

## Trust and Confidence Even Under Fire!

### Maintaining Protection: Firestopping, Repair Procedures, & Documentation in NEW and Existing Buildings

*Composite Sheet, Foam Blocks*

*– Dean Ahmed Zalzala, 3M*



Firestop Contractors International Association

FCIA Virtual 'DIIM' Firestop & Effective  
Compartmentation in Existing Buildings  
Symposium Middle East

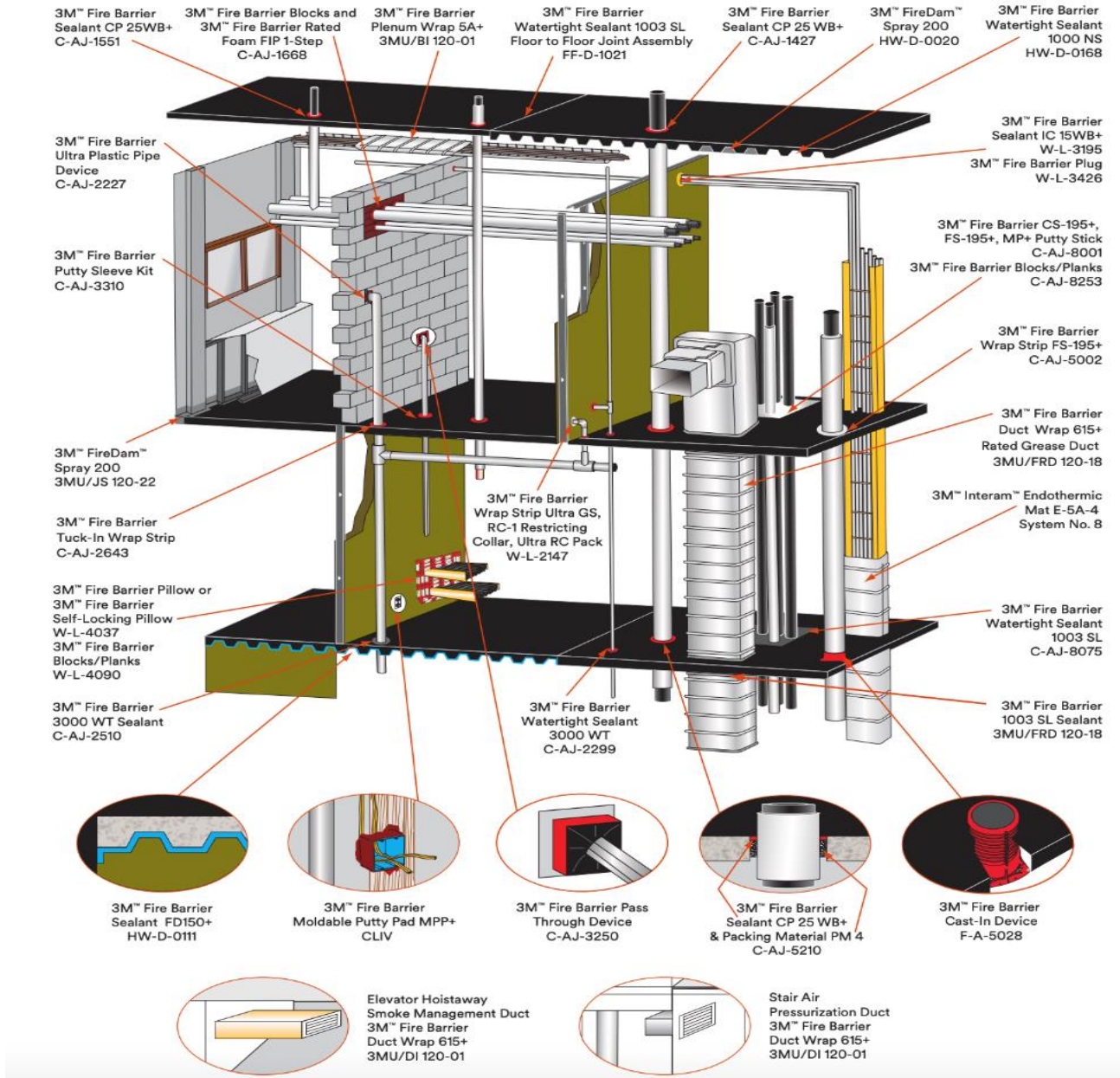


# Products do not firestop.

## Tested and listed systems do.

A firestop system is a complete, tested assembly that prevents the passage of flames, smoke and toxic gases through penetrations, joints or other weaknesses in fire-rated walls and floors for specified period of time.

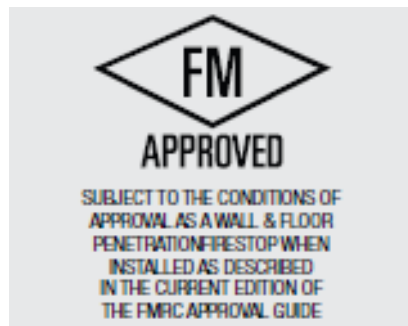
- ▶ Sealants, putties, foams and tapes
- ▶ Devices
- ▶ Wraps, mats, sheets and pillows



# 3M™ Fire Barrier Composite Sheet CS-195+

3M Fire Barrier Composite Sheets and Pillows provide a re-enterable solution for firestop systems. One-part composite system comprised of four components. It is designed to firestop larger penetrations, blank openings and for shielding cable trays and conduit, HVAC ductwork and vital process equipment.

- Firestop tested for up to 4 hours
- Thermally conductive — allows heat build-up to escape
- Intumescent firestop and cold smoke seal
- Re-enterable for new and retrofit installations
- Meets the intent of LEED® VOC Environmental Regulations



# 3M™ Fire Barrier Composite Sheet CS-195+

A re-enterable, thin one-part composite system designed to firestop blank openings and larger penetrations such as cable trays and conduit and HVAC ductwork through rated construction.

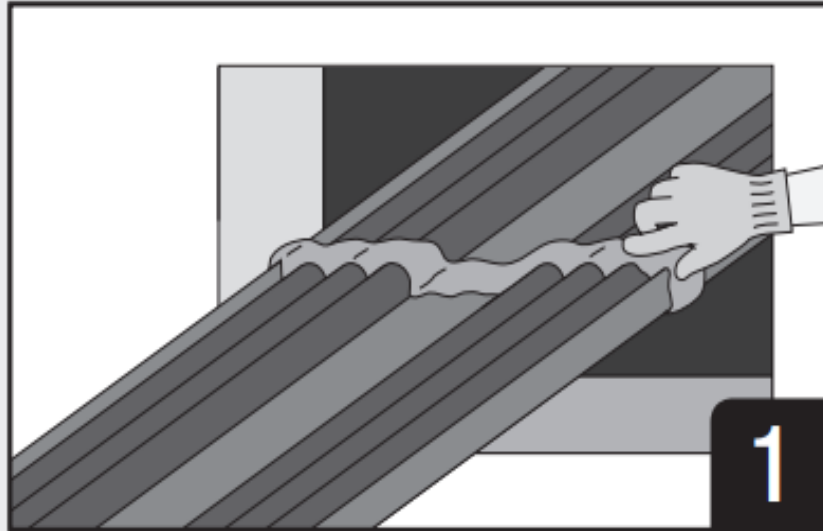
UL-Classified firestop used to seal cable trays, cable, piping and other items that penetrate through fire-rated walls and floors. The product firestops large blanks and provides a fire-resistive and smoke seal for any shape opening in gypsum walls, concrete block or slabs for up to 4 hours.

Use 3M™ Fire Barrier Composite Sheet CS-195+ to shield cable trays, conduit, HVAC ductwork, panels, valves and vital heat-sensitive process equipment. The product is effective in protecting cable drop-outs, junction boxes and cabinets, as well as in providing an intermittent firestop in horizontal and vertical cable tray runs.

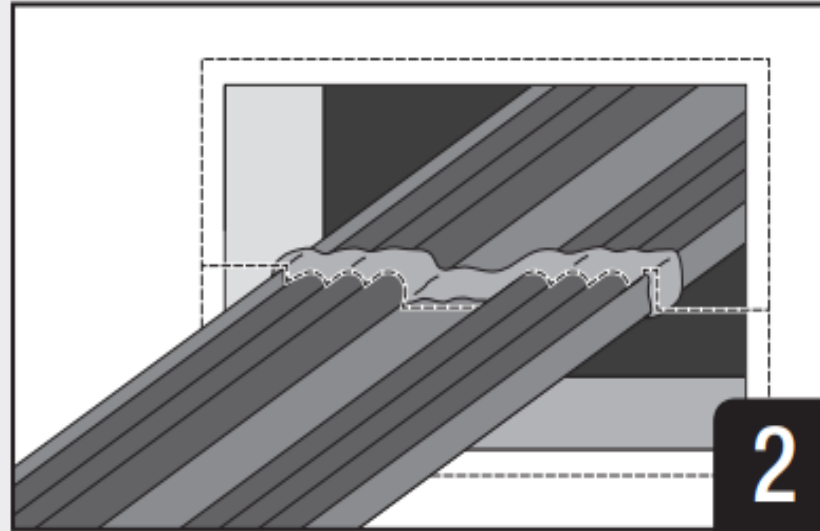


# 3M™ Fire Barrier Composite Sheet CS-195+

## Installation Guide



1  
Install appropriate 3M™ Fire Barrier product to firestop around penetrants as needed per system specs.

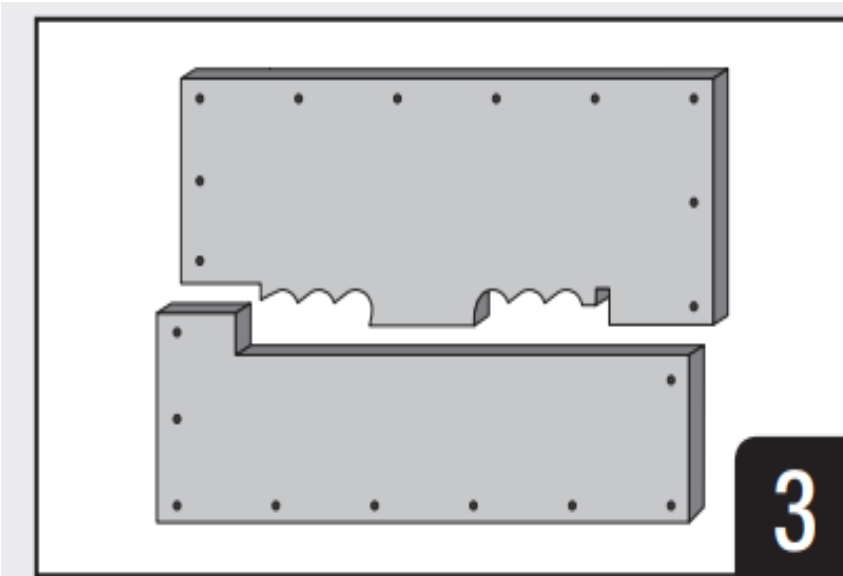


2  
Measure the aperture size and cut the 3M™ Fire Barrier Composite Sheet CS-195+ to size such that it overlaps past the opening 50mm on each edge. Sheet should be cut to follow the contours of the penetrants as closely as possible.

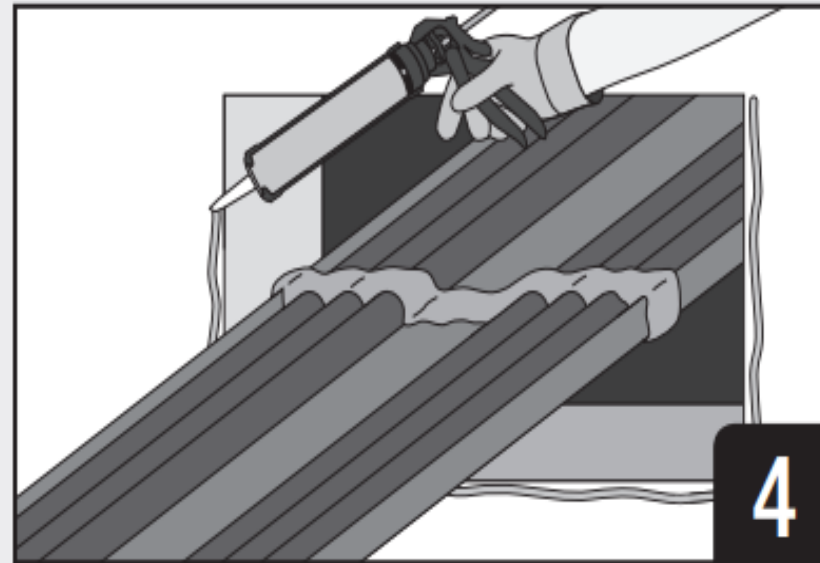


# 3M™ Fire Barrier Composite Sheet CS-195+

## Installation Guide – Cont...



Mark and pre-drill fastener positions in the Composite Sheet, ensuring that each fastener is 25mm from each corner and the maximum spacing between fasteners does not exceed 150mm.

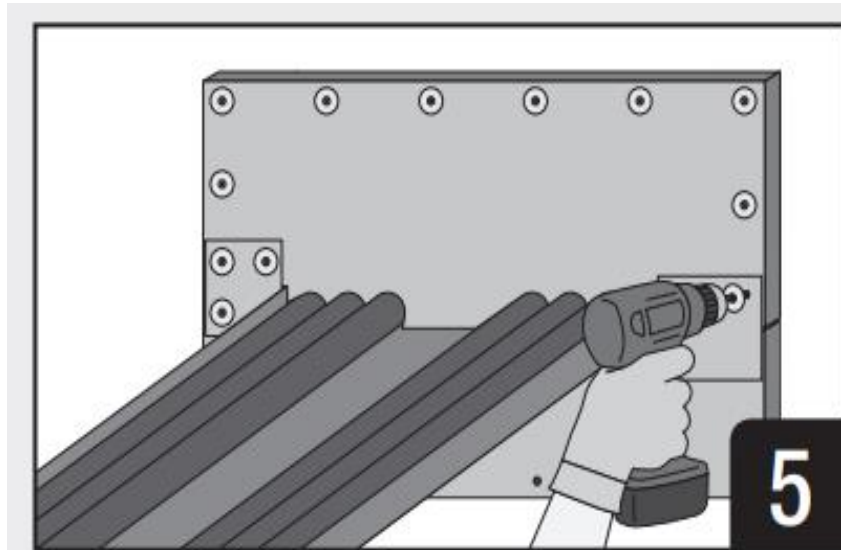


Apply a bead of sealant or putty on the faces of the floor/wall around the opening, 25mm from the edges.

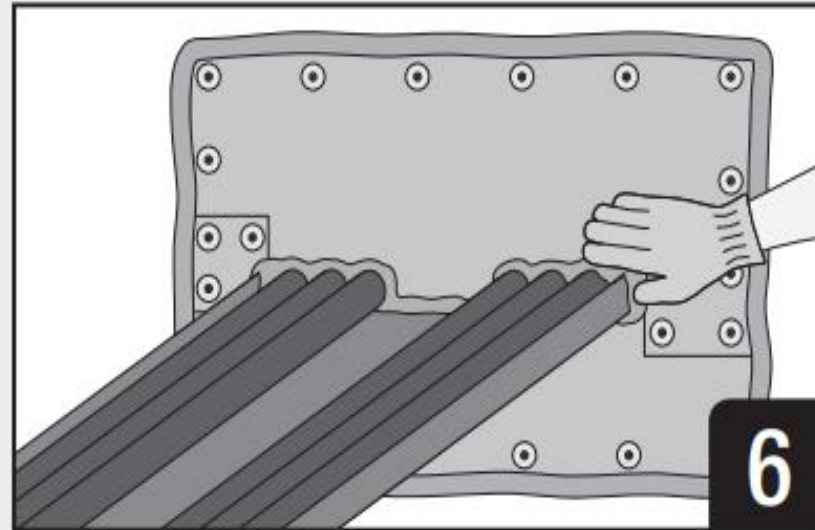


# 3M™ Fire Barrier Composite Sheet CS-195+

## Installation Guide – Cont...



Install Composite Sheet over the opening with the steel sheet side facing out and secure using appropriate fasteners. Seal any joints between adjacent sheets using a 50mm wide steel cover strip fastened with steel self-tapping screws and sealant.



Seal any gaps around penetrants using appropriate 3M™ Fire Barrier Sealant or 3M™ Fire Barrier Moldable Putty.



# 3M™ Fire Barrier Composite Sheet CS-195+

## Maintenance

3M Fire Barrier CS-195+ Composite Sheet remains stable for an indefinite period of time.

CS-195+ Composite Sheet should be stored in the original shipping container until used. The materials are non-impaired by freezing or storage at temperatures up to 187°F (86°C).

No maintenance is expected to be required when installed in accordance with the 3M™ Fire Barrier Composite Sheet CS-195+ Installation Guide and appropriate third-party listed systems.

Once installed, if any section of the 3M™ Fire Barrier Composite Sheet CS-195+ is damaged (visible damage to the aluminum foil and fire resistive base), the following procedure will apply:

- Any damaged product must be cut out and removed.
- The open area created must then be filled with new product, installed as detailed in the original applicable third-party tested and listed system.
- Minor dents or scratches to the galvanized steel sheet are not expected to impact the performance of the product.





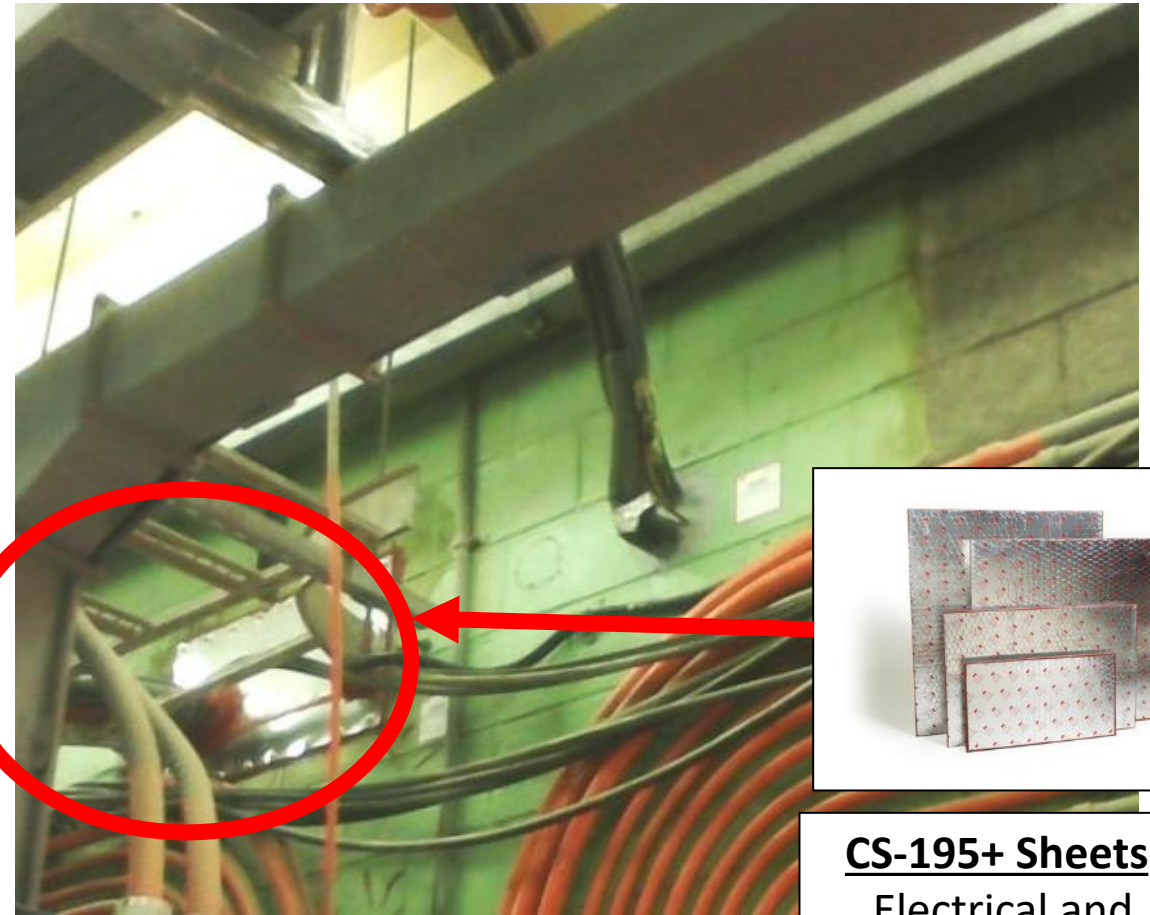
# 3M™ Fire Barrier Composite Sheet CS-195+

Installation Photos

Combos  
UL System C-AJ-8001



**BEFORE**



**AFTER**



**CS-195+ Sheets:**  
Electrical and  
Telecom Industry  
Standard

**3M**

# 3M™ Fire Barrier Blocks, Plugs and Planks

3M™ Fire Barrier Block B258, 3M™ Fire Barrier Plank PK39, and 3M™ Fire Barrier Plug PLG2 and PLG4 are smoke, sound, and firestopping pre-formed foam units for medium to large openings in wall and floor through-penetrations. Simple to use. During a fire, product maintains a tight firestop against smoke and flame.



- Re-enterable/repairable
- Fully reusable
- Easy to install — saves time and labor
- Paintable with primer
- No cure time

**Check out these “Stack. Seal. Done.” fire barrier products from 3M ... the trusted name in firestopping.**



# 3M™ Fire Barrier Blocks, Plugs and Planks



## Installation Techniques

- **Blocks and Planks**

1. Install Fire Barrier Blocks or Fire Barrier Planks with the 5 in. (130mm) dimension projecting through the floor or wall and centered within the opening; minimum 4-1/2 in. seal thickness is required.
2. Continue to install Blocks/Planks until through opening is completely full, and blocks/planks are firmly packed together. Block/Plank can be re-sized in the field as needed provided the 5 in. (130mm) dimension is maintained through the opening. No compression is necessary.
3. Install Fire Barrier Rated Foam FIP 1-Step or CP 25 WB+ sealant between the Blocks/Planks and the periphery of the opening and between Blocks/Planks and penetrants, per requirements of the listed UL System. Foam to be installed full depth of the Blocks/Planks.
4. Check for any openings between Blocks/Planks, framing, and penetrating items. Fill any visible openings with the required depth of Foam. Consult individual UL systems for Foam depth and location requirements.
5. To remove the Blocks/Planks, gently pull them out and place on a clean surface. After penetrants are routed through, or removed from the opening, replace the Blocks/Planks, making sure that they are firmly packed and fully filling the opening. Install Foam in any voids as required.

# 3M™ Fire Barrier Blocks, Plugs and Planks

## Installation Techniques – *Cont...*

- **Plugs**

1. Install Fire Barrier Plug within the opening flush with top surface of floor or both sides of wall.
2. To fit smaller openings, Plugs may be compressed to size, or a wedge may be cut from Plug to reduce size.
3. Plugs may be cut to fit around cable penetrants
4. Holes may be cut/punched through Plugs to route cables directly through.
5. Fill all voids and interstices of cables with Fire Barrier Rated Foam FIP 1-Step, full depth of the Plug. Limitations: Additional firestop may be necessary for non-metallic penetrants. Consult individual UL systems for firestop requirements.



# 3M™ Fire Barrier Blocks, Plugs and Planks

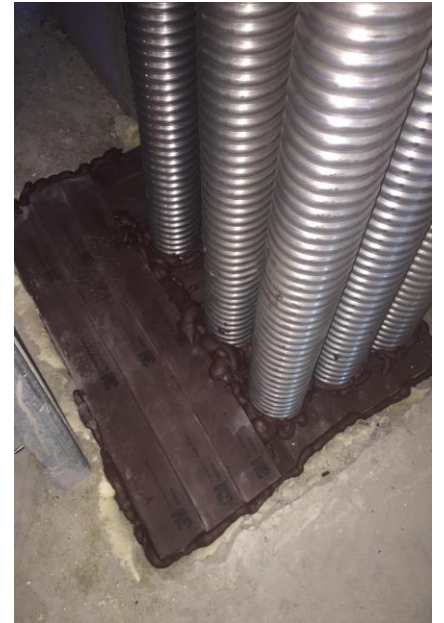
## Maintenance

- Inspection: Installations should be inspected periodically for subsequent damage. Damaged blocks, plugs, or planks shall be replaced.
- Retrofit: Penetrants may be added or replaced by simply removing and replacing blocks, planks, or plugs and foam as required.



# 3M™ Fire Barrier Blocks, Plugs and Planks

## Installation Photos



# UL Systems for 3M™ Fire Barrier Composite Sheet CS-195+

- System No. C-AJ-0004 (Blank Opening)

F Ratings – 1, 2, 3 and 4 Hr (See Items 1 and 3)

T Ratings – 0 and 1-1/2 Hr (See Item 3)

L Rating At Ambient – less than 1 CFM/sq ft (See Item 2)

L Rating At 400 F – less than 1 CFM/sq ft (See Item 2)

1. Floor or Wall Assembly – Lightweight or normal weight (100-150 pcf or 1600-2400kg/m<sup>3</sup>) concrete.
2. Fill, Void Or Cavity Materials\* – Graphite Seal, Caulk, Sealant or Putty (Not Shown) – One layer of 1/2 in. (13 mm) x 1/16 in. (1.6 mm) adhesive backed graphite intumescent seal positioned under intumescent sheet around entire perimeter of through opening or min 1/4 in. (6 mm) diam continuous bead of caulk or putty applied to edge of intumescent sheet at its interface with surface of floor or wall around entire perimeter of through opening.  
3M COMPANY – E-FIS or Ultra GS seals, CP 25WB+ caulk, MPS-2+ putty, FB-3000 WT sealant
3. Fill, Void Or Cavity Materials\* – Intumescent Sheet – Rigid aluminum foil-faced sheets with galv steel sheet backer.  
3M COMPANY – Type CS-195+

**System No. C-AJ-0004**  
June 28, 2010  
F Ratings – 1, 2, 3 and 4 Hr (See Items 1 and 3)  
T Ratings – 0 and 1-1/2 Hr (See Item 3)  
L Rating At Ambient – less than 1 CFM/sq ft (See Item 2)  
L Rating At 400 F – less than 1 CFM/sq ft (See Item 2)

**CONFIGURATION A - 1, 2 AND 3 HR F RATINGS**

**CONFIGURATION B - 4 HR F RATINGS**

1. **Floor or Wall Assembly** – Lightweight or normal weight (100-150 pcf or 1600-2400kg/m<sup>3</sup>) concrete. Min thickness of concrete floor or wall assembly to be 2-1/2 in. (64 mm) for 1 and 2 hr F Rating, 4-1/2 in. (114 mm) for 3 hr F Rating and 5-1/2 in. (140 mm) for 4 hr F Rating. Wall may also be constructed of any UL Classified **Concrete Blocks**\*. Max area of opening 36 sq ft (3.34 m<sup>2</sup>) with one dimension of opening being 36 in. (914 mm) or less.  
See **Concrete Blocks (CAZT)** category in the Fire Resistance Directory for names of manufacturers.
2. **Fill, Void Or Cavity Materials\*** – **Graphite Seal, Caulk, Sealant or Putty** (Not Shown) – One layer of 1/2 in. (13 mm) x 1/16 in. (1.6 mm) adhesive backed graphite intumescent seal positioned under intumescent sheet around entire perimeter of through opening or min 1/4 in. (6 mm) diam continuous bead of caulk or putty applied to edge of intumescent sheet at its interface with surface of floor or wall around entire perimeter of through opening.  
**3M COMPANY** – E-FIS or Ultra GS seals, CP 25WB+ caulk, MPS-2+ putty, FB-3000 WT sealant  
(Note: L Ratings apply only when Type CP 25WB+ or FB-3000 WT sealant caulk is used.)
3. **Fill, Void Or Cavity Materials\*** – **Intumescent Sheet** – Rigid aluminum foil-faced sheets with galv steel sheet backer. Sheet cut to lap a min of 2 in. (51 mm) on the floor or wall surface on all sides of the through opening. Sheets to be installed with the galv steel sheet backer exposed (aluminum foil facing against floor or wall surface). Sheets secured to both sides of floor or wall assembly using min 3/16 in. (4.8 mm) diam by 1-1/4 in. (32 mm) long steel masonry fasteners with min 1-1/4 in. (32 mm) diam steel washers. Max spacing of fasteners not to exceed 6 in. (152 mm) OC. As an option for 1, 2 and 3 hr F ratings in floor assemblies only, the sheet may be installed only on the top surface of the floor (see Configuration A above). When the sheet is installed only on the top surface of the floor, T Rating is 0 hr.  
**3M COMPANY** – Type CS-195+
4. **Support Channel** – (Not shown) – When area of through opening exceeds 1440 sq in., (9,290 cm<sup>2</sup>) an intermediate support channel shall be installed on each side of floor or wall assembly, flush with floor or wall surface, near the center of the opening. Support channels to be min 1-5/8 by 1-5/8 in. (41 by 41 mm) and formed of min 0.093 in. (2.36 mm) thick (No. 12 gauge) painted or galv steel. Ends of steel channel bolted or welded to steel angles anchored to inside walls of through opening. Intumescent sheets secured to steel support channels with steel sheet metal screws in conjunction with min 1-1/4 in. (32 mm) diam steel fender washers spaced a max of 4 in. (102 mm) OC.

\*Bearing the UL Classification Marking  
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**3M Fire Protection Products**  
[www.3m.com/firestop](http://www.3m.com/firestop)

**C-AJ-0004 • 1 of 1**

Product Support Line  
1-800-328-1687

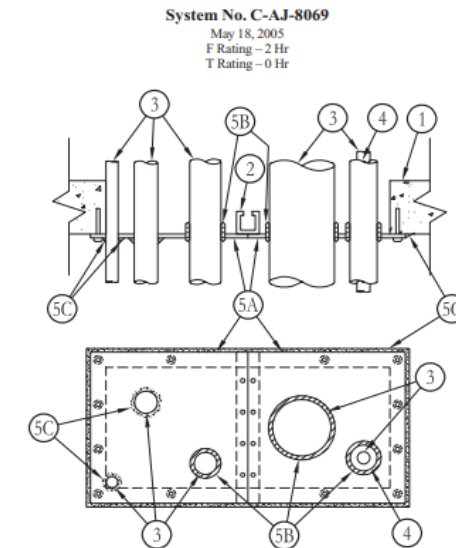
Through Penetrations  
Blanks  
0000 Series  
Concrete  
CAJ

# UL Systems for 3M™ Fire Barrier Composite Sheet CS-195+

- System No. C-AJ-8069 (Combos)

F Rating – 2 Hr T Rating – 0 Hr

- Floor or Wall Assembly – Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m<sup>3</sup>) concrete.
- Support Channel – Support channel shall be installed flush with bottom surface of floor or both sides of wall, midway in opening.
- Through Penetrants – Multiple metallic pipes, conduits or tubings to be installed either concentrically within the firestop system.
  - Steel Pipe – Nom 6 in. (152 mm) diam (or smaller) Schedule 10 (or heavier) or nom 4 in. (102 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
  - Iron Pipe – Nom 6 in. (152 mm) diam (or smaller) cast or ductile iron pipe.
  - Conduit – Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or steel conduit.
  - Copper Tubing – Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tube. E. Copper Pipe – Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.
- Firestop System – The details of the firestop system shall be as follows:
  - Fill, Void or Cavity Materials\* – Intumescent Sheet – Rigid aluminum foil-faced sheets with galv steel sheet backer. 3M COMPANY – CS-195+
  - Fill, Void or Cavity Materials\* – Wrap Strip – 3M COMPANY – FS-195+
  - Fill, Void or Cavity Materials\* – Caulk or Sealant – Min 1/4 in. (6 mm) diam continuous bead applied to edge of intumescent sheet  
3M COMPANY – CP 25WB+, IC 15WB+ caulk or FB-3000 WT sealant.



- System No. C-AJ-8069  
May 18, 2005  
F Rating – 2 Hr  
T Rating – 0 Hr
- Floor or Wall Assembly** – Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m<sup>3</sup>) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks\***. Max area of opening 3 sq ft (2787 cm<sup>2</sup>) with max dimension of 36 in. (914 mm).  
See **Concrete Block (CAZT)** category in the Fire Resistance Directory for names of manufacturers.
  - Support Channel** – Support channel shall be installed flush with bottom surface of floor or both sides of wall, midway in opening. Support channel not required for openings with a max dimension of 18 in. (457 mm) or less. Support channels to be min 1-5/8 in. (41 mm by 41 mm) and formed of min 0.093 in. (2.4 mm) thick (No. 12 gauge) painted or galv steel. Ends of steel channel bolted or welded to steel angles anchored to inside walls of through opening using min 1/4 in. (6 mm) diam by 1-1/2 in. (38 mm) long steel expansion bolts, or equivalent, in conjunction with steel nuts and washers.
  - Through Penetrants** – Multiple metallic pipes, conduits or tubings to be installed either concentrically within the firestop system. Min 1 in. (25 mm) clearance between pipes. Min clearance between uninsulated penetrants and wall of through opening 1/4 in. (6 mm). When single nom 4 in. (102 mm) diam (or smaller) steel pipe or conduit or nom 2 in. (51 mm) diam (or smaller) copper tube or pipe is installed, min clearance between pipe, tube, conduit or EMT and wall of through opening is 0 in. (0 mm) (point contact). Clearance between penetrants shall be min 1 in. (25 mm). Pipe and conduits rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
    - Steel Pipe** – Nom 6 in. (152 mm) diam (or smaller) Schedule 10 (or heavier) or nom 4 in. (102 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
    - Iron Pipe** – Nom 6 in. (152 mm) diam (or smaller) cast or ductile iron pipe.
    - Conduit** – Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or steel conduit.
    - Copper Tubing** – Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tube.
    - Copper Pipe** – Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.
  - Tube Insulation – Plastics** – Nom 1/2 in. (13 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. For use with penetrants having a nom 2 in. (51 mm) diam and less. The annular space between the insulated pipe and the edge of the through opening shall be min 1/4 in. (6 mm).  
See **Plastics (QMFZ2)** category in the Recognized Component Directory for names of manufacturers. Any Recognized Composite tube insulation material meeting the above specifications and having a UL94 Flammability Classification of 94-5VA may be used.
  - Firestop System** – The details of the firestop system shall be as follows:
    - Fill, Void or Cavity Materials\* – Intumescent Sheet** – Rigid aluminum foil-faced sheets with galv steel sheet backer. Sheet cut to tightly follow the contours of the penetrants or wrap strip (Item 5B) and to lap a min of 3 in. (76 mm) on the floor surface on all sides of the through opening. Sheets to be installed with the galv steel sheet backer exposed (aluminum foil facing against floor or wall surfaces). Sheets secured to bottom side of floor or both sides of wall using min 1/4 in. (6 mm) diam by 1-1/2 in. (38 mm) long steel



# UL Systems for 3M™ Fire Barrier Block & Planks

- System No. C-AJ-0153

ANSI/UL1479 (ASTM E814)

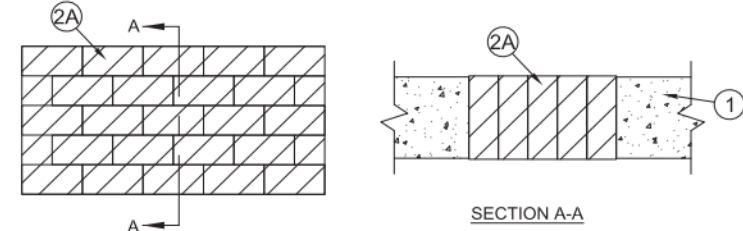
F Rating — 2 Hr

T Rating — 2 Hr

- Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m<sup>3</sup>) concrete. Wall may also be constructed of any UL Classified Concrete Blocks\*. Max area of opening is 384 in.2 (2477 cm<sup>2</sup>) with a max dimension of 32 in. (813 mm). See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
- Firestop System — The firestop system shall consist of the following:
  - Fill, Void or Cavity Material\* — Blocks installed with 5 in. (127 mm) dimension projecting through opening flush with bottom surface of floor or centered in wall. Blocks to be firmly packed to fill the opening area. 3M COMPANY - 3M™ Fire Barrier Block B258, 3M™ Fire Barrier Plank PK39
  - Fill, Void or Cavity Material\* — (Not shown) — Fill material to be forced between blocks and periphery of opening to the max extent possible on top surface of floor or both surfaces of wall. 3M COMPANY - 3MTM Fire Barrier Rated Foam, FIP 1-Step

System No. C-AJ-0153  
March 04, 2016


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



**SECTION A-A**

- Floor or Wall Assembly** — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m<sup>3</sup>) concrete. Wall may also be constructed of any UL Classified Concrete Blocks\*. Max area of opening is 384 in.2 (2477 cm<sup>2</sup>) with a max dimension of 32 in. (813 mm). See **Concrete Blocks (CAZT)** category in the Fire Resistance Directory for names of manufacturers.
- Firestop System** — The firestop system shall consist of the following:
  - Fill, Void or Cavity Material\*** — Blocks installed with 5 in. (127 mm) dimension projecting through opening flush with bottom surface of floor or centered in wall. Blocks to be firmly packed to fill the opening area.  
  
3M COMPANY - 3M™ Fire Barrier Block B258, 3M™ Fire Barrier Plank PK39
  - Fill, Void or Cavity Material\*** — (Not shown) — Fill material to be forced between blocks and periphery of opening to the max extent possible on top surface of floor or both surfaces of wall.  
  
3M COMPANY - 3MTM Fire Barrier Rated Foam, FIP 1-Step

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



www.3M.com/firestop 1-800-328-1687

C-AJ-0153 • 1 of 1

3M Fire Protection Products  
Through Penetrations Applicators and Specifiers Guide

Through Penetrations

Blanks

0000 Series

Concrete

CAJ



# UL Systems for 3M™ Fire Barrier Block & Planks

- System No. C-AJ-1668

ANSI/UL1479 (ASTM E814)

F Rating — 2 Hr

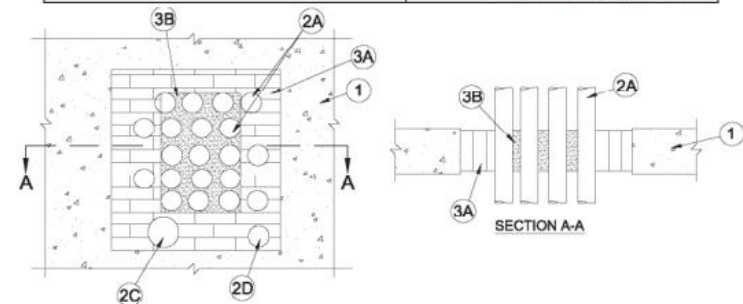
T Ratings — 1/4 and 1/2 Hr (See Item 2)

1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced light weight or normal weight (100-150 pcf or 1600-2400 kg/m<sup>3</sup>) concrete. Wall may also be constructed of any UL Classified Concrete Blocks\*. Max size of opening is 1296 in.<sup>2</sup> (0.836 m<sup>2</sup>) with a max dimension of 36 in. (914 mm).
2. Through Penetrants — One or more pipes, conduit or tubing to be installed within the opening. The space between the pipes, conduit or tubing shall be min 1/2 in. (13 mm) to max 9-1/2 in. (241 mm), except that for copper penetrants, the min annular space shall be 3 in. (76 mm). The following types and sizes of metallic pipes, conduits or tubing may be used:
  - A. Conduit — Nom 4 in. (102 mm) diam (or smaller) electrical metallic tubing or steel conduit. A maximum of twenty conduit may be installed within the opening.
  - B. Copper Tubing or Pipe — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing or Regular (or heavier) copper pipe. A maximum of one copper penetrant may be installed within the opening.
  - C. Steel Pipe — Nom 8 in. (203 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe. A maximum of one penetrant exceeding 4 in. (102 mm) diam may be installed within the opening.
  - D. Iron Pipe — Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe. The hourly T, FT and FTH Rating is 1/2 hr except that when copper pipe/tube (Items 2B) is used, the hourly T, FT and FTH Rating is 1/4 hr.



System No. C-AJ-1668  
May 20, 2016

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Ratings — 1/4 and 1/2 Hr (See Item 2)	FT Ratings — 1/4 and 1/2 Hr (See Item 2)
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Rating — 2 Hr
L Rating At 400 F — Less Than 1 CFM/sq ft	FTH Ratings — 1/4 and 1/2 Hr (See Item 2)
	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. (114 mm) thick reinforced light weight or normal weight (100-150 pcf or 1600-2400 kg/m<sup>3</sup>) concrete. Wall may also be constructed of any UL Classified Concrete Blocks\*. Max size of opening is 1296 in.<sup>2</sup> (0.836 m<sup>2</sup>) with a max dimension of 36 in. (914 mm).  
See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Through Penetrants** — One or more pipes, conduit or tubing to be installed within the opening. The space between the pipes, conduit or tubing shall be min 1/2 in. (13 mm) to max 9-1/2 in. (241 mm), except that for copper penetrants, the min annular space shall be 3 in. (76 mm). The space between pipes, conduit or tubing and periphery of opening shall be min 3/4 in. (19 mm) to max 14 in. (356 mm), except that for copper penetrants, the min annular space shall be 2 in. (51 mm). Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall. The following types and sizes of metallic pipes, conduits or tubing may be used:
  - A. **Conduit** — Nom 4 in. (102 mm) diam (or smaller) electrical metallic tubing or steel conduit. A maximum of twenty conduit may be installed within the opening.
  - B. **Copper Tubing or Pipe** — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing or Regular (or heavier) copper pipe. A maximum of one copper penetrant may be installed within the opening.
  - C. **Steel Pipe** — Nom 8 in. (203 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe. A maximum of one penetrant exceeding 4 in. (102 mm) diam may be installed within the opening.
  - D. **Iron Pipe** — Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.  
The hourly T, FT and FTH Rating is 1/2 hr except that when copper pipe/tube (Items 2B) is used, the hourly T, FT and FTH Rating is 1/4 hr.
3. **Firestop System** — The firestop system shall consist of the following:
  - A. **Fill, Void or Cavity Material\*** — Blocks to be firmly packed to fill the opening area between the grouping of conduit (Item 2A) and periphery of opening, and between and around all other individual penetrants to the periphery of the opening. Blocks installed with 5 in. (127 mm) dimension projecting through opening, flush with bottom surface of floor or centered in wall. For floors and walls thicker than 5 in. (127 mm), the fire block can be installed flush with either side of floor or wall. In concrete block walls, fire block to fill entire thickness of wall opening unless concrete block is solid filled. Blocks can be cut to fit around penetrants and within smaller annular spaces.  
3M COMPANY 3M FIRE PROTECTION PRODUCTS — 3M™ Fire Barrier Block B258, 3M™ Fire Barrier Plank PK39
  - B. **Fill, Void or Cavity Materials\*** — **Foam** — Fill material installed to fill the entire annular space within and around the grouping of conduit penetrating items to a min thickness of 5 in. (127 mm). Fill material to be forced between blocks and periphery of opening to the max extent possible. Fill material to be injected in-between blocks and penetrants to the full depth of the blocks, as well as in any visible voids/openings between blocks (Item 3A).  
3M COMPANY 3M FIRE PROTECTION PRODUCTS — Fire Barrier Rated Foam, FIP 1-Step

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

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Through Penetrations Applicators and Specifiers Guide

Through Penetrations  
Metallic Pipes  
1000 Series  
Concrete  
CAJ

# UL Systems for 3M™ Fire Barrier Block & Planks

- System No. C-AJ-1668 – *Cont...*

ANSI/UL1479 (ASTM E814)

F Rating — 2 Hr

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

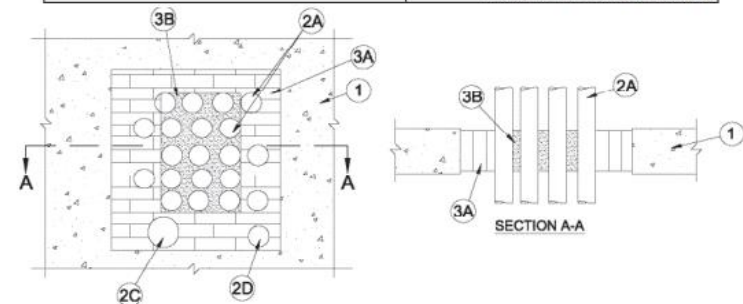
3. Firestop System — The firestop system shall consist of the following:

- A. Fill, Void or Cavity Material\* — Blocks to be firmly packed to fill the opening area between the grouping of conduit (Item 2A) and periphery of opening, and between and around all other individual penetrants to the periphery of the opening. Blocks installed with 5 in. (127 mm) dimension projecting through opening, flush with bottom surface of floor or centered in wall. For floors and walls thicker than 5 in. (127 mm), the fire block can be installed flush with either side of floor or wall. In concrete block walls, fire block to fill entire thickness of wall opening unless concrete block is solid filled. Blocks can be cut to fit around penetrants and within smaller annular spaces. 3M COMPANY 3M FIRE PROTECTION PRODUCTS — 3M™ Fire Barrier Block B258, 3M™ Fire Barrier Plank PK39
- B. Fill, Void or Cavity Materials\* — Foam — Fill material installed to fill the entire annular space within and around the grouping of conduit penetrating items to a min thickness of 5 in. (127 mm). Fill material to be forced between blocks and periphery of opening to the max extent possible. Fill material to be injected in-between blocks and penetrants to the full depth of the blocks, as well as in any visible voids/openings between blocks (Item 3A). 3M COMPANY 3M FIRE PROTECTION PRODUCTS — Fire Barrier Rated Foam, FIP 1-Step



System No. C-AJ-1668  
May 20, 2016

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Ratings — 1/4 and 1/2 Hr (See Item 2)	FT Ratings — 1/4 and 1/2 Hr (See Item 2)
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Rating — 2 Hr
L Rating At 400 F — Less Than 1 CFM/sq ft	FTH Ratings — 1/4 and 1/2 Hr (See Item 2)
	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. (114 mm) thick reinforced light weight or normal weight (100-150 pcf or 1600-2400 kg/m<sup>3</sup>) concrete. Wall may also be constructed of any UL Classified Concrete Blocks\*. Max size of opening is 1296 in.2 (0.836 m<sup>2</sup>) with a max dimension of 36 in. (914 mm).  
See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Through Penetrants — One or more pipes, conduit or tubing to be installed within the opening. The space between the pipes, conduit or tubing shall be min 1/2 in. (13 mm) to max 9-1/2 in. (241 mm), except that for copper penetrants, the min annular space shall be 3 in. (76 mm). The space between pipes, conduit or tubing and periphery of opening shall be min 3/4 in. (19 mm) to max 14 in. (356 mm), except that for copper penetrants, the min annular space shall be 2 in. (51 mm). Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall. The following types and sizes of metallic pipes, conduits or tubing may be used:
  - A. Conduit — Nom 4 in. (102 mm) diam (or smaller) electrical metallic tubing or steel conduit. A maximum of twenty conduit may be installed within the opening.
  - B. Copper Tubing or Pipe — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing or Regular (or heavier) copper pipe. A maximum of one copper penetrant may be installed within the opening.
  - C. Steel Pipe — Nom 8 in. (203 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe. A maximum of one penetrant exceeding 4 in. (102 mm) diam may be installed within the opening.
  - D. Iron Pipe — Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.  
The hourly T, FT and FTH Rating is 1/2 hr except that when copper pipe/tube (Items 2B) is used, the hourly T, FT and FTH Rating is 1/4 hr.
3. Firestop System — The firestop system shall consist of the following:
  - A. Fill, Void or Cavity Material\* — Blocks to be firmly packed to fill the opening area between the grouping of conduit (Item 2A) and periphery of opening, and between and around all other individual penetrants to the periphery of the opening. Blocks installed with 5 in. (127 mm) dimension projecting through opening, flush with bottom surface of floor or centered in wall. For floors and walls thicker than 5 in. (127 mm), the fire block can be installed flush with either side of floor or wall. In concrete block walls, fire block to fill entire thickness of wall opening unless concrete block is solid filled. Blocks can be cut to fit around penetrants and within smaller annular spaces.  
3M COMPANY 3M FIRE PROTECTION PRODUCTS — 3M™ Fire Barrier Block B258, 3M™ Fire Barrier Plank PK39
  - B. Fill, Void or Cavity Materials\* — Foam — Fill material installed to fill the entire annular space within and around the grouping of conduit penetrating items to a min thickness of 5 in. (127 mm). Fill material to be forced between blocks and periphery of opening to the max extent possible. Fill material to be injected in-between blocks and penetrants to the full depth of the blocks, as well as in any visible voids/openings between blocks (Item 3A).  
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\* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

3M Fire Protection Products  
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1000 Series
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**3M** Science.  
Applied to Life.™



**Trust and Confidence Even Under Fire!**

**Questions?**

**Thank You!**

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**Mobile: +971 56 177 0849**

For more information, visit:

**[www.3m.com/firestop](http://www.3m.com/firestop)**