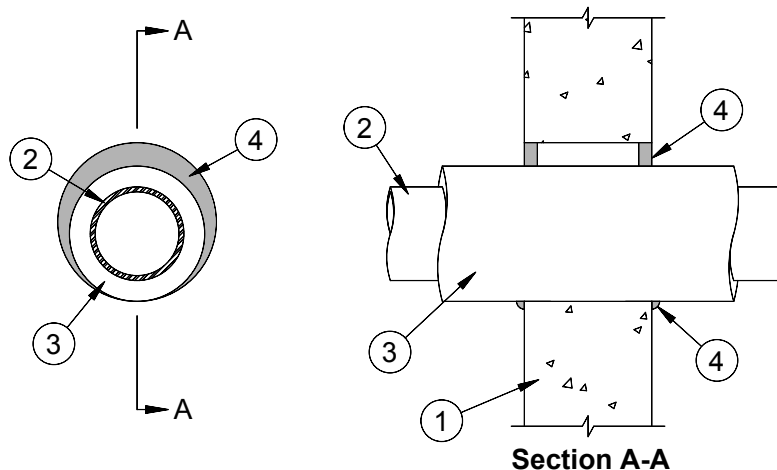
T Ratings — 3/4, 1, 1-1/2 and 2 Hr (See Item 3)

L Rating At Ambient — Less Than 1 CFM/sq ft

L Rating At 400 F — Less Than 1 CFM/sq ft

1. **Wall Assembly** — Min 6 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max diam of opening is 20 in.  
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Through Penetrant** — 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** — Nom 16 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 16 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Tubing** — Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
  - D. **Copper Pipe** — Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
3. **Pipe Covering Materials\*** — **Cellular Glass Insulation** — Nom 2 in. thick cellular glass units sized to the outside diam of the through-penetrant and supplied in nom 24 in. long half sections or nom 18 in. long segments. Pipe insulation installed on pipe in accordance with the manufacturer's instructions. The annular space between insulated pipe or tubing and periphery of opening shall be min 0 in. (point contact) to max 3/8 in.  
**PITTSBURGH CORNING CORP — FOAMGLAS**
4. **Fill, Void or Cavity Materials\*** — **Sealant** — Min 5/8 in. thickness of fill material applied within the annulus flush with both surfaces of wall. After installation of the metal jacketing (Item 5), min 3/8 in. diam bead of fill material shall be applied to the metal jacketing/fill material interface on both sides of wall.  
**SPECIFIED TECHNOLOGIES INC — SpecSeal 100, 101 or 105 Sealant**
5. **Metal Jacket** — Min 12 in. long jacket formed of min 0.010 in. thick aluminum sheet cut to wrap tightly around the pipe insulation with a min 2 in. lap and secured using bands and seals of similar material. Bands to be located within 2 in. of each end of the jacket and spaced max 10 in. OC. Jacket to be installed with edge abutting surface of fill material (Item 4) on each side of wall. Metal jacket to be used in addition to any other jacketing material which may be required or desired on the pipe insulation.

\*Bearing the UL Classification Marking



### System No. W-J-5012

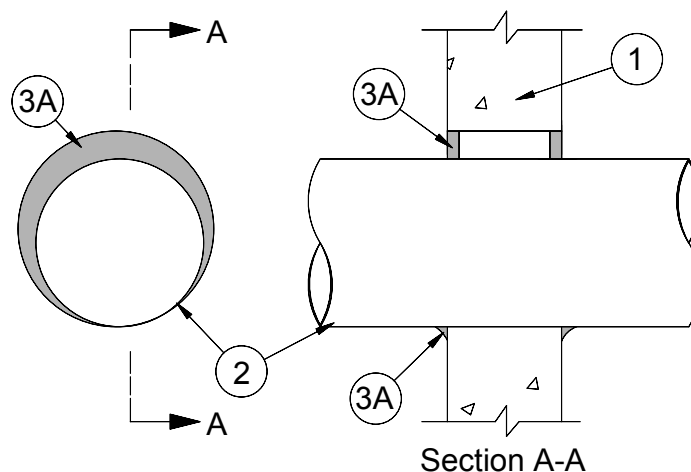
F Rating — 2 Hr.

T Ratings — 3/4 and 1 Hr. (See Item 3)

1. **Wall Assembly** — Min 5 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\*** Max diam of opening is 7-5/8 in.  
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Through Penetrant** — One metallic pipe, tubing or conduit 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, tubing or conduits may be used:
  - A. **Steel Pipe** — Nom 4 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 4 in. (or smaller) cast or ductile iron pipe.
  - C. **Copper Tubing** — Nom 4 in. diam (or smaller) Type L (or heavier) copper tubing.
  - D. **Copper Pipe** — Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
3. **Tube Insulation — Plastics+** — Nom 3/4 in. or 1 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The annular space between penetrating item and periphery of opening shall be min 0 in. (point contact) to max 1-1/2 in. **When 1 in. thick AB/PVC insulation is used, T Rating is 3/4 hr. When 3/4 in. thick AB/PVC insulation is used, T Rating is 1 hr.**  
See **Plastics+** (QMFZ2) category in the Recognized Component Directory for names and manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
4. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material within annulus, flush with both surfaces of wall. Min 1/4 in. diam bead of sealant to be applied at the point contact location between the AB/PVC insulation and the concrete wall.  
**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102, 105, 120 or 129 Sealant

+Bearing the UL Listing Mark.

\*Bearing the UL Classification Mark



### System No. W-J-7005

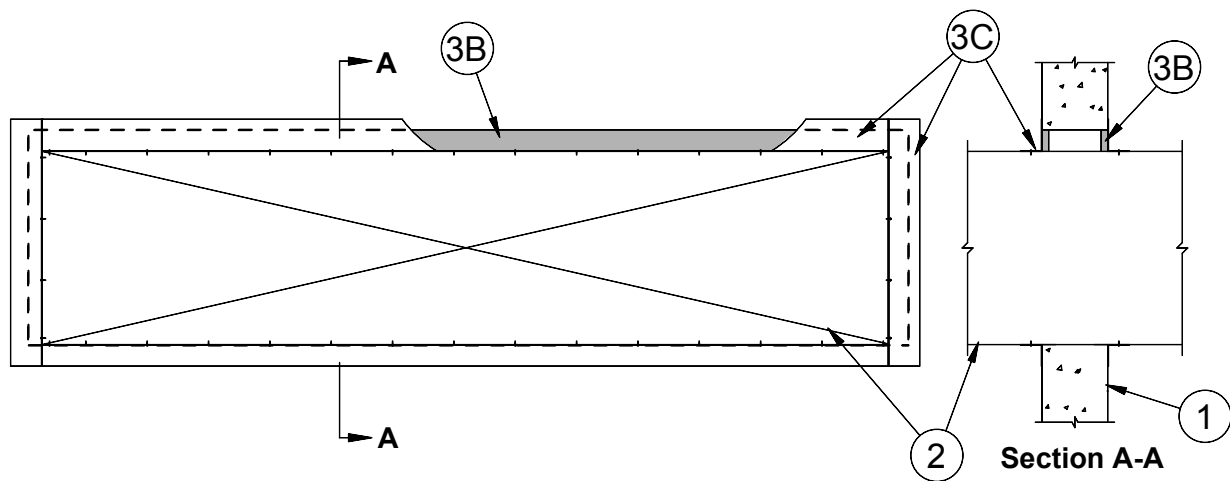
F Rating — 2 Hr

T Rating — 0 Hr

1. **Wall Assembly** — Min 6 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\*** Max diam of opening is 25-1/2 in.  
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Steel Duct** — Nom 24 in. diam (or smaller) No. 28 gauge (or heavier) galv steel vent duct or No. 24 gauge (or heavier) spiral wound galv steel duct. One steel duct to be installed either concentrically or eccentrically within the firestop system. An annular space of min 0 in. (point contact) to max 1-1/2 in. is required within the firestop system. Steel duct to be rigidly supported on both sides of the wall assembly.
3. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall. At the point contact location between through penetrant and concrete, a min 3/8 in. diam bead of fill material shall be applied at the through penetrant/concrete interface on both surfaces of wall.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102, 105, 120 or 129 Sealant.

\*Bearing the UL Classification Mark



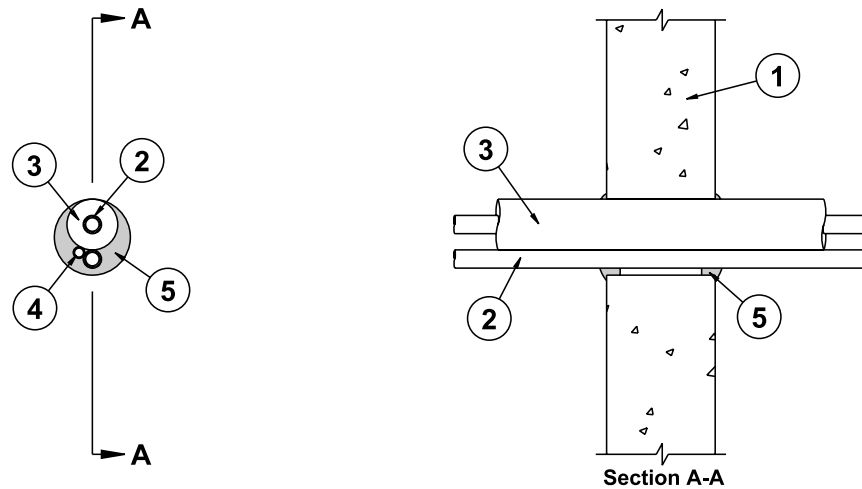
### System No. W-J-7007

F Rating — 2 Hr

T Rating — 1/2 Hr

1. **Wall Assembly** — Min 6 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\*** Max area of opening is 73.67 sq ft with max dimension of 104 in.  
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Steel Duct** — Nom 100 in. by 100 in. (or smaller) No. 24 gauge (or heavier) galv steel duct to be installed either concentrically or eccentrically within the firestop system. The space between the steel duct and periphery or opening shall be min 0 in. (point contact) to max 2 in. Steel duct to be rigidly supported on both sides of the wall assembly.
3. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — (Optional, Not Shown) — Polyethylene backer rod, mineral wool batt insulation or fiberglass batt insulation friction fitted into annular space of opening. Packing material to be recessed from both surfaces of wall as required thickness of fill material.
  - B. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point contact location between steel duct and concrete wall, a min 1/4 in. diam bead of fill material shall be applied at the concrete/steel duct interface on both surfaces of wall assembly.  
**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102, 105, 120 or 129 Sealant
  - C. **Steel Retaining Angles** — Min No. 16 gauge galv steel angles sized to lap steel duct a min of 2 in. and lap wall surfaces a min 1 in. Angles attached to steel duct on both sides of wall with min No. 10 by 1/2 in. long steel sheet metal screws spaced a max of 1 in. from each end of steel duct and spaced a max 6 in. OC.

\*Bearing the UL Classification Mark



**System No. W-J-8006**

November 26, 1996

F Rating — 2 Hr

T Rating — 1/2 Hr

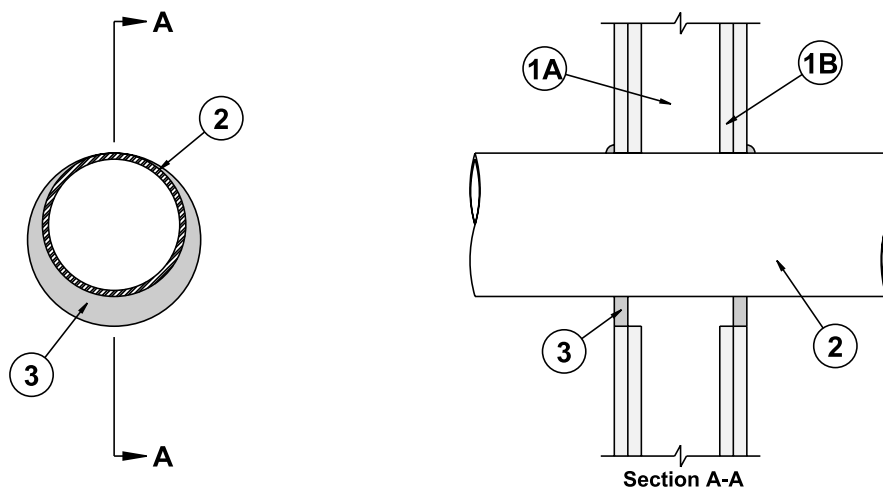
1. **Wall Assembly** — Min 5 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max diam of opening is 3-1/2 in.  
See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Through Penetrant** — A max of two pipes or tubing to be installed within the opening. Of the two pipes, or tubing only one of the pipes or tubing shall have a nom diam greater than 1/2 in. The annular space between pipe or tubing and periphery of opening shall be min ) 0 in. (point contact) to max 1/2 in. Pipes 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** — Nom 1 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 1 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Tubing** — Nom 1 in. diam (or smaller) Type L (or heavier) copper tubing.
  - D. **Copper Pipe** — Nom 1 in. diam (or smaller) Regular (or heavier) copper pipe.
3. **Tube Insulation — Plastics+** — Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The tube insulation may be installed on a max of one pipe or tubing. The annular space between penetrating item and periphery of opening shall be min 1/2 in. max 3/4 in. The space between pipe or tubing shall be 0 in. (point contact).  
See **Plastics+** (QMFZ2) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
4. **Cables** — One 4 pair No. 18 AWG (or smaller) thermoset cable with polyvinyl chloride (PVC) insulation and jacket materials. Cable to be spaced a min 0 in. (point contact) to max 1/2 in. from the other penetrants. The space between the cable and the periphery of the opening shall be a min 0 in. (point contact) to max 1/2 in. Cable to be rigidly supported on both sides of wall assembly.
5. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material within annulus, flush with both surfaces of wall. Additional fill material to be forced into intersties within groups of penetrating items to max extent possible and installed such that a min 1/4 in. thick crown is formed around the penetrating items lapping 1/4 in. beyond the periphery of the opening.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102 or 105 Sealant.

+Bearing the UL Recognized Component Mark.

\*Bearing the UL Classification Marking





**System No. W-L-1049**

December 02, 1997

(Formerly System No. 635)

F Ratings — 1 and 2 Hr (See Item 1B)

T Rating — 0 Hr

L Rating At Ambient — Less Than 1 CFM/sq ft

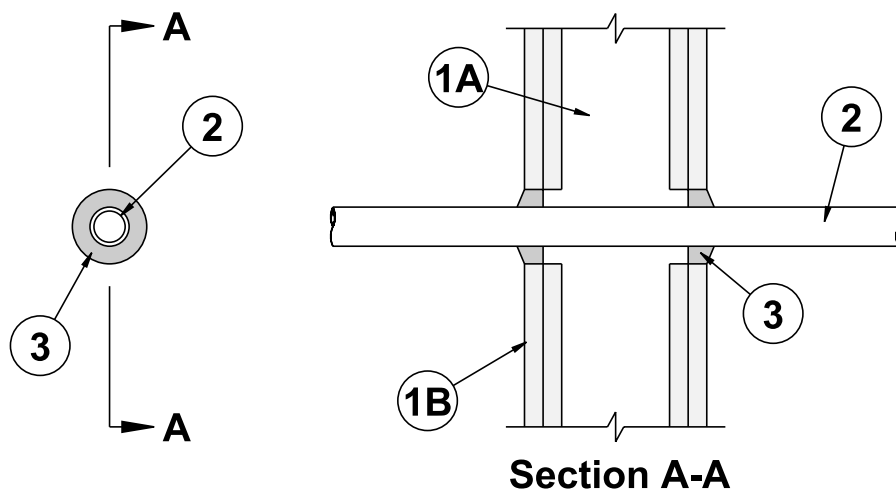
L Rating At 400 F — Less Than 1 CFM/sq ft

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 Design in the UL Fire Resistance Directory and shall include the following construction features:
  - A. **Studs** — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 3-5/8 in. wide and spaced max 24 in. OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. wider and 4 to 6 in. higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. clearance is present between the penetrating item and the framing on all four sides.
  - B. **Gypsum Board\*** — 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 25-3/4 in. for steel stud walls. Max diam of opening is 14-1/2 in. for wood stud walls.

**The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.**
2. **Through Penetrant** — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening shall be min 0 in. (point contact) to max 1-3/4 in. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
  - A. **Steel Pipe** — Nom 24 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 24 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Conduit** — Nom 4 in. diam (or smaller) steel electrical metallic tubing, nom 6 in. diam (or smaller) steel conduit or nom 1 in. diam (or smaller) flexible steel conduit.
  - D. **Copper Tubing** — Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
  - E. **Copper Pipe** — Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
3. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall. At the point contact location between through penetrant and gypsum wallboard, a min 3/8 in. diam bead of fill material shall be applied at the gypsum wallboard/through penetrant interface on both surfaces of wall.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102 or 105 Sealant

\*Bearing the UL Classification Marking



**System No. W-L-2100**

November 28, 2000

F Ratings — 1 and 2 Hr (See Item 1)

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

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 Design in the UL Fire Resistance Directory and shall include the following construction features:
  - A. **Studs** — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 3-5/8 in. wide and spaced max 24 in. OC.
  - B. **Gypsum Board\*** — 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 3-1/2 in.

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. **Nonmetallic Pipe** — One nonmetallic pipe or tubing to be centered within the firestop system. Pipe or tubing to be rigidly supported on both sides of wall assembly. The following types of nonmetallic pipes or tubing may be used:
  - A. **Polybutylene Pipe** — Nom 1 in diam (or smaller) SDR 11 (or heavier) polybutylene (PB) pipe for use in closed (process or supply) piping systems. A nom annular space of 1/4 in. is required within the firestop system.
  - B. **Cross Linked Polyethylene (PEX) Tubing** — Nom 1 in. diam (or smaller) SDR 9 PEX tubing for use in closed (process or supply) piping systems. A nom annular space of 1/4 in. is required within the firestop system.
  - C. **Acrylonitrile Butadiene Styrene (ABS) Pipe** — Nom 1-1/2 in. diam (or smaller) Schedule 40 cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. The annular space shall be min 1/4 in. to max 1 in.
  - D. **Polyvinyl Chloride (PVC) Pipe** — Nom 2 in. 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. The annular space shall be min 0 in. (point contact) to max 1 in.
  - E. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** — Nom 2 in. diam (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. The annular space shall be min 0 in. (point contact) to max 1 in.

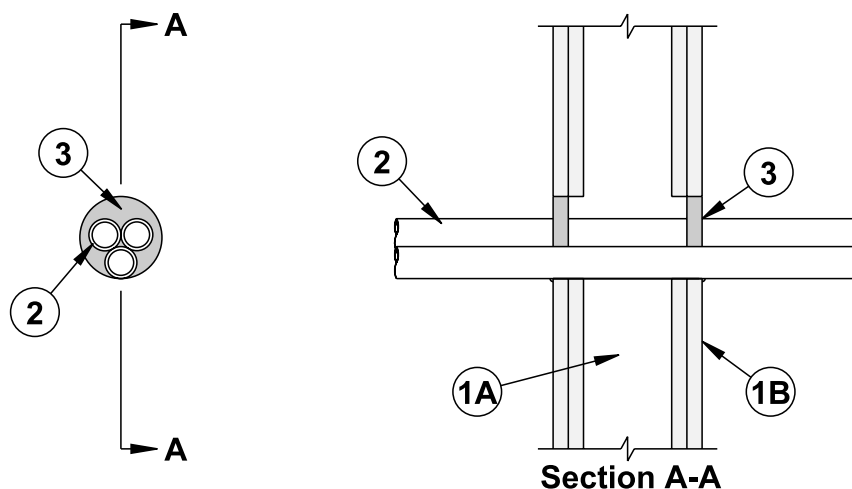
The hourly T Rating of the firestop system is dependent on the hourly fire rating of the wall assembly in which it is installed and the type of through penetrant, as shown in the table below:

Rating of Wall	Type of Through Penetrant	T Rating, Hr
2	PB pipe	1-1/2
2	PEX tubing	1-1/2
2	PVC or CPVC pipe	1/4
2	ABS pipe	0
1	PB pipe	1
1	PEX tubing	1
1	PVC or CPVC pipe	1/4
1	ABS pipe	0

3. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall. Additional fill material to be installed such that a min 1/4 in. thick crown is formed around the penetrating item.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102, 105, 120 or 129 Sealant

\*Bearing the UL Classification Mark



**System No. W-L-2144**

October 04, 2000

F Ratings — 1 and 2 Hr (See Item 1)

T Ratings — 1 and 1-3/4 Hr (See Item 2)

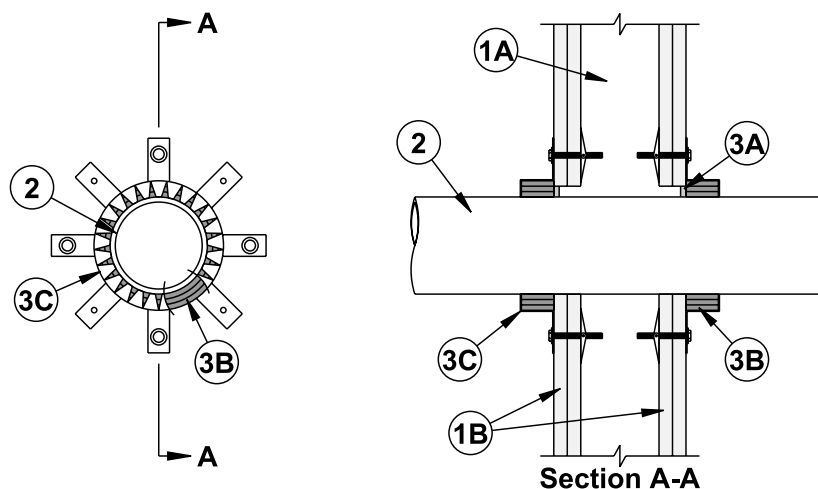
1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
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

**The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.**
2. **Through Penetrant** — One to three nonmetallic pipes, conduits or tubes to be bundled together and installed eccentrically or concentrically within the firestop system. The annular space between the pipes, conduits or tubes and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. Separation between pipes, conduits or tubes to be min 0 in. (point contact) to max 1 in. Pipes, conduits or tubes to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes, conduits and tubes may be used:
  - A. **Polyvinyl Chloride (PVC) Pipe** — Nom 1 in. diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) piping systems.
  - B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** — Nom 1 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) piping systems.
  - C. **Rigid Nonmetallic Conduit+** — Nom 1 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70).
  - D. **Electrical Nonmetallic Tubing+** — Nom 1 in. diam (or smaller) PVC tubing installed in accordance with Article 331 of the National Electrical Code (NFPA 70).
  - E. **Optical Fiber Raceway+** — Nom 1 in. diam (or smaller) optical fiber raceway formed from polyvinyl chloride (PVC) or polyvinylidene fluoride (PVDF) installed in accordance with Article 770 of the National Electrical Code (NFPA 70).
  - F. **Cross Linked Polyethylene (PEX) Tubing** — Nom 1 in. diam (or smaller) SDR9 PEX tubing for use in closed (process or supply) piping systems.

**T Rating is 1 hr and 1-3/4 hr for 1 hr and 2 hr fire rated walls, respectively.**
3. **Fill, Void or Cavity Material\*** — **Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall assembly. Sealant to be forced into interstices between penetrants to max extent possible. At point contact location, min 1/4 in. diam bead of fill material applied at nonmetallic pipe/gypsum board interface on both surfaces of wall.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102, 105, 120 or 129 Sealant

\*Bearing the UL Classification Marking



**System No. W-L-2243**

October 04, 2000

F Ratings — 1 and 2 Hr (See Item 1)

T Ratings — 1, 1-1/2 and 2 Hr (See Item 1 and 3B)

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

**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 nonmetallic pipe or conduit to be installed eccentrically or concentrically within the firestop system. The annular space shall range from min 0 in. (point contact) to max 1/2 in. Pipe or conduit to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes or conduits may be used:
  - A. **Polyvinyl Chloride (PVC) Pipe** — Nom 6 in. diam (or smaller) solid or cellular core Schedule 40 polyvinyl chloride (PVC) pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
  - B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe** — Nom 6 in. diam (or smaller) SDR17 chlorinated polyvinyl chloride (CPVC) pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
  - C. **Rigid Nonmetallic Conduit†** — Nom 6 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70).
  - D. **Acrylonitrile Butadiene Styrene (ABS) Pipe** — Nom 6 in. diam (or smaller) solid or cellular core Schedule 40 acrylonitrile butadiene styrene (ABS) pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
3. **Firestop System** — The firestop system shall consist of the following:
  - A. **Fill, Void or Cavity Material\* — Sealant** — Fill material installed to min 1/4 in. depth within annulus. When nom diam of pipe is less than 4 in., the fill material is optional.  
**SPECIFIED TECHNOLOGIES INC — SpecSeal LCI Sealant**
  - B. **Fill, Void or Cavity Material\* — Wrap Strip** — Nom 1/4 in. thick by 1-1/2 in. wide or 3/16 in. by 2 in. wide intumescent strips faced on both sides with a plastic film. Strips tightly wrapped around nonmetallic pipe with edges butted against both surfaces of the wall. The wrap strips may be installed with butted seams with butted seams in successive layers aligned or offset or continuously wrapped around through penetrant. Wrap strips are temporarily held in place with masking tape. The number of layers of wrap strip are dependent on the diam of the pipe as tabulated below:
 

Diam of Through Penetrant	Layers of Wrap Strip
6	3*
4	3
4	2**
3	2
2	1

\* For nom 6 in. pipe, two sets of three wrap strip layers are "stacked" to attain a 3 in. or 4 in. wrap strip width for RED or BLU wrap strip, respectively.

\*\* When two layers of wrap strip are used in lieu of three for 4 in. diam pipe, the T Rating is 1-1/2 hr for 2 hr fire-rated wall assembly.

**SPECIFIED TECHNOLOGIES INC — SpecSeal RED or BLU Wrap Strip**
- C. **Steel Collar** — Nom 1-1/2, 2, 3 or 4 in. deep collar, dependent upon wrap strip width, with 1 in. wide by 2 in. long anchor tabs for securement to gypsum board and min 3/4 in. wide retaining tabs tapering down to 1/4 in. wide and located

**(System No. W-L-2243 Continued)**

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Created or Revised: 09/01/01

Specified Technologies, Inc., Somerville, NJ (800) 992-1180

FOD-3455

**(System No. W-L-2243 Continued)**

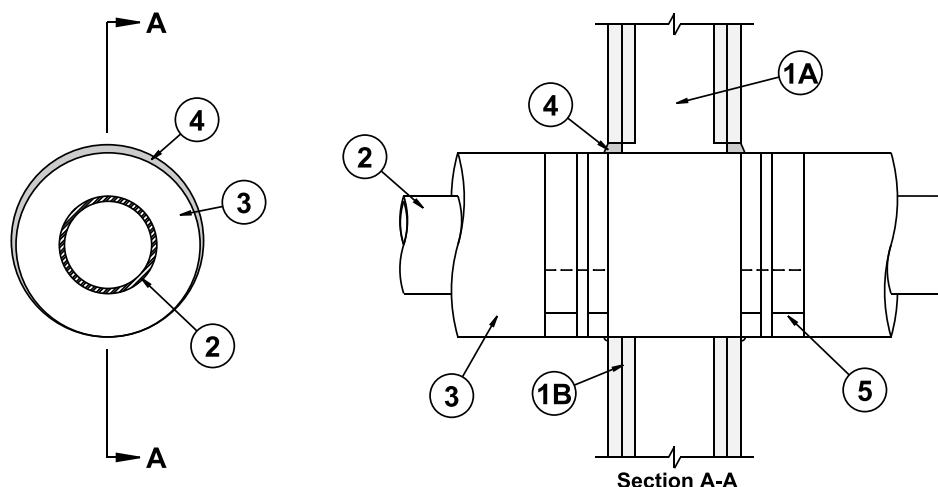
opposite the anchor tabs. Steel collar, with anchor tabs bent outward 90 deg, wrapped tightly around wrap strip layers with min 1 in. overlap at seam. Retainer tabs to be bent 90 deg toward pipe to lock wrap strips in position. Anchor tabs to be pressed tightly against wall surfaces, and collar to be secured in place with one 1/2 in. wide by 0.028 in. thick stainless steel band clamp. Two band clamps are required for 3 in. high (or higher) collar on 6 in. pipe. As an alternate to the band clamps on 1-1/2 and 2 in. deep collar, secure collar together by means of three No. 8 by 1/4 in. long steel screws. Collar to be secured to wall surfaces with 1/8 in. diam by min 2-3/4 in. long steel molly bolts or toggle bolts in conjunction with min 1-1/4 in. diam steel fender washers. The number of hollow wall anchors is dependent upon the nom diam of the through penetrant. Min two hollow wall anchors, symmetrically located, are required for nom 1-1/2 in. through 2 in. diam through penetrants. Min three hollow wall anchors, symmetrically located, are required for nom 2-1/2 in. through 3 in. diam through penetrants. Min four hollow wall anchors, symmetrically located, are required for nom 3-1/2 in. through 4 in. diam through penetrants. Min six hollow wall anchors, symmetrically located, are required for nom 6 in. diam through penetrants.

- D. **Firestop Device\*** — (Not Shown) — As an alternate to Items C and D, a firestop device consisting of a galv steel collar lined with an intumescent material sized to fit the specific diam of the through penetrant may be used. Device shall be installed around through-penetrant in accordance with the accompanying installation instructions. Device incorporates anchor tabs for securement to both surfaces of wall assembly by means of 1/8 in. diam by 2-3/4 in. long steel molly bolts or toggle bolts in conjunction with min 1-1/4 in. diam steel fender washers.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal Firestop Collar

\*Bearing the UL Classification Marking

+Bearing the UL Listing Mark



### System No. W-L-5051

F Ratings — 1 and 2 Hr (See Item 1B)  
 T Ratings — 3/4, 1, 1-1/2 and 2 Hr (See Item 3)  
 L Rating At Ambient — Less Than 1 CFM/sq ft  
 L Rating At 400 F — Less Than 1 CFM/sq ft

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 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
  - A. **Studs** — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber max spaced 16 in. OC. Steel studs to be min 3-1/2 in. wide and spaced max 24 in. OC.
  - B. **Gypsum Board\*** — 5/8 in. thick, 4 ft wide with square or tapered edges. 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 14 in. for wood stud walls and 20 in. for steel stud walls.

**The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.**

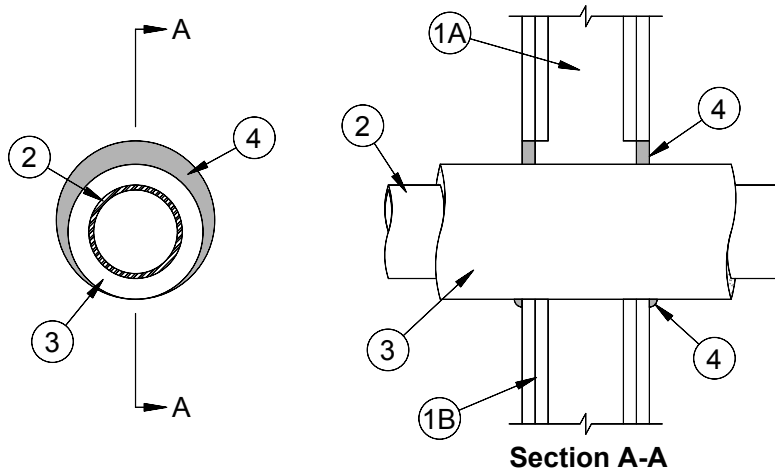
2. **Through Penetrant** — One metallic pipe or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes or tubes may be used:
  - A. **Steel Pipe** — Nom 16 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 16 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Tubing** — Nom 6 in. diam (or smaller) type L (or heavier) copper tubing.
  - D. **Copper Pipe** — Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
3. **Pipe Covering Materials\*** — **Cellular Glass Insulation** — Nom 1 to 3 in. thick cellular glass units sized to the outside diam of the through-penetrant and supplied in nom 24 in. long half sections or nom 18 in. long segments. Pipe insulation installed on pipe in accordance with the manufacturer's instructions. The annular space between insulated pipe or tubing and periphery of opening shall be min 0 in. (point contact) to max 1-1/2 in. The hourly T Rating is dependent upon the insulation thickness and the hourly rating of the wall, as shown in the following table:

Fire Rating of Wall, hr	FOAMGLAS Insulation Thickness, in.	T Rating, hr
1 or 2	1	3/4
1 or 2	1-1/2	1
1	2 or 3	1
2	2	1-1/2
2	3	2

**PITTSBURGH CORNING CORP** — FOAMGLAS

4. **Fill, Void or Cavity Materials\*** — **Sealant** — Min 5/8 in. thickness of fill material applied within the annulus flush with both surfaces of wall. At point contact location, min 3/8 in. diam bead of fill material to be applied at the insulated metal pipe/gypsum board interface on both sides of wall.  
**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102, 105, 120 or 129 Sealant
5. **Metal Jacket** — Min 12 in. long jacket formed of min 0.010 in. thick aluminum sheet cut to wrap tightly around the pipe insulation with a min 2 in. lap and secured using bands and seals of similar material. Bands to be located within 2 in. of each end of the jacket and spaced max 10 in. OC. Jacket to be installed with edge abutting surface of fill material (Item 4) on each side of wall. Metal jacket to be used in addition to any other jacketing material which may be required or desired on the pipe insulation.

\*Bearing the UL Classification Mark



**System No. W-L-5054**

F Ratings — 1 & 2 Hr. (See Item 1)

T Ratings — 3/4 and 1 Hr.

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 Design in the UL Fire Resistance Directory and shall include the following construction features:

- A. **Studs** — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. O.C. with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-1/2 in. wide and spaced max 24 in. O.C.
- B. **Gypsum Board\*** — 5/8 in. thick, 4 ft wide with square or tapered edges. 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 7-5/8 in.

**The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.**

2. **Through Penetrant** — One metallic pipe 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** — Nom 4 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
- B. **Iron Pipe** — Nom 4 in. diam (or smaller) cast or ductile iron pipe.
- C. **Copper Tubing** — Nom 4 in. diam (or smaller) Type L (or heavier) copper tubing.
- D. **Copper Pipe** — Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.

3. **Tube Insulation — Plastics+** — Nom 3/4 in. or 1 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The annular space between penetrating item and periphery of opening shall be min 0 in. (point contact) to max 1-1/2 in. **When 1 in. thick AB/PVC insulation is used, T Rating is 3/4 hr. When 3/4 in. thick AB/PVC insulation is used, T Rating is 1 hr.**

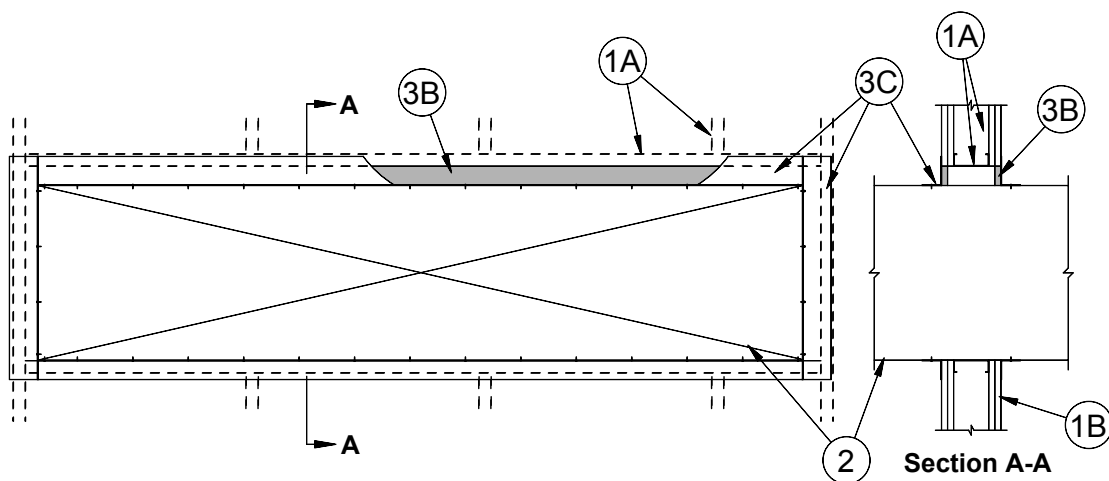
See **Plastics+** (QMFZ2) category in the Recognized Component Directory of names for manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.

4. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. Thickness of fill material applied within annulus, flush with both surfaces of wall. Min 1/4 in. diam bead of sealant to be applied at the point contact location between the AB/PVC insulation and the gypsum board.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102, 105, 120 or 129 Sealant

+ Bearing UL Listing Mark

\*Bearing the UL Classification Mark



**System No. W-L-7025**

F Ratings — 1 and 2 Hr (See Item 1)

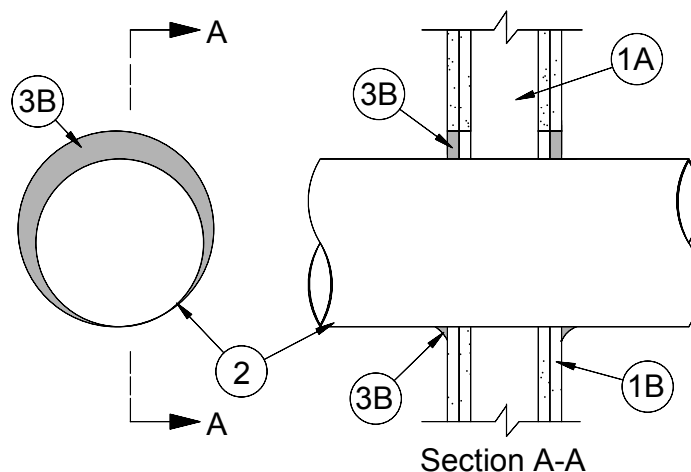
T Rating — 1/2 Hr

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 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 min 3-5/8 in. wide steel channel studs spaced max 24 in. OC. Additional 3-5/8 in. wide steel studs shall be used to completely frame the opening.
  - B. **Gypsum Board\*** — 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U400 Series Design in the UL Fire Resistance Directory. Max area of opening is 73.67 sq ft with a max dimension of 104 in.

**The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.**
2. **Steel Duct** — Nom 100 in. by 100 in. (or smaller) No. 24 gauge (or heavier) galv steel duct to be installed either concentrically or eccentrically within the firestop system. The space between the steel duct and periphery of opening shall be min 0 in. (point contact) to max 2 in. Steel duct to be rigidly supported on both sides of the wall assembly.
3. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — (Optional, Not Shown) — Polyethylene backer rod, mineral wool batt insulation or fiberglass batt insulation friction fitted into annular space. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.
  - B. **Fill, Void or Cavity Material\*** — **Sealant** — Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. Min 1/4 in. diam bead of fill material shall be applied at the point contact location between the steel duct and the gypsum board.  
**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102, 105, 120 or 129 Sealant
  - C. **Steel Retaining Angles** — Min No. 16 gauge galv steel angles sized to lap steel duct a min of 2 in. and to lap wall surfaces a min 1 in. Angles attached to steel duct on both sides of wall with min No. 10 by 1/2 in. long steel sheet metal screws spaced a max of 1 in. from each end of steel duct and spaced a max 6 in. OC.

\*Bearing the UL Classification Mark





**System No. W-L-7026**

F Ratings — 1 and 2 Hr (See Item 1)

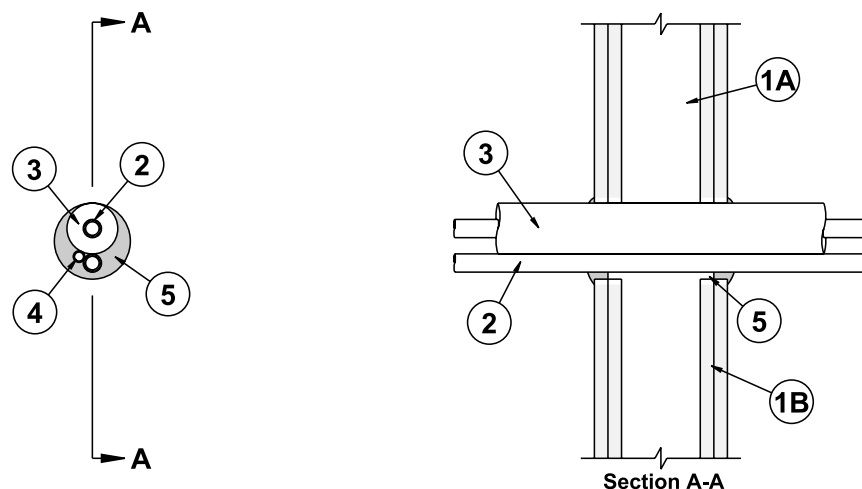
T Rating — 0 Hr

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 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 3-5/8 in. wide steel channel studs spaced max 24 in. OC. When diam of opening exceeds width of stud cavity, additional lengths of steel stud installed to frame out opening around steel duct (Item 2).
  - B. **Gypsum Board\*** — 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 25-1/2 in.

**The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.**
2. **Steel Duct** — Nom 24 in. diam (or smaller) No. 28 gauge (or heavier) galv steel vent duct or No. 24 gauge (or heavier) spiral wound galv steel duct. One steel duct to be installed either concentrically or eccentrically within the firestop system. An annular space of min 0 in. (point contact) to max 1-1/2 in. is required within the firestop system. Steel duct to be rigidly supported on both sides of the wall assembly.
3. **Firestop System** — The firestop system shall consist of the following:
  - A. **Packing Material** — (Optional, Not Shown) — 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\* — Sealant** — Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. Min 1/4 in. diam bead of fill material shall be applied at the point contact location between the steel duct and the gypsum board.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102, 105, 120 or 129 Sealant

\*Bearing the UL Classification Mark



**System No. W-L-8011**

November 26, 1996

F Ratings — 1 and 2 Hr (See Item 1B)

T Rating — 1/2 Hr

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 Design in the UL Fire Resistance Directory and shall include the following construction features:
  - A. **Studs** — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. O.C. with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-5/8 in. wide and spaced max 24 in. O.C.
  - B. **Gypsum Board\*** — 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 3-1/2 in.

**The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.**
2. **Through Penetrant** — A max of two pipes or tubing to be installed within the opening. Of the two pipes, or tubing, only one of the pipes or tubing shall have a nom diam greater than 1/2 in. The annular space between pipes or tubing and periphery of opening shall be min 0 in. (point contact) to max 1/2 in. Pipes 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** — Nom 1 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
  - B. **Iron Pipe** — Nom 1 in. diam (or smaller) cast or ductile iron pipe.
  - C. **Copper Tubing** — Nom 1 in. diam (or smaller) Type L (or heavier) copper tubing.
  - D. **Copper Pipe** — Nom 1 in. diam (or smaller) Regular (or heavier) copper pipe.
3. **Tube Insulation — Plastics+** — Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The tube insulation may be installed on a max of one pipe or tubing. The annular space between penetrating item and periphery of opening shall be min 1/2 in. to max 3/4 in. The space between pipes or tubing shall be 0 in. (point contact)  
See **Plastics+** (QMFZ2) category in the Recognized Component Directory for names for manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
4. **Cables** — One 4 pair No. 18 AWG (or smaller) thermostat cable with polyvinyl chloride (PVC) insulation and jacket materials. Cable to be spaced a min 0 in. (point contact) to max 1/2 in. from the other penetrants. The space between the cable and the periphery of the opening shall be a min 0 in. (point contact) to max 1/2 in. Cable to be rigidly supported on both sides of wall assembly.
5. **Fill, Void or Cavity Material\* — Sealant** — Min 5/8 in. thickness of fill material applied within annulus, flush with both surfaces of wall. Additional fill material to be forced into intersties within groups of penetrating items to max extent possible and installed such that a min 1/4 in. thick crown is formed around the penetrating items and lapping 1/4 in. beyond the periphery of the opening.

**SPECIFIED TECHNOLOGIES INC** — SpecSeal 100, 101, 102 or 105 Sealant

+Bearing the UL Recognized Component Mark

\*Bearing the UL Classification Marking



Specified  
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Inc.

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## GENERAL CERTIFICATE of CONFORMANCE

**Description:** SpecSeal® Firestop Products

**Included Products:**

*Series SSS Intumescent Sealant*  
*Series LCI Intumescent Sealant*  
*Series LC Latex Endothermic Sealant*  
*Series SSP Intumescent Putty*  
*Series EP Power Shield™ Box Insert*  
*Series SSWRED Intumescent Wrap Strips*  
*Series SSWBLU Intumescent Wrap Strips*  
*Series SSC Intumescent Firestop Collars*  
*Series LCC Intumescent Firestop Collars*

*Series SSB Intumescent Firestop Pillows*  
*Series AS100 Elastomeric Spray*  
*Series AS200 Elastomeric Spray*  
*Series ES100 Elastomeric Sealant*  
*Series SSM Firestop Mortar*  
*Pensil Series PEN200 Silicone Foam*  
*Pensil Series PEN300 Silicone Sealant*  
*Pensil Series PEN300SL Silicone Sealant*

**These products are tested to the following standards where applicable:**

**ASTM STANDARD:**

<b>E 814</b>	Fire Tests of Through-Penetration Fire Stops
<b>E 119</b>	Fire Tests of Building Construction and Materials
<b>E 1966</b>	Fire-Resistive Joint Systems
<b>E 84</b>	Surface Burning Characteristics of Building Materials
<b>E 1399</b>	Cyclic Movement and Measuring the Minimum and Maximum Joint Widths of Architectural Joint Systems

**UL STANDARD**

<b>1479</b>	Fire Tests of Through-Penetration Firestops
<b>263</b>	Fire Tests of Building Construction and Materials
<b>2079</b>	Tests for Fire-Resistance of Building Joint Systems
<b>723</b>	Tests for Surface Burning Characteristics of Building Materials

**Chemical Content Statements:**

No asbestos, PCB's or water-soluble intumescent ingredients are used or contained in these products.

James P. Stahl, Jr.  
Technical Manager

February 1, 2002

Date



Specified Technologies, Inc.

# PRODUCT DATA SHEET



## Series SSS Intumescent Sealant



### FEATURES

- **Water-Based** for easy installation, cleanup, and disposal.
- **Two-Stage Intumescence** features extremely fast and directionalized expansion.
- **Endothermic Fillers** absorb heat & release water.
- **High Solids Formula** means no shrinkage!
- **Sandable & Paintable** (when dry)
- **Water-Resistant:** Will not re-emulsify when dry!
- **Safe** for contact with plastics.
- **Red Color** for easy identification and inspection.
- **Multi Viscosity Grade** means excellent caulking properties along with high build capabilities.
- **Excellent Smoke Seal**
- **Low VOC:** Safe, No Solvents,

### 1. PRODUCT DESCRIPTION

SpecSeal® Series SSS Sealant is a latex based, high solids firestop compound. This material, when properly installed, will effectively seal penetration openings against the spread of fire, smoke, toxic gasses and water.

SpecSeal® Series SSS Sealant features STI's patented and proprietary two-stage intumescent technology. When exposed to high temperatures or fire, this material expands aggressively in a highly directionalized fashion to quickly close off voids left by the burning or melting of combustible materials.

SpecSeal® Series SSS Sealant's unique multi-viscosity formula yields a single grade that has excellent caulking properties as well as high build properties on vertical or overhead surfaces. This single grade may be pumped, caulked (standard cartridge or bulk loaded), knifed or troweled. In addition, SpecSeal® SSS does not contain PCB's or asbestos.

SpecSeal® Series SSS Sealant is storage stable (when stored according to the manufacturer's recommendations) and will not separate nor shrink when dried. SpecSeal® Series SSS Sealant will adhere to all common construction and penetrant materials and contains no solvents that might adversely effect plastic pipes or cable jackets.

### 2. APPLICATIONS

See Table A for a summary application list.

Series SSS Sealant is used to seal through-penetrations as well as construction gaps and blank openings. Series SSS has been tested for use with metallic penetrants up to 30" trade size. This product is also used with other SpecSeal® Products such as SpecSeal® Firestop Collars and Wrap Strips.

### 3. PHYSICAL PROPERTIES

See Table B.

### 4. PERFORMANCE

SpecSeal® Series SSS Sealant is the basis for systems that meet the exacting criteria of ASTM E814 (UL1479) as well as to the time-temperature requirements of ASTM E119 (UL263). Systems have been tested for all common forms of construction and most common penetrants with ratings up to 4 hours. STI firestop systems are designed to maximize the fire resistance of the seal by not only sealing off the spread of fire and hot gasses but also by minimizing the amount of heat conducted through the assembly.

### 5. SPECIFICATIONS

The firestopping sealant shall be a one-part, two-stage intumescent latex compound. The sealant when exposed to high heat or flame shall be capable of expanding a minimum of 8 times. Range of continuing expansion shall be from 230°F to >1,000°F. The sealant shall be thixotropic and shall be capable of caulking or troweling onto vertical surfaces or overhead. The sealant shall be UL Classified and/or FM Systems Approved and tested to the requirements of ASTM E814 (UL1479).

### SPECIFIED DIVISIONS

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



Call STI's automated faxing system for the latest Product and System Information toll-free at 888-526-6800!

STI Product Data Sheet • Series SSS Intumescent Sealant • FOD-5001 03/2003



Specified Technologies, Inc.

www.stifirestop.com • Toll Free 800-992-1180

Page 1 of 4

## Table A: APPLICATIONS

- **Metallic Pipes** including steel, iron, or copper pipe and tubing through all common constructions.
- **Nonmetallic Pipes, Conduits & Tubing** including PVC, CPVC, PVDF, PEX, PEX-AL-PEX, ABS, PB through all common constructions.
- **Cable, Cable Trays & Bus Duct**
- **HVAC Ductwork**
- **Insulated Pipes**
- **Multi-Service Penetrations** including AC line sets, electrical, telephone, or TV service entrance and interior penetrations.
- **Complete Wood Floor** firestopping package for electrical, plumbing, HVAC, TV and telephone.

## Table B: PHYSICAL PROPERTIES

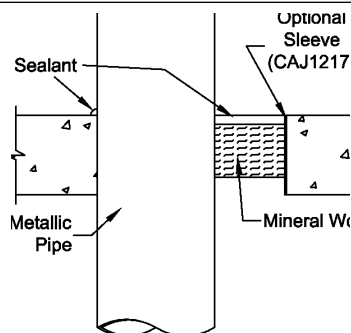
<b>Product Name</b>	Series SSS Sealant
<b>Color</b>	Red
<b>Odor</b>	Mild Latex
<b>Density</b>	9.4 Lb/Gal
<b>Solids</b>	80% ± 2%
<b>pH</b>	8.3
<b>Expansion Begins</b>	230°F (110°C) 1st Stage 350°F (177°C) 2nd Stage
<b>Expansion Range</b>	230°F to >1,000°F (110°C to > 538°C)
<b>Volume Expansion</b>	> 500% Free Expansion
<b>In-Service Temp.</b>	130°F
<b>Flame Spread</b>	0*
<b>Smoke Development</b>	10*
<b>STC Rating</b>	51
<b>VOC Content**</b>	0.18 lbs/gal (22.0 g/l)

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

\*\*ASTM D3960 and EPA Federal Reference Method 24

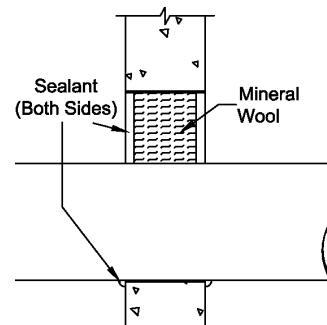
Shown below and on the following page are just a few of the most common applications for SpecSeal Series SSS Sealant. Consult the Technical Library at [www.stifirestop.com](http://www.stifirestop.com) for over 200 available designs utilizing this product.

**Fig. 1: METALLIC PIPE PENETRATIONS - CONCRETE/MASONRY FLOORS & WALLS**



### UL SYSTEM C-AJ-1079

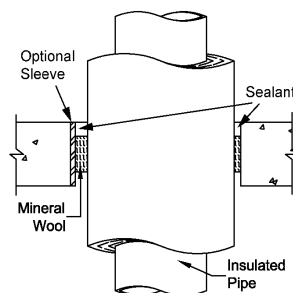
F Rating: 4 Hr • T Rating: 0  
Steel or Iron Pipe: 24", Copper Pipe: 6"  
Annulus: Point Contact to 4" • Sealant Depth: 1/2"  
Forming Material: Nom 4 pcf Mineral Wool  
Thickness: 1-1/2" for 6" Steel or Iron Pipe  
3" for 4" Copper or 6" Iron or Steel Pipe



### UL SYSTEM C-AJ-1217

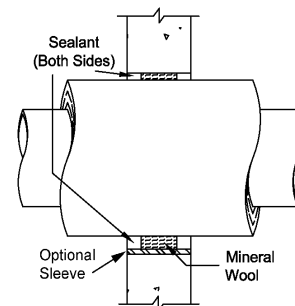
F Rating: 4 Hr • T Rating: 0  
Steel or Iron Pipe: 30", Copper Pipe: 6"  
Annulus: Point Contact to 2" • Sealant Depth: 1/2"  
Forming Material: Nom 4 pcf Mineral Wool  
Tightly Packed to a 3" Depth.

**Fig. 2: INSULATED METALLIC PIPE PENETRATIONS - CONCRETE/MASONRY FLOORS & WALLS**



### UL SYSTEM C-AJ-5087

F Rating: 2 Hr • T Rating: 1  
Steel or Iron Pipe: 24"  
Insulated with 2" Thick Fiber Glass or Mineral Wool Pipe Insulation  
Annulus: 1/2" to 1-1/2" • Sealant Depth: 1/2"  
Forming Material: Nom 4 pcf Mineral Wool Tightly Packed to a 4" Depth.



**Table C: SEALANT REQUIREMENTS IN CUBIC INCHES PER HALF INCH OF INSTALLED DEPTH\***

Pipe Size		Diameter of Opening (in.)											
Trade Size	Pipe O.D.	1.5	2.0	3.0	4.0	5.0	6.0	7.0	8.0	10	12	14	26
0.5"	0.840	0.61	1.29	3.26	6.01								
1"	1.315	0.20	0.89	2.86	5.60	9.14							
1.5"	1.900			2.12	4.87	8.40							
2"	2.375			1.32	4.07	7.60	11.92						
2.5"	2.875				3.04	6.57	10.89						
3"	3.500				1.47	5.01	9.33	14.43	20.32				
3.5"	4.000					3.53	7.85	12.96	18.85				
4"	4.500					1.87	6.19	11.29	17.18	31.32	48.60		
6"	6.625							2.01	7.90	22.03	39.31		
8"	8.625									10.04	27.34		
10"	10.750										11.17	31.59	
12"	12.750											13.13	
24"	24.000												39.27

#### \*Different Sealant Depth?

- 1/2" Multiply by 2
- 5/8" Multiply by 2.5
- 1" Multiply by 4
- 1-1/4" Multiply by 5

IMPORTANT NOTE: This table is for estimation purposes only. Consult UL Fire Resistance Directory or STI Product & Application Guide for specific installation requirements and limitations

Thus all systems have been designed to provide T Ratings capable of matching the rating of the wall or floor assembly (where possible) when tested without penetrants.

## 5. SPECIFICATIONS

See page 1.

## 6. INSTALLATION INSTRUCTIONS

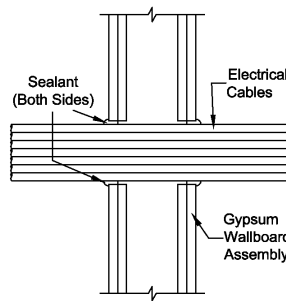
**General:** Areas to be protected must be clean and free of oil, loose dirt, rust or scale. Installation temperatures must be between 35°F and 100°F. Allow product to dry a minimum of 24 hours before exposure to moisture.

**System Selection:** Selection of an appropriate firestop system design is critical to the fire protection process. Space limitations preclude highly detailed information pertaining to individual application systems. Please consult the STI Product & Application Guide as well as the UL® Fire Resistance Directory for additional information.

**Forming:** Some installations may require forming as either an integral part of the system or as an option to facilitate installation. In systems where forming is required, mineral wool batts (1-1/2" to 3" nominal thickness, 4 lb./cu. ft. density) are recommended. Some gypsum wallboard systems utilize fiberglass. Cut forming material over-size to allow for tight packing. Position forming material to allow for the proper depth of fill material.

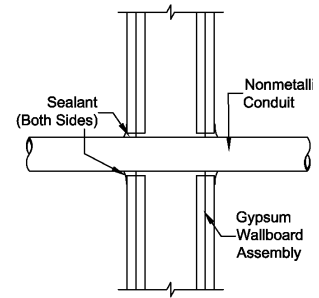
**Fill Material:** SpecSeal® Series SSS Sealant may be installed by caulking using a standard caulking gun or from bulk containers using a bulk loading caulk gun, or by manually troweling using a mason's trowel or putty knife. If the sealant tends

**Fig. 3: ELECTRICAL, DATA OR COMMUNICATIONS PENETRATIONS - RATED GYPSUM WALLBOARD ASSEMBLIES**



### UL SYSTEM W-L-3076

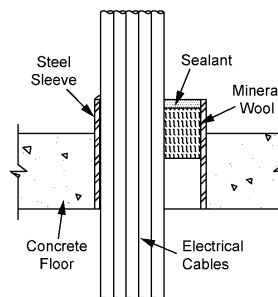
F Rating: 1 or 2 Hr • T Rating: 0 hr  
Up to 4" Cable Bundle  
Centered in 4 - 1/2" Opening  
Sealant Depth: 5/8" with 1/4" Crown



### UL SYSTEM W-L-2093

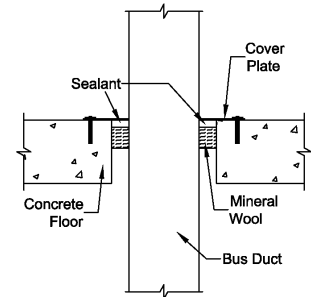
F Rating: 1 or 2 Hr • T Rating: 1, 1-1/2 Hr  
2" Rigid PVC, ENMT,  
or Optical Fiber Raceway.  
1-1/4" PVDF Optical Fiber Raceway.  
Sealant Depth: 5/8" with 1/4" Crown

**Fig. 4: ELECTRICAL PENETRATIONS - CONCRETE/MASONRY FLOORS & WALLS**



### UL SYSTEM C-AJ-3154

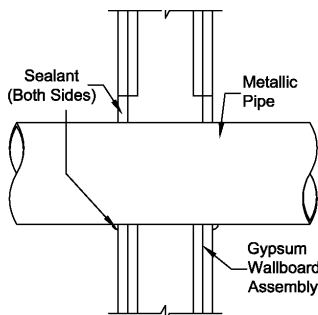
F Rating: 1, 2, 3 & 4 Hr • T Rating: 0, 1/2, & 2 3/4 Hr  
Optional Sleeve-PVC or Steel  
Electrical, Telephone or Data Cables  
Annulus: 0" to 2"  
Sealant Depth: 1/2"  
Forming Materials: Nom 4 pcf Mineral Wool  
Sealant Depth: 1/2" for 1, 2, 3 Hr; 1" for 4 Hr



### UL SYSTEM C-AJ-6008

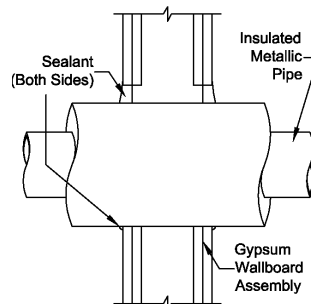
F Rating: 3 Hr • T Rating: 0 Hr  
Aluminum or Copper Bus Duct 5,000 Amp  
Steel Cover Plate  
Sealant Depth: 1/2"  
Forming Materials: Nom 4 pcf Mineral Wool  
Tightly Packed to a depth of 1-1/2"

**Fig. 5: BARE & INSULATED METALLIC PIPE PENETRATIONS - RATED GYPSUM WALLBOARD ASSEMBLIES**



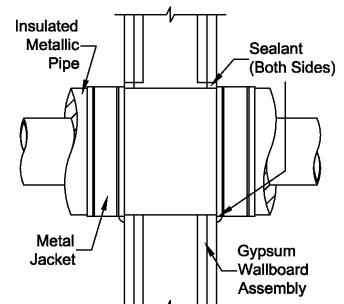
### UL SYSTEM W-L-1049

F Rating: 2 hr • T Rating: 0 hr  
Steel or Iron Pipe: 24", Copper Pipe: 6"  
Annulus: Point Contact to 1-3/4"  
Sealant Depth: 5/8" with 3/8" Crown



### UL SYSTEM W-L-5014

F Rating: 1 & 2 Hr • T Rating: 1 & 2 hr  
Steel or Iron Pipe: 12", Copper Pipe: 4"  
Insulated with 2" Thick Fiber Glass  
or Mineral Wool Pipe Insulation  
Annulus: 0" to 1-1/4"  
Sealant Depth: 5/8" with 3/8" Crown



### UL SYSTEM W-L-5051

F Rating: 1 & 2 Hr • T Rating: 3/4, 1, 1-1/2 & 2 Hr  
Steel or Iron Pipe: 16", Copper Pipe: 6"  
Foam Glass Pipe Insulation: 1" to 3" Thick  
12" Wide 0.010" Thick Metal Jacket Wrapped Around  
Insulation and Secured with Metal Banding as Shown  
Annulus: 0" to 1-1/2"  
Sealant Depth: 5/8"



to pull back from a surface, clean the surface with a damp rag or sponge and reapply. Work sealant into all areas exercising care to eliminate voids or seams. The surface of the sealant can be smoothed using a putty knife dipped in water. Adding water to the sealant itself is not recommended. Sealant (when dry) may be sanded and painted using most non-solvent based paints. In gypsum wallboard penetrations, crown sealant 1/4" from penetrant to wallboard surface at a point approximately 1/2" or more from opening.

**Smoke Sealing:** In some applications including firestop collars, SpecSeal® Series SSS Sealant is recommended as a smoke seal. It is suggested in these application that the sealant be applied to both sides of walls. In floor applications, a sealing bead is suggested top and bottom.

**Cover Plate:** In some designs a galvanized steel cover plate (26 gauge) may be used to upgrade the fire resistance rating to 4 hours. Consult STI Product and Application Guide for dimensional and fastening requirements.

## 7. MAINTENANCE

**Inspection:** Installations should be inspected periodically for subsequent damage. Any damage should be repaired using SpecSeal® products per the original approved design.

**Retrofit:** When adding or removing penetrants, care should be

taken to minimize damage to the seal. Reseal using SpecSeal® products per the approved design. NOTE: New penetrants of a different nature than the original design may require a totally new firestop design or extensive modifications to the existing design. Reseal all openings as per the requirements of the modified design.

## 8. TECHNICAL SERVICE

Specified Technologies Inc. provides toll free technical support to assist in product selection and appropriate installation design. UL Systems, Material Safety Data Sheets and other technical information is available at the Technical Library at [www.stifirestop.com](http://www.stifirestop.com) or through STI's automated attendant fax back system at 888-526-6800.

## 9. PRECAUTIONARY INFORMATION

Consult Material Safety Data Sheet for additional information on the safe handling and disposal of this material. Wash areas of skin contact with soap and water. Avoid contact with eyes. SEALANT IS CONDUCTIVE UNTIL DRY.

## 10. AVAILABILITY

SpecSeal® Series SSS Sealant is available from authorized STI distributors. Consult factory for the names and locations of the nearest sales representatives or distributors. Available packages and additional SpecSeal® Products are listed below.

### TABLE D: ORDERING INFORMATION

CAT. NO.	DESCRIPTION
SSS100	10.5 oz. Tube (311 ml) 19 cu.in.
SSS129	29 oz. Tube (858 ml) 52 cu. in.
SSS120	20 oz. Sausage (592 ml) 36 cu. in.
SSS102	2 Gal. Pail (7.6 liters) 462 cu.in.
SSS105	5 Gal. Pail (19.0 liters) 1,155 cu.in.

#### Additional SpecSeal Products...

##### SSP Firestop Putty

Available both in bar form and in pads, putty provides easy retrofit for through-penetrations and economical protection for electrical boxes.

##### SSB Firestop Pillows

Durable, monolithic pillows for installations requiring quick and easy retrofitting. Systems designed for pipes, cables and cable tray in all types of construction!

##### Intumescent Wrap Strips

Two grades of intumescent wrap strips provide an unmatched combination of flexibility, economy, and expansion (up to 30X). Systems for plastic pipes including FR Polypropylene up to 8" trade size!

##### Molded Firestop Collars

Easy to install, economical protection for ABS and PVC pipes (both solid and foam core) as well as CPVC, PVDF, and FRPP. Collars available up to 6" trade size.



### CITY OF NEW YORK MEA 130-96M

Important Notice: All statements, technical information, and recommendations contained herein are based upon testing believed to be reliable, but the accuracy and completeness thereof is not guaranteed. WARRANTY: Specified Technologies Inc. manufactures its goods in a manner to be free of defects. Should any defect occur in its goods (within one year), Specified Technologies Inc., upon prompt notification, will at its option, exchange or repair the goods or refund the purchase price.

Limitations and Exclusions: THIS WARRANTY IS IN LIEU OF ALL OTHER REPRESENTATIONS EXPRESSED OR IMPLIED (INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR USE) AND UNDER NO CIRCUMSTANCES SHALL SPECIFIED TECHNOLOGIES INC. BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL PROPERTY DAMAGE OR LOSSES. PRIOR TO USE, THE USER SHALL DETERMINE THE SUITABILITY OF THE PRODUCT FOR ITS INTENDED USE, AND THE USER ASSUMES ALL RISKS AND LIABILITY FOR SUBSEQUENT USE. No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of seller and manufacturer.

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STI on the WEB: [www.stifirestop.com](http://www.stifirestop.com)





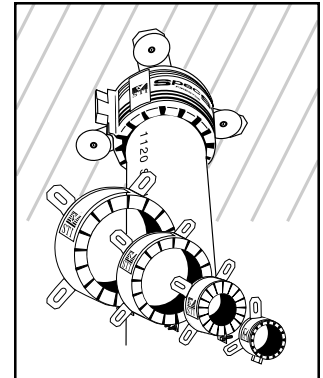
## Firestop Collars

### 1. PRODUCT DESCRIPTION

The SpecSeal<sup>®</sup> Firestop Collar is a factory-manufactured device designed to protect plastic pipes penetrating fire-rated walls and floors. Utilizing a heavy gauge galvanized metal collar to house a molded intumescent insert, the SpecSeal<sup>®</sup> Collar is specifically sized to fit 1-1/2", 2", 3", 4", and 6" trade sized pipes.

This product utilizes STI's patented two-stage intumescent technology, providing a very responsive and highly directionalized expansion. Expansion is extremely fast, providing quick closure for burning combustible pipes.

When exposed to temperatures in excess of 250°F (121° C), the SpecSeal<sup>®</sup> Collar's molded insert begins to expand (intumesce) rapidly to form a dense, highly insulative char. Its free expansion ranges from 16-24 times original (pre-expanded) volume. Expansion continues up to 1,000° F.



### 2. APPLICATIONS

SpecSeal<sup>®</sup> Collars are used to protect a variety of plastic pipes including PVC, PVC Foam Core (ccPVC), CPVC, ABS, ABS Foam Core (ccABS), and FR Polypropylene in both vented (DWV) and closed (electrical conduit and water supply) installations.

SpecSeal<sup>®</sup> Collars are suitable for use in all common forms of construction including concrete floors, concrete over steel deck, concrete walls, concrete block walls, gypsum board walls, and wood floor assemblies.

SpecSeal<sup>®</sup> Collars are used alone or in combination with other SpecSeal<sup>®</sup> products to protect a wide variety of nonmetallic pipe penetrations either individually or in combination with other types of penetrants.

### 3. PHYSICAL PROPERTIES

See Table A. This material is extremely stable. Long term aging studies indicate no significant loss of physical properties nor significant change in expansion properties after elevated temperature, humidity, and immersion testing. Consult factory for additional information.

### 4. PERFORMANCE

SpecSeal<sup>®</sup> Collars are the basis for systems that meet the exacting criteria of ASTM E814 (UL1479). Systems have been tested for all common forms of construction and most common penetrants with ratings up to three hours.

STI designed firestop systems are engineered to maximize the fire resistance of the seal by not only sealing off the spread of fire and hot gasses but also by minimizing the amount of heat conducted through the assembly. Thus all systems have been designed to provide T Ratings capable of matching the rating of the wall or floor assembly (where possible). Consult factory for information not available in UL Fire Resistance Directory as of this printing.

**NOTICE: The use of this product may be regulated by regional or local codes. CONSULT THE LOCAL AUTHORITY HAVING JURISDICTION.**



THROUGH-PENETRATION  
FIRESTOP DEVICE CLASSIFIED BY  
UNDERWRITERS LABORATORIES INC. ®  
SEE UL FIRE RESISTANCE DIRECTORY

### FEATURES

- **Rapid Expansion:** Closes off burning penetrants faster.
- **High Volume Char:** Expands over 20 times!
- **Water-Resistant:** No soluble or hygroscopic ingredients.
- **Economical:** Factory assembly reduces field labor!
- **Easy Installation:** No guess work.
- **Approved** for a wide variety of pipes and constructions.

### 5. SPECIFICATIONS

The firestop system shall be a factory assembled firestop collar utilizing a molded two-stage, flexible intumescent insert. The intumescent insert shall provide a minimum of 15X free expansion and shall contain no water soluble expansion ingredients. The specified material shall be approved for a wide range of applications including PVC, CPVC, ABS, ABS Foam Core, and FRPP pipes when used by itself or in combination with other products from the same manufacturer. The collar shall be UL Classified and/or FM Systems Approved and tested to the requirements of ASTM E814 (UL1479).

#### SPECIFIED DIVISIONS

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

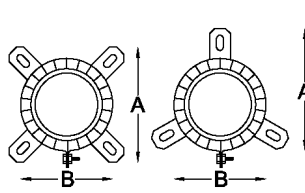
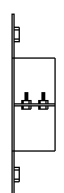
**For the latest Product and System Information, Call  
STI'S FACTS-ON-DEMAND automated information attendant  
system by dialing toll-free (888)526-6800!**



**Table A: PHYSICAL PROPERTIES**

Available Sizes	1.5" thru 6"
Shell Construction	22 Gauge Gal. Steel
Intumescent Insert	Molded one piece.
Expansion Begins	250° F (1st stage) 350° F (2nd stage)
Volume Expansion	16 to 24x (free expansion)
In-Service Temp.	≤ 130° F.
Oven Aging	No Change (60°C)*
Humidity Exposure	No Change (60°C, 98% R.H.)*

\* Evaluation of physical properties and total expansion.

**Table B: COLLAR DIMENSIONS**

The following dimensions are provided for installation purposes only. All dimensions have been rounded up to the next 1/10th in.

\*NOTE: (See Below) The 'A' dimension for SSC600 represents the max. width of collar at tabs that are 180° opposed from each other.

CAT NO:	SSC151	SSC202	SSC301	SSC400	SSC600
Trade Size	1-1/2"	2"	3"	4"	6"
A	4.2"	4.5"	5.6"	7.1"	11.2"
B	2.8"	3.2"	4.5"	6.2"	8.3"
C	1.5"	1.5"	2"	2"	4"

## 6. INSTALLATION

**GENERAL:** The installation of this product requires the application of a smoke seal utilizing SpecSeal® Series SSS Sealant and suitable mechanical fasteners for attachment to the floor or wall surface. Sealant and floor or wall attachment hardware must be purchased separately. Any fasteners required to close the collar around the pipe itself are included in the collar package.

**SYSTEM SELECTION:** Proper methods and materials are critical to firestopping. A number of methods have been developed to suit a wide variety of firestopping applications. Tables B and C have been provided to assist in determining of systems suitable for various applications. Furthermore, many installations have been illustrated throughout this data sheet and new systems are continually being tested. For more information consult your local distributor, sales rep. or call STI toll free at (800) 992-1180.

**SMOKE SEALING:** Smoke sealing is a vital step in the firestopping process. Since proper smoke seal design will vary from one type of construction to another, STI has elected to require a separate sealing step. A separate seal provides for abnormalities in floor or wall surfaces (such as blow-outs in core drilled holes), variations in annular space, and prevents the passage of smoke produced by deterioration of the pipe itself within the wall or floor cavity. This seal in floor applications, also seals against water leakage into the floor cavity in plumbing or mechanical installations. For additional information on this topic, request "Firestopping Plastic Pipes," SpecSeal® Technology Update.

Smoke seals should be installed at the top and bottom surfaces of floor/ceiling assemblies. In solid concrete floors, a single seal may be installed at the lower surface. It is strongly recommended however, that an additional seal be caulked at the top side to seal against smoke generated within the floor cavity itself. Smoke seals are required at both sides of wood floor assemblies and hollow wall cavities.

Apply sealant to a clean surface, free of dirt, oil, rust, or scale. Caulk annulus shut using a nominal 3/8" bead. Sealant may be smoothed out or the collar may be set directly into the wet sealant.

**NOTE:** Collars installed around pipes poured directly into SpecSeal® Mortar do not require this sealing step.

**FASTENERS:** Always use the correct type of fastener. The fastener types used in product testing are shown in Table C. All fasteners should be steel (lead or plastic fasteners are unsuitable and should not be used). 1 1/4" or 1 1/2" fender washers are used in conjunction with all wall or floor fasteners. All fasteners should be installed as per the recommendations of the manufacturer.

**CONCRETE:** Expanding wedge type anchors (1/4" x 1 3/4") are recommended. Powder activated fasteners may be used at the discretion of the installer and are subject to the recommendations of the fastener manufacturer.

**GYPSUM WALLBOARD:** Toggle bolts or molly-type expanding anchors are suitable for collar attachment.

**GYPSUM BOARD-WOOD FLOOR FLOOR/CEILINGASSEMBLIES:** Toggle bolts are suggested for gypsum wallboard ceiling attachment. Collars mounted internally and fastened to wood may use standard #8 x 1/2" round head wood screws for attachment.

**Table C: APPLICATION INFORMATION**

DESCRIPTION FLOOR/WALL CONSTRUCT.	PIPE SIZE	ATTACHMENT HARDWARE*	ANNULAR SPACE	UL SYS. NO.	HOURLY RATING	FIG.
<b>Concrete Floor</b>						
PVC, CPVC, ABS, PVDF	≤ 4"	1	≤ 1/2"	CAJ-2038	≤ 3	3, 4
FR PP	≤ 4"	1	≤ 1/2"	CAJ-2045	≤ 2	3, 4
PVC, CPVC, FR PP, ABS	6"	1	≤ 1/2"	CAJ-2089	≤ 3	3
<b>Concrete or Block Wall</b>						
PVC, CPVC, ABS, PVDF	≤ 4"	1	≤ 1/2"	CAJ-2038	≤ 3	5, 6
FR PP	≤ 4"	1	≤ 1/2"	CAJ-2045	≤ 2	5, 6
PVC, CPVC, FR PP, ABS	6"	1	≤ 1/2"	CAJ-2089	≤ 3	5
<b>Gypsum Wallboard</b>						
PVC, CPVC, ABS, FR PP, PVDF	≤ 4"	2 or 3	≤ 1/2"	WL-2029	≤ 2	7
PVC, CPVC, FR PP, ABS	6"	2 or 3	≤ 1/2"	WL-2074	≤ 2	7
<b>Wood Floor Drain, Waste, Vent Stack</b>						
PVC, ABS	≤ 4"	4	≤ 1/2"	FC-2034, 2035	1	
<b>Wood Floor Single Collar</b>						
PVC, CPVC	≤ 4"	3	≤ 1/2"	FC-2020	≤ 2	8
<b>Wood Floor Double Collar</b>						
PVC, CPVC	≤ 4"	3 & 4	≤ 1/2"	FC-2021	≤ 2	9

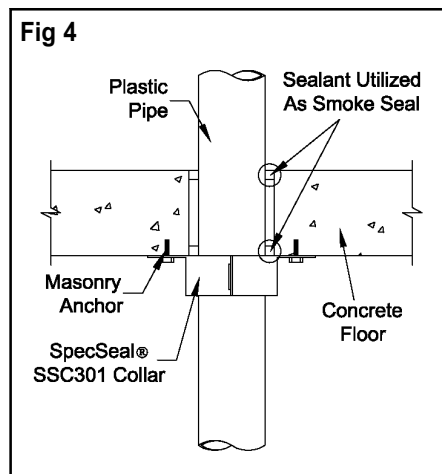
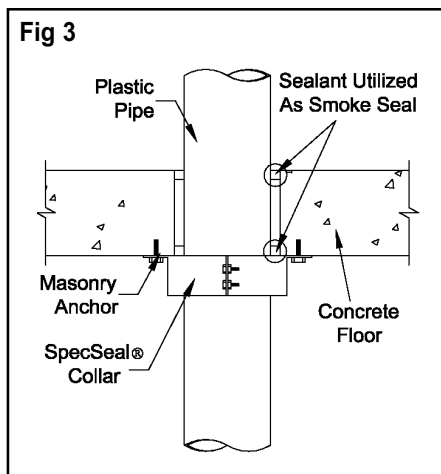
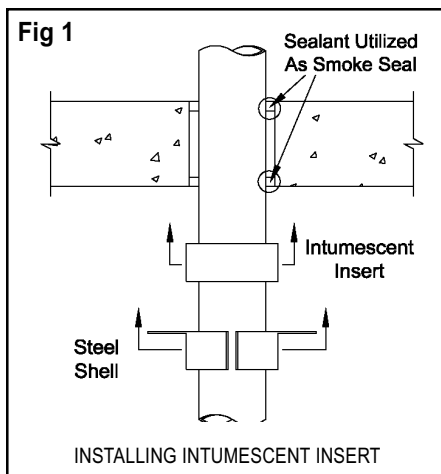
\* ATTACHMENT HARDWARE CODE:

(Fender washers are recommended and often required)

1 = Concrete wedge anchors, 2 = Steel molly-type fasteners

3 = 3/16" Toggle bolts, 4 = #8 X 1/2" round head wood screws.

**NOTE:** PVC & ABS are approved for solid or cellular core piping up to four inch trade size.



#### INSTALLATION PROCEDURE:

1. Apply smoke seal (see above).
2. To install collar around pipe: Flex intumescent insert, followed by the outer steel shell around pipe (See Fig. 1). Close steel shell around insert and fasten by crimping tab closure for SSC151, 202, and 301 models (see Fig. 2), or by bolting shell together using supplied fasteners (SSC400 & 600 models). Snug fasteners sufficiently to allow collar to slide.
3. Slide collar to wall or floor surface and mark anchor holes for drilling.
4. Drill holes and install fasteners as per the requirements of the fastener manufacturer. Place 1 1/4" fender washers of the appropriate diameter over fastener at collar mounting tabs and tighten anchors fully.
5. Recheck and tighten shell bolts fully to complete installation.

### 7. MAINTENANCE

**INSPECTION:** Installations should be inspected periodically for subsequent damage. Any damage should be repaired using SpecSeal® products per the original approved design.

**RETROFIT:** When adding or removing penetrants, care should be taken to minimize damage to the seal. Reseal using SpecSeal® products per the approved design.

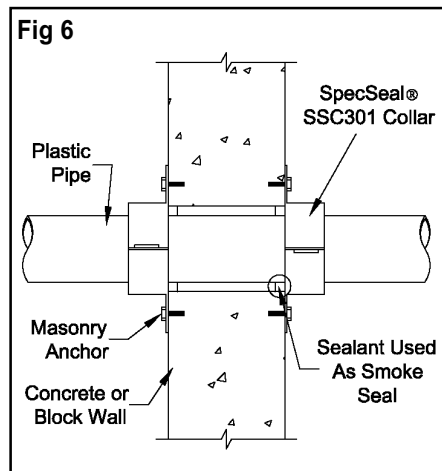
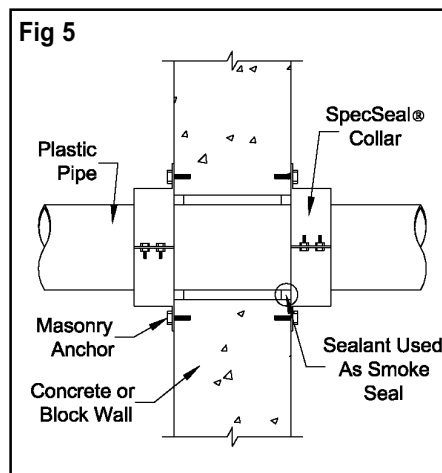
**NOTE:** New penetrants of a different nature than the original design may require a totally new firestop design or extensive modifications to the existing design. Reseal all openings as per the requirements of the new design.

### 8. TECHNICAL SERVICE

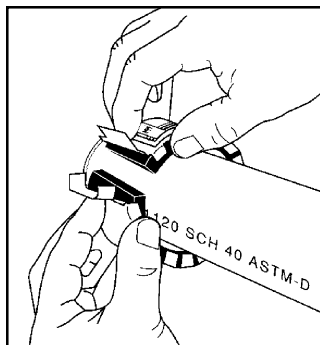
Specified Technologies Inc. provides toll free technical support to assist in product selection and appropriate installation design. Design System Drawings suitable for submittal or specification purposes are available on request.

### 9. PRECAUTIONARY INFORMATION

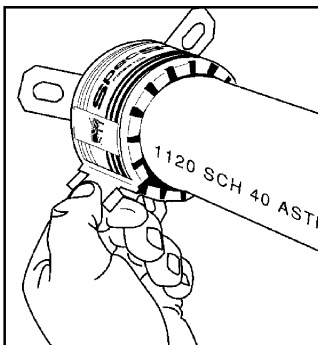
Consult Material Safety Data Sheet for additional information on the safe handling and disposal of this material. Wash areas of skin contact with soap and water. Avoid contact with eyes.



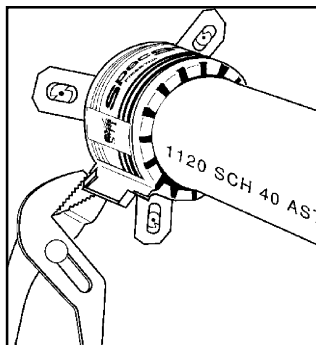
**Fig 2: SSC151, 202 & 301 CRIMP CLOSURE & MOUNTING**



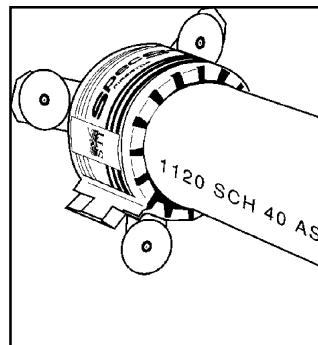
1. Wrap collar around pipe.



2. Press tab into slot.

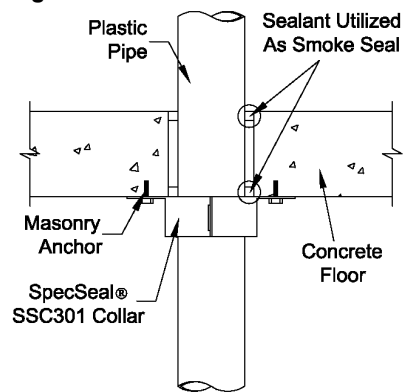


3. Crimp tabs closed using pliers.

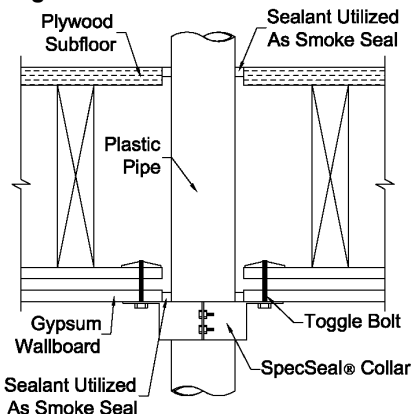


4. Fasten to wall or floor.

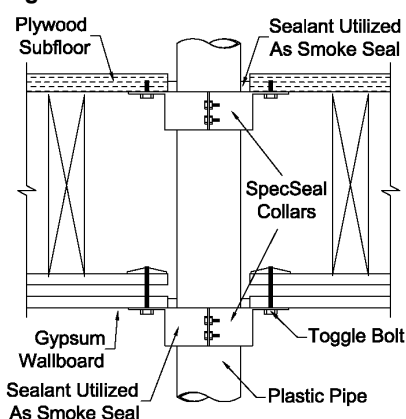
**Fig 7**



**Fig 8**



**Fig 9**



## 10. AVAILABILITY

SpecSeal® Firestop Collars are available from authorized STI distributors nationwide. Consult factory for the names and locations of the nearest sales representatives or distributors. Available packages and additional SpecSeal® Products are listed in Table D.

**Table D: ORDERING INFORMATION**

Cat. No.	Name	Description
SSC151	Firestop Collar	Fits 1-1/2" Trade size pipes. Utilizes crimp closure.
SSC202	Firestop Collar	Fits 2" Trade size pipes. Utilizes crimp closure.
SSC301	Firestop Collar	Fits 3" Trade size pipes. Utilizes crimp closure.
SSC400	Firestop Collar	Fits 4" Trade size pipes. Utilizes bolt closure, bolts included.
SSC600	Firestop Collar	Fits 6" Trade size pipes. Utilizes bolt closure, bolts included.



### Additional SpecSeal Products...

#### Series SSS Sealant

The industry's most versatile sealant provides the firestopping solutions for a wide range of combustible and noncombustible applications. Water-based intumescent sealant expands up to 8x!

#### Series LC Sealant

An economical latex firestop sealant for noncombustible applications. Non-halogenated, easy clean up, flexible, water-resistant!

#### SSP Firestop Putty

Available both in bar form and in pads, putty provides easy retrofit for through-penetrations and economical protection for electrical boxes.

#### SSB Firestop Pillows

Durable, monolithic pillows for installations requiring quick and easy retrofitting. Systems designed for pipes, cables and cable tray in all types of construction!

#### Firestop Mortar

Lightweight, versatile and economical! The best choice for large or complex installations.

#### Pensil® Silicones

Sealants and foam for through-penetrations and construction joints. Unexcelled aging characteristics and flexibility.

#### Intumescent Wrap Strips

Two grades of intumescent wrap strips provide an unmatched combination of flexibility, economy, and expansion (up to 30X). Systems for plastic pipes including FR Polypropylene up to 8" trade size!

#### Elastomeric Joint Seals

New economical products for sealing construction joints. Choose caulk or spray applied products tested to UL2079.

## CITY OF NEW YORK MEA 307-92M

**Important Notice:** All statements, technical information, and recommendations contained herein are based upon testing believed to be reliable, but the accuracy and completeness thereof is not guaranteed.

**WARRANTY:** Specified Technologies Inc. manufactures its goods in a manner to be free of defects. Should any defect occur in its goods (within one year), Specified Technologies Inc., upon prompt notification, will at its option, exchange or repair the goods or refund the purchase price.

**Limitations and Exclusions:** THIS WARRANTY IS IN LIEU OF ALL OTHER REPRESENTATIONS EXPRESSED OR IMPLIED (INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR USE) AND UNDER NO CIRCUMSTANCES SHALL SPECIFIED TECHNOLOGIES INC. BE RESPONSIBLE FOR ANY INCIDENTAL OR CONSEQUENTIAL PROPERTY DAMAGE OR LOSSES. PRIOR TO USE, THE USER SHALL DETERMINE THE SUITABILITY OF THE PRODUCT FOR ITS INTENDED USE, AND THE USER ASSUMES ALL RISKS AND LIABILITY FOR SUBSEQUENT USE.

No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of seller and manufacturer.

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**Specified  
Technologies  
STI Inc.**

200 Evans Way • Somerville, NJ 08876  
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Facts-On-Demand: (888) 526-6800  
STI on the WEB: [www.stifirestop.com](http://www.stifirestop.com)



# Material Safety Data Sheet

01-JAN-2003

## SpecSeal® TYPE SSS SEALANT

### CHEMICAL PRODUCT/COMPANY IDENTIFICATION

#### Material Identification

PRODUCT NAME.....SpecSeal® SSS Sealant  
CHEMICAL FAMILY.....Mixture

#### Company Identification

#### MANUFACTURER/DISTRIBUTOR

Specified Technologies, Inc.  
200 Evans Way  
Somerville, NJ 08876

#### PHONE NUMBERS

Product Information : 1-908-526-8000  
Emergency : 1-800-255-3924

### COMPOSITION/INFORMATION ON INGREDIENTS

#### INGREDIENT NAME

Proprietary mixture

#### CAS NUMBER

-----

### HAZARDS IDENTIFICATION

\*\*\*\*\*EMERGENCY OVERVIEW\*\*\*\*\*

\* Possible skin and eye irritant. Red paste. \*

\*\*\*\*\*

#### Potential Health Effects:

**EYE:** Contact may cause irritation.

**SKIN:** Contact may cause irritation.

**INGESTION:** Relatively non-toxic.

**INHALATION:** Irritation of the nose, throat, and lungs may result from over-exposure to vapors or mist.

**CHRONIC (CANCER) INFORMATION:** Not classified as carcinogenic.

**LONG TERM TOXIC EFFECTS:** None known.

## FIRST AID MEASURES

### First Aid

**INHALATION:** Remove to fresh air.

**SKIN CONTACT:** Wash thoroughly.

**EYE CONTACT:** Irrigate eyes with running water for at least 15 minutes. Get medical attention if irritation develops.

**INGESTION:** None applicable.

## FIRE FIGHTING MEASURES

Not a fire hazard.

EXTINGUISHING MEDIA..... Dry Chemical; Carbon Dioxide; Foam; Water spray for large fires.

SPECIAL FIRE FIGHTING PROCEDURES: ..... As for surrounding fire.

## ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

## HANDLING AND STORAGE

Store under ambient conditions. No special handling required.

## EXPOSURE CONTROLS/PERSONAL PROTECTION

**EYE PROTECTION REQUIREMENTS:** ..... Safety glasses/goggles.

**SKIN PROTECTION REQUIREMENTS:** ..... Gloves.

**RESPIRATOR REQUIREMENTS:** ..... None.

**VENTILATION REQUIREMENTS:** ..... If needed, use local exhaust ventilation to keep airborne concentrations below the TLV.

### Exposure Guidelines

#### Exposure Limits

**PEL (OSHA) :** Particulates (Not Otherwise Classified) 15 mg/m<sup>3</sup>, 8 Hr. TWA, total dust 5 mg/m<sup>3</sup>, 8 Hr. TWA, respirable dust

**TLV (ACGIH) :** None Established

## PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL FORM ..... Red paste with minimal odor

SPECIFIC GRAVITY ..... 1.24

PERCENT VOLATILES ..... 20

EVAPORATION RATE ..... >1

BOILING POINT ..... 100 deg. C

SOLUBILITY IN WATER ..... Infinitely dilutable

## STABILITY AND REACTIVITY

STABILITY: ..... This is a stable material.

CONDITIONS TO AVOID ..... Storage >55 deg. C

HAZARDOUS POLYMERIZATION: ..... Will not occur.

INCOMPATIBILITIES: ..... None special.

## TOXICOLOGICAL INFORMATION

Mixture not tested but based on components:

May be irritating to skin and eyes and may aggravate existing skin and eye conditions.

None of the components are listed as carcinogens.

## ECOLOGICAL INFORMATION

No data.

## DISPOSAL CONSIDERATIONS

Waste Disposal:

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

## TRANSPORTATION INFORMATION

DOT – not regulated.

## REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status: Reported/Included.

Section 313 Supplier Notifications.

This product contains no toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372:

## OTHER INFORMATION

NPCA-HMIS Rating

Health : 1

Flammability : 0

Reactivity : 0

Personal Protection rating to be supplied by user depending on use conditions.

### STATE RIGHT-TO-KNOW LAWS

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated. While we do not specifically analyze these products, or the raw materials used in their manufacture, for substances on various state hazardous substances lists, to the best of our knowledge the products on this Material Safety Data Sheet contain no such substances except for those specifically listed below:

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): NJTSRN-SSS100

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER: Possible traces of formaldehyde, ethyl acrylate, acetaldehyde, acrylamide and acrylonitrile.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.

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This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief accurate and reliable as of the data compiled. However, no representation, warranty, or guarantee is made as to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information.

### Responsibility for MSDS :

Specified Technologies, Inc.  
200 Evans Way  
Somerville, NJ 08876



# Material Safety Data Sheet

01-JAN-2003

## SpecSeal® FIRESTOP COLLAR

### CHEMICAL PRODUCT/COMPANY IDENTIFICATION

#### Material Identification

PRODUCT NAME.....SpecSeal® Firestop Collar

CHEMICAL FAMILY.....Does not apply

#### Company Identification

#### MANUFACTURER/DISTRIBUTOR

Specified Technologies, Inc.  
200 Evans Way  
Somerville, NJ 08876

#### PHONE NUMBERS

Product Information : 1-908-526-8000  
Emergency : 1-800-255-3924

### COMPOSITION/INFORMATION ON INGREDIENTS

Metal collar with contained rubber strip.

### HAZARDS IDENTIFICATION

#### \*\*\*\*\*EMERGENCY OVERVIEW\*\*\*\*\*

\* Non-hazardous metal collar with contained rubber strip. \*

\*\*\*\*\*

#### Potential Health Effects:

**EYE:** Physical contact may cause irritation.

**SKIN:** Contact should not cause problems.

**INGESTION:** Not likely.

**INHALATION:** No hazard.

**CHRONIC (CANCER) INFORMATION:** None known.

**LONG TERM TOXIC EFFECTS:** None known.

## FIRST AID MEASURES

### First Aid

**INHALATION:** None applicable.

**SKIN CONTACT:** None applicable.

**EYE CONTACT:** Irrigate eyes with running water for at least 15 minutes. Get medical attention if irritation develops.

**INGESTION:** None applicable.

## FIRE FIGHTING MEASURES

Flash point: Not established.

EXTINGUISHING MEDIA.....Dry Chemical; Carbon Dioxide; Foam; Water spray for large fires.

SPECIAL FIRE FIGHTING PROCEDURES: .....As for surrounding fire.

## ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

## HANDLING AND STORAGE

Store under ambient conditions. No special handling required.

## EXPOSURE CONTROLS/PERSONAL PROTECTION

**EYE PROTECTION REQUIREMENTS:**.....Safety glasses/goggles.

**SKIN PROTECTION REQUIREMENTS:** .....None.

**RESPIRATOR REQUIREMENTS:** .....None.

**VENTILATION REQUIREMENTS:**.....If needed, use local exhaust ventilation to keep airborne concentrations below the TLV.

### Exposure Guidelines

### Exposure Limits

None.

## PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL FORM ..... Solid

SPECIFIC GRAVITY ..... Not applicable

PERCENT VOLATILES..... 0

SOLUBILITY IN WATER..... Insoluble

## STABILITY AND REACTIVITY

STABILITY: ..... This is a stable material.

CONDITIONS TO AVOID..... None.

HAZARDOUS POLYMERIZATION:..... Will not occur.

INCOMPATIBILITIES:.....None special.

## TOXICOLOGICAL INFORMATION

Mixture not tested but based on components:

Particles may cause physical irritation to eyes.

Contains no carcinogens as specified by IARC, ACGIH and NTP or OSHA.



## ECOLOGICAL INFORMATION

No data but not expected to be environmental hazard.

## DISPOSAL CONSIDERATIONS

### Waste Disposal:

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

## TRANSPORTATION INFORMATION

DOT – not regulated.

## REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status: Article.

Section 313 Supplier Notifications.

This product contains no toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372:

## OTHER INFORMATION

### NPCA-HMIS Rating

Health : 0

Flammability : 1

Reactivity : 0

Personal Protection rating to be supplied by user depending on use conditions.

## STATE RIGHT-TO-KNOW LAWS

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated. While we do not specifically analyze these products, or the raw materials used in their manufacture, for substances on various state hazardous substances lists, to the best of our knowledge the products on this Material Safety Data Sheet contain no such substances except for those specifically listed below:

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): NJTSRN-SSC.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER: None known.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.

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### Responsibility for MSDS :

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