SECTION 07 84 00

FIRESTOPPING

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\*\* NOTE TO SPECIFIER \*\* 3M Fire Protection Products; Firestopping Systems.
This section is based on the products of 3M Fire Protection Products, which is located at:
3M Center Bldg. 223-2N-21
St. Paul, MN 55144-1000
Toll Free Tel: 800-328-1687
Tel: 651-575-0441
Fax: 651-737-6043
Email: [request info (gwyoshida5@mmm.com)](http://admin.arcat.com/users.pl?action=UserEmail&company=3M+Fire+Protection+Products&coid=38199&rep=&fax=651-737-6043&message=RE:%20Spec%20Question%20(07840_3m):%20%20&mf=)
Web: <http://www.3m.com/firestop>

 [ [Click Here](http://www.arcat.com/arcatcos/cos38/arc38199.html) ] for additional information.

3M Fire Protection Products has been creating innovative passive fire protection systems for more than 30 years. Our complete line of fire protection products helps stop the spread of fire, smoke and toxic fumes. They are easy to install and are approved for a wide variety of firestop applications by Underwriters Laboratories, Factory Mutual and Intertek Testing Service (formerly known as Omega Point Laboratories.) .

See our SpecWizard: [Click Here](http://www.arcat.com/specwizard/07840_3m/index.htm)

1. GENERAL
	1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Firestopping systems including the following:
			1. Fire resistive joint fire containment.
			2. Fire containment for single membrane penetrations.
			3. Penetrations through fire-rated vertical and horizontal assemblies.
			4. Firestop sealants.
			5. Firestop pillows.
			6. Firestop composite sheets.
			7. Firestop tapes.
			8. Firestop wrap strips.
			9. Firestop putty.
			10. Firestop mortar.
			11. Firestop sprays.
			12. Through penetration firestopping.
	1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 03 30 00 - Cast-in-Place Concrete.
		2. Section 04 21 29 - Terra Cotta Masonry.
		3. Section 07 90 00 - Joint Protection.
		4. Section 09 20 00 - Plaster and Gypsum Board.
		5. Section 22 40 00 - Plumbing Fixtures.
		6. Section 23 80 00 - Decentralized HVAC Equipment.
		7. Section 26 05 00 - Common Work Results for Electrical.
		8. Section 27 11 23 - Communications Cable Management and Ladder Rack.
	1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. American National Standards Institute (ANSI):
			1. ANSI/UL 263 - Fire Tests of Building Construction and Materials.
			2. ANSI/UL 723 - Surface Burning Characteristics of Building Materials.
			3. ANSI/UL 1479 - Standard for Fire Tests of Through-Penetration Firestops.
			4. ANSI/UL 1709 - Rapid Rise Fire Tests of Protection Materials for Structural Steel.
			5. ANSI/UL 2079 - Tests for Fire Resistance of Building Joint Systems.
		2. ASTM International (ASTM):
			1. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
			2. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
			3. ASTM E 814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
			4. ASTM E 1399 - Standard Test Method for Cyclic Movement and Measuring the Minimum and Maximum Joint Widths of Architectural Joint Systems.
			5. ASTM E 1966 - Standard Test Method for Fire Resistive Joint Systems.
			6. ASTM E 1529 - Standard Test Methods for Determining Effects of Large Hydrocarbon Pool Fires on Structural Members and Assemblies.
			7. ASTM E 1725 - Standard Test Methods for Fire Tests of Fire-Resistive Barrier Systems for Electrical System Components.
			8. ASTM E 2307 - Fire Tests of Perimeter Fire Barrier Systems Using Intermediate Scale, Multi-Story Test Apparatus.
		3. FM Global (FM) - FM4991 - Standard for Approval of Firestop Contractors.
		4. International Code Congress (ICC):
			1. International Building Code (IBC).
			2. International Residential Code (IRC).
		5. National Fire Protection Association (NFPA):
			1. NFPA 70 - National Electrical Code.
			2. NFPA 101 - Life Safety Code.
		6. Underwriters Laboratories (UL) - UL Building Materials Directory; Through-Penetration Firestops Systems (XHEZ), Joint Systems (XHBN), Firestop Devices (XHJI), Forming Materials (XHKU), Wall Opening Protective Materials (CLIV), and Fill, Void or Cavity Materials (XHHW).
	1. PERFORMANCE REQUIREMENTS
		1. Provide systems that are listed by at least one the following:

\*\* NOTE TO SPECIFIER \*\* Delete any of the following independent testing agencies whose listings would not be acceptable to the authorities having jurisdiction.

* + - 1. Underwriters Laboratories Inc. (UL), in "Fire Resistance Directory".
			2. Intertek Testing Service (Formerly known as Omega Point Laboratories), in "Directory of Listed Products."
			3. Any other qualified independent testing and inspection agency that conducts periodic follow-up inspections and is acceptable to authorities having jurisdiction.
		1. Provide firestop products that are flexible enough to allow for pipe vibration in a through penetration application.
		2. Provide firestop sealants and sprays for construction joint applications that are flexible enough to satisfy the movement criteria per the test standards ASTM E 1399, ASTM E 1966 or ANSI/UL 2079.
		3. Provide products that meet the intent of the L rating classification for the movement of smoke per ANSI/UL 1479 for through penetrations and ANSI/UL 2079 for construction joints.
		4. Provide products identical to those tested and listed for classification by UL, Intertek or any other qualified independent testing agency.
		5. Provide products that bear classification marking of qualified independent testing agency.
		6. Where firestop systems not listed by any listing agency are required due to project conditions, submit a substitution proposal with evidence specified.
		7. Use only products specifically listed for use in listed systems.
		8. Provide products that are compatible with each other, with the substrates forming openings, and with the items, if any, penetrating the firestopping, under the conditions represented by this project, based on testing and field performance demonstrated by manufacturer.
		9. Firestopping materials must meet and be acceptable for use by all building codes and NFPA codes cited in this section.
	1. SUBMITTALS
		1. Submit under provisions of Section 01 30 00.
		2. Shop Drawings: For each firestopping system, provide the following:
			1. Listing agency's detailed drawing showing opening, penetrating item(s), and firestopping materials, identified with listing agency's name and number or designation and fire rating achieved. .
			2. For proposed systems that do not conform strictly to the listing, submit listing agency's drawing marked to show modifications and approved by firestop system manufacturer.
		3. Product Certificates: Submit certificates of conformance signed by firestop system manufacturer certifying that materials furnished comply with requirements.
		4. Product Data: Furnish manufacturer's product data sheets on each material to be used in firestop systems. Information on manufacturer's product data sheet should include:
			1. Product characteristics including compliance with appropriate ASTM/UL/ANSI test standards.
			2. Storage and handling requirements and recommendations.
		5. Installation Instruction: Furnish manufacturer's installation instructions.
	2. QUALITY ASSURANCE
		1. General: All through-penetration firestop systems shall be installed with approved methods using materials that have been tested and classified to produce an approved assembly.
		2. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of twenty five (25) years experience.
		3. Installer Qualifications: Firm must be qualified by having experience, staff, and be properly trained to install the specified products, and meets the following criteria:

\*\* NOTE TO SPECIFIER \*\* 3M recommends that only 3M Master Contractors or Certified 3M Trained Contractors be used. Delete options below that are not required.

* + - 1. Contractor is a 3M Master Contractor.
			2. Contractor is a Certified 3M Trained contractor.
			3. Contractor is acceptable to manufacturer.
			4. Contractor is acceptable to authority having jurisdiction.
			5. Contractor has completed the manufacturer's certified product installation training.
			6. Contractor must provide a list of completed projects as evidence of experience; include project name and address, owner's name and address, and architect's name and phone number.
			7. Certificate: Contractor should provide certificate of qualification.
		1. Codes: Where manufacturer's application procedures are in conflict with those of the code authority having jurisdiction, the more strict guidelines will prevail.
		2. Pre-installation Meetings: Meetings to agree on firestop requirements, conditions, manufacturer's instructions.
	1. DELIVERY, STORAGE, AND HANDLING
		1. Deliver and store products until ready for installation in manufacturer's original unopened packaging, legibly marked with manufacturer's name and product identification, date of manufacture, lot number, shelf life, listing agency's classification marking, curing time, and mixing instructions if applicable.
		2. Store and handle in such a manner as to prevent deterioration or damage due to moisture, temperature changes, contaminants, and other causes; follow manufacturer's instructions.
		3. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.
	2. PROJECT CONDITIONS
		1. Coordinate construction and cutting of openings so that each particular firestop system may be installed in accordance with its listing, including sizing, sleeves, and penetrating items.
		2. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install firestopping under environmental conditions outside manufacturer's absolute limits.
		3. Provide ventilation as required by firestopping manufacturer, including mechanical ventilation if required.
	3. WARRANTY
		1. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: 3M Fire Protection Products, which is located at: 3M Center Bldg. 223-2N-21; St. Paul, MN 55144-1000; Toll Free Tel: 800-328-1687; Tel: 651-575-0441; Fax: 651-737-6043; Email: [request info (gwyoshida5@mmm.com)](http://admin.arcat.com/users.pl?action=UserEmail&company=3M+Fire+Protection+Products&coid=38199&rep=&fax=651-737-6043&message=RE:%20Spec%20Question%20(07840_3m):%20%20&mf=); Web: <http://www.3m.com/firestop>
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.
		3. Single Source: To maintain control and integrity of the firestop applications a single manufacturer should be used. Specific UL or approved listing agencies systems applicable to each type of firestop condition should be supplied by one manufacturer.
	2. SCOPE/APPLICATION
		1. Provide installed firestop protects that limit the spread of fire, heat, smoke, and gasses through otherwise unprotected openings in rated assemblies, including walls, partitions, floors, roof/ceilings, and similar locations, restoring the integrity of the fire rated construction to its original fire rating.

\*\* NOTE TO SPECIFIER \*\* Retain the next paragraph if Firestopping for Through Penetrations is specified.

* + 1. Provide firestop systems listed for the specific combination of fire rated construction, type of penetrating item, annular space requirements, and fire rating, and the following criteria:
			1. F-Rating: Equal to or greater than the fire-resistance rating of the assembly in which the firestopping will be installed.
			2. T-Rating: In habitable areas where penetrating items are exposed to potential contact with materials on fire side(s) of rated assembly, T-rating must equal its F-rating.
			3. L-Rating: L-rating of 1 cfm per linear foot (5.5 cu m/h/m) maximum at ambient temperatures.
			4. Wall Penetrations: Systems must be symmetrical, with the same rating from both sides of the wall.
			5. Testing: Determine ratings in accordance with ASTM E 814 or UL 1479.

\*\* NOTE TO SPECIFIER \*\* Retain the next paragraph if Firestopping for Construction Gaps is specified.

* + 1. Provide firestopping systems listed for construction gaps per the specific combination of fire-rated construction type, configuration, gap dimensions, and fire rating, and the following criteria:
			1. Fire resistance rating must be equal to or greater than that of the assembly in which it is to be installed.
			2. Movement capability must be appropriate to the potential movement of the gap, demonstrated by testing in accordance with ASTM E 1399 for minimum of 500 cycles at 10 cycles per minute.
			3. L-Rating: L-rating of 1 cfm per linear foot (5.5 cu m/h/m) maximum.
			4. Determine ratings in accordance with UL 2079.
	1. THROUGH PENETRATION FIRESTOP SYSTEMS

\*\* NOTE TO SPECIFIER \*\* Retain only products required on this project from the following options.

* + 1. 3M Fire Barrier Cast-in-Place Devices: Firestopping device for use prior to a concrete pour. Adjustable height with pull tabs, straight edge design for close placement to walls and adjacent devices.
			1. Fire Resistance: For use in 1, 2, or 3 hour fire rated systems.
		2. 3M Fire Barrier Ultra Plastic Pipe Device: Intumescent device for firestopping of plastic pipe and cables through rated walls and floors.
			1. Configuration: One-piece metal collar, with locking latch and bendable tabs to secure; equipped also for conventional anchoring.
			2. Fire Resistance: For use in 1, 2 or 3 hour fire rated systems.

\*\* NOTE TO SPECIFIER \*\* Specify either FS 195+ Wrap Strip or 3M Interam Ultra GS Wrap Strip when specifying this product. See "Q" or "R" below.

* + 1. 3M Fire Barrier RC-1 Restricting Collar: For firestopping of plastic pipes from 4 inches (102 mm) to 10 inches (254mm) in diameter.
			1. Material: 28 gauge steel.
			2. Size: 25 foot (7.6 m) roll.
		2. 3M Fire Barrier CP25WB+ Sealant: Intumescent water-based latex caulk. No-sag, fast drying, paintable, red in color.
			1. Fire Resistance: For use in 1, 2, 3 or 4 hour fire rated systems.
		3. 3M Fire Barrier IC 15WB+ Sealant: Intumescent latex based sealant. No-sag, fast drying, paintable.
			1. Fire Resistance: For use in 1, 2 or 3 hour fire rated systems.
		4. 3M FireDam 150+ Acrylic Latex Sealant: Single part, water based, acrylic latex sealant. No-sag, low-shrinkage, low VOC.
			1. Fire Resistance: For use in 1, 2 or 3 hour fire rated systems.
		5. 3M Fire Barrier Watertight Silicone 3000 WT Sealant: Water-tight intumescent silicone sealant for filling voids in concrete gypsum, metal, plastic, wood and insulation.
			1. Fire Resistance: For use in 1, 2, 3 or 4 hour fire rated systems.
		6. 3M Fire Barrier 1000 NS Silicone Sealant: Non-slump firestopping sealant for floor and wall openings.
			1. Hardness (ASTM C 661): 1000 NS: 20 - 25.
			2. Service Temperature (ASTM C 1299): -60 - 300 degrees F (-51 - 149 degrees C).
			3. Fire Resistance: For use in 1, 2 or 3 hour fire rated systems..
		7. 3M Fire Barrier 1003 SL Silicone Sealant: Self-leveling firestopping sealant for floor openings.
			1. Hardness (ASTM C 661): 1003 SL: 10 - 15.
			2. Service Temperature (ASTM C 1299): -60 - 300 degrees F (-51 - 149 degrees C).
			3. Fire Resistance: For use in 1, 2 or 3 hour fire rated systems..
		8. 3M Fire Barrier Moldable Putty+: One-part, 100 percent solids intumescent firestop. Remains pliable, flexible and easily re-enterable. Non-toxic synthetic formula.
			1. Type: Stick or Pad
			2. Fire Resistance: For use in 1, 2 or 3 hour fire rated systems.
		9. 3M Fire Barrier Mortar: For sealing openings in concrete and masonry walls and floors. Self Leveling, non-sag, low VOC.
			1. Fire Resistance: For use in 1, 2 or 3 hour fire rated systems.
		10. 3M Fire Barrier Rated Foam FIP 1-Step: Premium two-part, easy-to-handle formulation. Dries to a flexible solid. During a fire, product maintains a tight firestop against smoke and flame.
			1. Fire Resistance: For use in 1 or 2 hour fire rated systems.
			2. Tested to the criteria of ASTM E 814 / UL 1479.
		11. 3M Fire Barrier Self-Locking Pillow: Self-contained, intumescent firestop pillow with interlocking strips. Meets fire rating without the use of wire mesh.
			1. Fire Resistance: For use in 1, 2 or 3 hour fire rated systems.
		12. 3M Fire Barrier Pillow: Self-contained, intumescent firestop product. Meets fire rating without the use of wire mesh.
			1. Fire Resistance: For use in 1, 2 or 3 hour fire rated systems.
		13. 3M Fire Barrier CS-195+ Composite Sheet: Organic/inorganic intumescent elastomeric sheet, bonded on one side to a layer of 28 gauge galvanized steel. Other side reinforced with steel-wire mesh and covered with aluminum foil. Re-enterable.
			1. Thickness: Nominal 0.3 inch (7.6 mm).
			2. Thermal Expansion: 8 - 10 times original size.
			3. Tensile Strength (ASTM D412): 93.6 psi (645 kPa)/489 percent.
			4. Fire Resistance: For use in 1, 2, 3 or 4 hour fire rated systems.
		14. 3M Interam Ultra GS Wrap Strip: Graphite based, flexible, largely inorganic, intumescent mat. For use firestopping around non-metallic piping..
			1. Fire Resistance: For use in 1, 2 or 3 hour fire rated systems.
		15. 3M Fire Barrier FS-195+ Wrap/Strip: One-part, organic/inorganic intumescent strip with foil on one side. May be cut to fit irregular shapes.
			1. Length: 24 inch (610 mm).
			2. Width: 1 or 2 inches.
			3. Fire Resistance: For use in 1, 2, 3 or 4 hour fire rated systems.
		16. 3M Fire Barrier Pass Through Devices: One-Piece device for firestopping of cable penetrations through rated walls and floors.
			1. Fire Resistance: For use in 1, 2 or 3 hour fire rated systems.

\*\* NOTE TO SPECIFIER \*\* The following article is for firestopping of construction gaps. Retain only products required or delete the entire article if not required.

* 1. FIRESTOPPING FOR CONSTRUCTION GAPS

\*\* NOTE TO SPECIFIER \*\* Retain only products required on this project from the following four options.

* + 1. 3M FireDam 150+ Acrylic Latex Sealant: Single part, water based, acrylic latex sealant. Endothermic, no-sag, low-shrinkage, low VOC.
			1. Fire Resistance: For use in 1, 2 or 3 hour fire rated systems.
		2. 3M Fire Barrier 2000+ Silicone Sealant: Elastomeric, firestopping sealant.
			1. Compression/Extension Recovery: +/- 15 percent of original joint width.
			2. Fire Resistance: For use in 1, 2, 3 or 4 hour fire rated systems.
		3. 3M FireDam Spray 200: Water based, spray applied firestopping for use at head-of-wall, wall-to-wall, floor-to-floor and perimeter joints. Paintable, low VOC.
			1. Compression/Extension Recovery: +/- 25 percent of joint width.
			2. Fire Resistance: For use in 1, 2, 3 or 4 hour fire rated systems.

\*\* NOTE TO SPECIFIER \*\* The following article is for firestopping of penetrations such as electrical boxes, medical gas boxers and outlet and switch boxes. Retain only products required or delete the entire article if not required.

* 1. FIRESTOPPING FOR SINGLE MEMBRANE PENETRATIONS
		1. 3M Fire Barrier Moldable Putty+: One-part, 100 percent solids intumescent firestop. Remains pliable, flexible and easily re-enterable. Non-toxic synthetic formula.
			1. Type: Pad.
			2. Fire Resistance: For use in 1, 2 or 3 hour fire rated systems.
		2. 3M Endothermic Mat E-5A-4: Endothermic heat absorbing mat.
			1. Type: Mat.
			2. Fire Resistance: For use in 1 or 2 hour fire rated systems.
1. EXECUTION
	1. EXECUTION
		1. Do not begin installation until substrates have been properly prepared.
		2. Conduct tests according to manufacturer's written recommendations to verify that substrates are free of oil, grease, rolling compounds, incompatible primers, loose mill scale, dirt and other foreign substances capable of impairing bond of firestopping.
		3. Verify that items penetrating fire rated assemblies are securely attached, including sleeves, supports, hangers, and clips.
		4. Verify that openings and adjacent areas are not obstructed by construction that would interfere with installation of firestopping, including ducts, piping, equipment, and other suspended construction.
		5. Verify that environmental conditions are safe and suitable for installation of firestopping.
		6. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
	2. PREPARATION
		1. Prepare substrates in accordance with manufacturer's instructions and recommendations.
		2. Install masking and temporary coverings as required to prevent contamination or defacement of adjacent surfaces due to firestopping installation.
	3. INSTALLATION
		1. Install in strict accordance with manufacturer's detailed installation instructions and procedures.
		2. Install so that openings are completely filled and material is securely adhered.
		3. Where firestopping surface will be exposed to view, finish to a smooth, uniform surface flush with adjacent surfaces.
		4. After installation is complete, remove combustible forming materials and accessories that are not part of the listed system.
		5. Repair or replace defective installations to comply with requirements.
		6. At each through penetration, attach identification labels on both sides in location where label will be visible to anyone seeking to remove penetrating items or firestopping.
		7. Clean firestop materials off surfaces adjacent to openings as work progresses, using methods and cleaning materials approved in writing by firestop system manufacturer and which will not damage the surfaces being cleaned.
		8. Notify authority having jurisdiction when firestopping installation is ready for inspection; obtain advance approval of anticipated inspection dates and phasing, if any, required to allow subsequent construction to proceed.
		9. Do not cover firestopping with other construction until approval of authority having jurisdiction has been received.

\*\* NOTE TO SPECIFIER \*\* This article is optional. Delete if not required.

* 1. FIELD QUALITY CONTROL
		1. Owner will engage an independent testing agency to inspect installed firestopping and to prepare reports indicating whether the installed work complies with the contract documents.
		2. Notify testing agency at least 7 days prior to date when firestopping installation will be ready for inspection; obtain advance approval of general schedule and phasing, if any, required to allow subsequent construction to proceed.
	2. CLEANING AND PROTECTION
		1. Remove left over material and debris from Work area. Use necessary means to protect film before, during, and after installation.
		2. Touch-up, repair or replace damaged products before Substantial Completion.
		3. Install identification Labels for Through Penetration and Construction Joint Systems: Pressure sensitive self-adhesive vinyl labels, preprinted with the following information:
			1. The words "Warning - Through Penetration Firestop System - Do not Disturb. Notify Building Management of Any Damage."
			2. Listing agency's system number or designation.
			3. System manufacturer's name, address, and phone number.
			4. Installer's name, address, and phone number.
			5. General contractor's name, address, and phone number (if applicable).
			6. Date of installation.

END OF SECTION