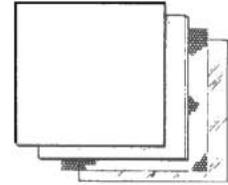




CS-195+ Composite Sheet

Product Data



FILL, VOID OR CAVITY MATERIALS
CLASSIFIED BY
UNDERWRITERS LABORATORIES, INC.®
FOR USE IN THROUGH-PENETRATION FIRESTOP
SYSTEMS (XHEZ).
SEE CURRENT UL FIRE RESISTANCE DIRECTORY.

1. Product Description

3M™ Fire Barrier CS-195+ Composite Sheet is a one-part composite system comprised of four components. The heart of the system is an organic/inorganic, fire-resistive elastomeric sheet. It is bonded on one side to a layer of 28 gauge galvanized steel. The other side is reinforced with hexagonal shaped steel-wire mesh and covered with aluminum foil. CS-195+ Composite Sheet is designed to seal larger penetrations through fire-rated walls and floors. It is also used for shielding cable trays and conduit, HVAC ductwork and vital process equipment from radiant heat, flame spread and smoke. CS-195+ Composite Sheet functions as an effective intermittent fire-break within horizontal and vertical cable tray runs, and is excellent for both new and retrofit construction.

The nominal 0.3 inch (7,62 mm) thick composite sheet provides up to a 4-hour fire rating. It is lightweight and can be easily installed with common trade tools.

When exposed to temperatures in excess of 250°F (121°C), the fire-resistive sheet begins to volumetrically expand and swells 8-10 times its original size, forming a high strength, hard char that retards heat transmission. This expansion process is called "intumescence."

Under normal operating conditions, CS-195+ Composite Sheet is a good thermal conductor which allows unwanted heat build-up to escape from process and control equipment and also minimizes power cable derating.

Product features are:

- Intumesces (expands with heat) to form a hard char that tightly seals penetrations against flame spread, smoke and toxic fumes.
- Multiple applications...through penetration firestop, heat shield and firebreak protection.
- Easy to install using common trade tools.
- Lightweight...easy to handle, cut and form to desired shape.
- Easy to fasten...bolt punch or drill through. Use self-tapping screws or anchor bolts.
- Thermally conductive...allows unwanted heat build-up to escape.
- Non-flame supporting.
- UL Classified.
- Cost effective, high performance versus installed cost.
- No mixing or damming...is clean to install.
- Versatile: can be cut to fit irregular shapes.
- Re-enterable.
- Low odor.
- Normal disposal procedures.

2. Applications

CS-195+ Composite Sheet is used to seal penetrations through fire-rated walls and floors and for cable trays, cable, piping and large blanks. It provides a fire-resistive and smoke seal for any shape opening in concrete block or slabs for up to 4 hours - UL Classified.

Use CS-195+ Composite Sheet 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.

3. Physical Properties

Sheet Sizes:	28 in. x 52 in. (711,2 mm x 1320,8 mm)
	24 in. x 36 in. (609,6 mm x 914,4 mm)
	36 in. x 36 in. (914,4 mm x 914,4 mm)
	36 in. x 41 in. (914,4 mm x 1,041 mm)
	16 in. x 28 in. (406,4 mm x 711,2 mm)

Composite Detail:

Component	Thickness
Galvanized sheet steel	0.0157 in. ± 0.003 in. (0,399 mm ± 0,076 mm) (30 gauge)
Fire-resistive sheet	0.285 in. ± 0.05 in. (7,24 mm ± 1,27 mm)
Hexagonal restraining wire	20 gauge
Aluminum foil	0.002 in. ± 0.0002 in. (0,0508 mm ± 0,00508 mm)
Complete material	0.303 in. ± 0.054 in. (7,70 mm ± 1,37 mm)

4. Specifications

A. Product

The intumescent sheet must be capable of passing ASTM E 814 (ANSI/UL 1479) Standard Method of Fire Tests for Through-Penetration Fire Stops up to the desired fire resistance rating.

B. Engineering/Architectural

All penetrations in fire rated walls, floors, floor ceiling assemblies and designated smoke or fire barriers shall be sealed with 3M Brand Fire Barrier Products per manufacturers' installation instructions.

5. Performance

A. Physical and Electrical Properties

CS-195+ Composite Sheet as Installed

Nominal Weight (lb/ft²) 2.75 (13,4 kg/m²)

Fire resistive ratings
[ASTM E 814 (UL 1479)] up to 4 hours

Intumescent Activation Sequence

Expansion begins 302°F (150°C)

Significant expansion 350°F (177°C)

Weight loss (TGA) 20.1% @ 662°F (350°C); 31.0% @ 932°F (500°C); 53.2% @ 1,832°F (1000°C)

Expansion 8-10 typical

Intumescent Sheet Properties (as part of composite)

Dielectric strength
(ASTM D 149) 119 volts/mil average

Non-flame supporting hardness 45 to 65 Shore A

Tensile strength/elongation
(ASTM D 412, Method A) 93.6 psi (0,645 MPa)/489%

Compression set 25% (maximum)

B. Fire Performance Test

Test

1. Summary of Fire Test Results per ASTM E 814 (ANSI/UL 1479)

Results

Up to 4 hour ratings for penetrations in walls and floors. See current UL Fire Resistance Directory.

2. Summary of Fire Test Results per ASTM E 814, Electrical Circuit Protection Systems for Cable Trays

1 hour UL Classified Systems. See Current UL Buildings Material Directory.

3. Surface Burning Characteristics
ASTM E 84 (ANSI/UL 723)

Flame Speed 5
Smoke Development 50

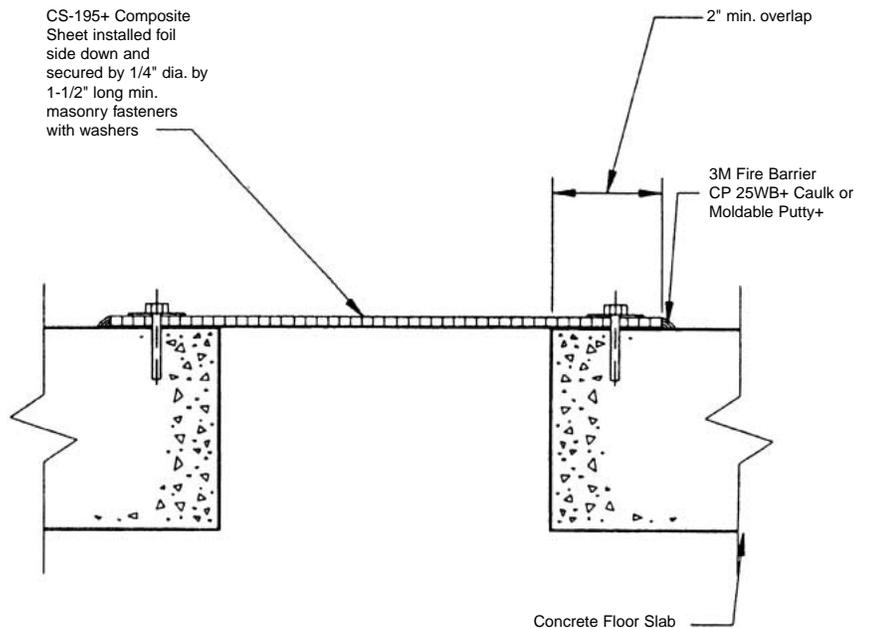
6. Installation Techniques

Exact instructions for specific applications are available upon request from 3M or your local authorized 3M Fire Protection Products Distributor. The following summarizes three representative applications:

A. Penetration firestop for blank openings (no penetration item) using 3M Fire Barrier CS-195+ Composite Sheet. Refer to current UL Fire Resistance Directory for system numbers.

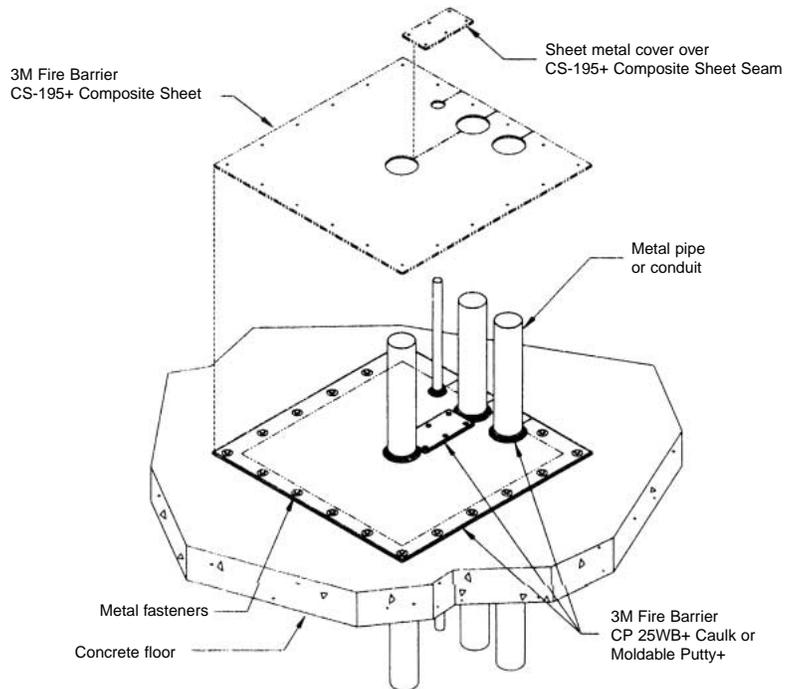
1. **Cover Sheet :** A CS-195+ Composite Sheet is cut to overlap the opening by a minimum of 2 in. (50,8 mm) installed with its galvanized steel surface facing outward (exposed). The cover sheet is secured to the opening using 1/4 in. (6,35 mm) x 1-1/2 in. (38,1 mm) steel masonry fasteners with steel washers spaced 6 in. (152,4 mm) O.C.
2. **Seal:** 3M Fire Barrier CP 25 WB+ Caulk, or Moldable Putty+ is used to seal the CS-195+ Composite Sheet.

Note: All wall openings require a cover sheet of CS-195+ Composite Sheet and caulk/putty on both sides of the wall.



B. Penetration firestop for large openings with pipe using CS-195+ Composite Sheet. Refer to current UL Fire Resistance Directory for system numbers.

1. **Cover Sheet:** The opening is covered with CS-195+ Composite Sheet cut to fit snugly around pipes and to overlap the opening by a minimum of 2 in. (50,8 mm). The sheet's galvanized steel layer should face outward (exposed).
2. The CS-195+ Composite Sheet is secured with 1/4 in. (6,35 mm) x 1-1/2 in. (38,1 mm) steel masonry fasteners with steel washers spaced 6 in. (152,4 mm) O.C.
3. **Seal:** 3M Fire Barrier CP 25 WB+ Caulk and Moldable Putty+ is used to seal the CS-195+ Composite Sheet.



C. Penetration Firestop for Insulated Metal Pipe through a cement block or concrete wall. Refer to current UL Fire Resistance Directory for system numbers.

1. The CS-195+ Composite Sheet must be placed on both sides of the wall and overlap the edge of the opening a minimum of 2 in. (50,8 mm).
2. Use a minimum of 1 layer of FS-195+ Wrap/Strip for a 1 in. (25,4 mm) thickness of insulation. Use a minimum of 2 layers of FS-195+ Wrap/Strip for a 2 in. (50,8 mm) thickness of insulation. **Note:** It is not necessary to remove the pipe insulation as it passes through the wall.
3. Wrap the required number of layers of FS-195+ Wrap/Strip around the insulated pipe, foil side out. Secure the FS-195+ Wrap/Strip to the

insulated pipe using 16 gauge, minimum, stainless steel tie wire. Center the FS-195+ Wrap/Strip in the CS-195+ Composite Sheet so that approximately 7/8 in. (22,2 mm) of FS-195+ Wrap/Strip Composite Sheet surface.

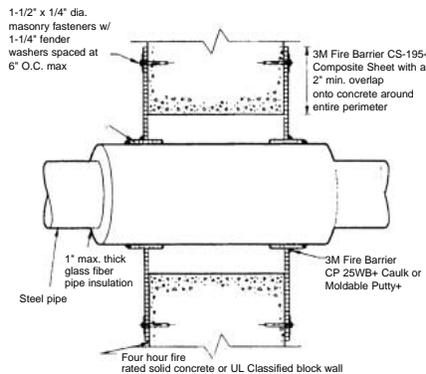
4. Cut the CS-195+ Composite Sheet to closely follow the contours of the FS-195+ Wrap/Strip around the insulated pipe. Do not allow an annular space greater than 1/8 in. (3,18 mm) to remain between the CS-195+ Composite Sheet and the FS-195+ Wrap/Strip.
5. Install the CS-195+ Composite Sheet with the foil side facing into the penetration opening. Apply a 1/8 in. (3,18 mm) minimum bead of CP 25 WB+ Caulk or Moldable Putty+ around the perimeter of the opening

on the concrete before installing the CS-195+ Composite Sheet. To allow for fastening, there must be a 2 in. (50,8 mm) minimum overlap of the CS-195+ Composite Sheet onto the concrete on all sides of the opening.

6. For seaming details when the CS-195+ Composite Sheet must be cut or joined together, use 3M print #5300-REF1.
7. Use a 1/8 in. (3,18 mm) minimum diameter bead of CP 25 WB+ Caulk or Moldable Putty+ to seal the interfaces between the CS-195+ Composite Sheet and the FS-195+ Wrap/Strip, and the FS-195+ Wrap/Strip and the pipe insulation.
8. Use masonry anchors with washers to secure the CS-195+ Composite Sheet to the substrate. The fasteners are spaced at a maximum of 6 in. (152,4 mm) O.C.

7. 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).



8. Availability

3M Fire Barrier CS-195+ Composite Sheets are available from authorized 3M Fire Protection Products Distributors.

Other 3M Fire Protection Products:

FS-195+ Wrap/Strip - 2 in. x 24 in. (50,8 mm x 609,6 mm)

CP 25 WB+ Caulk - 10.1 fl. oz. cartridge, 20.0 fl. oz. sausage, 28.0 fl. oz. cartridge 2 and 5 gallon pail.

Moldable Putty+ - Stik and Pads.

Warranty and Limited Remedy. This product will be free from defects in material and manufacture for a period of ninety (90) days from date of purchase. **3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of application. If this 3M product is proved to be defective within the warranty period stated above, your exclusive remedy and 3M's sole obligation shall be, at 3M's option, to replace or repair the 3M product or refund the purchase price of the 3M product.

Limitation of Liability. Except where prohibited by law, 3M will not be liable for any loss or damages arising from the use of this 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.

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