



SECTION 07 84 43
FIRE RESISTIVE JOINT SYSTEMS
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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Firestopping products and systems including the following:
 - 1. Fire and Water Barrier Tapes, Smoke and Sound Tapes.
 - 2. Fire resistive joint fire containment for the following conditions:
 - a. Perimeter (curtain wall) joints.
 - b. Head-of-wall joints.
 - c. Wall-to-wall joints.
 - d. Bottom-of-wall joints.
 - e. Floor-to-floor joints.

1.2 RELATED SECTIONS

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 04 21 29 - Terra Cotta Masonry.
- C. Section 04 22 00 - Concrete Unit Masonry.
- D. Section 07 21 00 - Thermal Insulation.
- E. Section 07 84 13 - Through Penetration Firestopping.
- F. Section 07 84 53 - Building Perimeter Firestopping.
- G. Section 07 90 00 - Joint Protection.
- H. Section 07 95 99 - Expansion Control.
- I. Section 09 20 00 - Plaster and Gypsum Board.

1.3 REFERENCES

- A. Underwriters Laboratories (UL) - UL Building Materials Directory; Joint Systems (XHBN), Perimeter Fire Barrier Containment Systems (XHDG), Continuity Head-of-Wall Systems (XHBO), Firestop Devices (XHJI), Forming Materials (XHKU), Through-Penetration Firestops Systems (XHEZ), and Fill, Void or Cavity Materials (XHHW). UL Qualified Firestop Contractors Program.
 - 1. UL2079, "Tests for Fire Resistance of Building Joint Systems".
 - 2. UL263, "Fire Tests of Building Construction and Materials".
 - 3. UL723, "Surface Burning Characteristics of Building Materials".

- B. ASTM International (ASTM):
 1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 2. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
 3. ASTM E1399 - Standard Test Method for Cyclic Movement and Measuring the Minimum and Maximum Joint Widths of Architectural Joint Systems.
 4. ASTM E1966 - Standard Test Method for Fire Resistive Joint Systems.
 5. ASTM E2307 - Fire Tests of Perimeter Fire Barrier Systems Using Intermediate Scale, Multi-Story Test Apparatus.
- C. FM Global (FM) - FM4991 - Standard for Approval of Firestop Contractors.
- D. International Code Congress (ICC):
 1. International Building Code (IBC).
 2. International Residential Code (IRC).
- E. National Fire Protection Association (NFPA):
 1. NFPA 70 - National Electrical Code.
 2. NFPA 101 - Life Safety Code.
- F. 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).

1.4 PERFORMANCE REQUIREMENTS/CRITERIA

- A. Provide systems that incorporate firestop tapes that are listed by at least one of the following:
 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.
- B. Provide firestop tapes that meet the fire, cycling and inspection requirements of:
 1. ANSI/UL2079 "Tests for Fire Resistance of Building Joint Systems"
 2. ANSI/UL263 "Fire Tests of Building Construction and Materials"
 3. ANSI/UL723 "Surface Burning Characteristics of Building Materials"
 4. ASTM E1966 "Test Method for Fire Resistive Joint Systems"
 5. ASTM E119 "Fire Tests of Building Construction and Materials"
 6. ASTM E84 "Surface Burning Characteristics of Building Materials"
 7. ASTM E2307 "Fire Tests of Perimeter Fire Barrier Systems Using Intermediate Scale, Multi-Story Test Apparatus"
 8. ASTM E2837 "Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies"
 9. ASTM E2174 "Standard Practice for On Site Inspection of Installed Fire Stops"
 10. ASTM E2393 "Standard Practice for On Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers".
- C. Provide firestop tapes that are flexible enough to satisfy the movement criteria per the test standards ASTM E2837, ASTM E1966 or ANSI/UL 2079 and are able to withstand movement of the building caused by load, wind-sway, seismic activity or thermal changes.
- D. Provide firestop tapes 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.

- E. Provide firestop tapes that meet the intent of the Class 1 W rating for maintaining water tightness per ANSI/UL 1479 for through-penetrations and ANSI/UL 2079 for construction joints.
- F. Provide firestop tapes that immediately cure/adhere to substrates protecting against fire, smoke, water and sound.
- G. Provide products that do not require ventilation during installation.
- H. Provide products that do not use materials that contain solvents.
- I. Provide products that do not emit Volatile Organic Compounds.
- J. Provide products that do not require solvents during clean up.
- K. Provide products identical to those tested and listed for classification by UL, Intertek or any other qualified independent testing agency.
- L. Provide products that bear classification marking of qualified independent testing agency.
- M. Where firestop systems not listed by any listing agency are required due to project conditions, submit a substitution proposal with evidence specified.
- N. Firestopping materials must meet and be acceptable for use by all building codes and NFPA codes cited in this section.

1.5 SUBMITTALS

- A. Shop Drawings: For each firestopping system, provide the following:
 - 1. Listing agency's detailed drawing showing linear void 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.
- B. Product Certificates: Submit certificates of conformance signed by firestop system manufacturer certifying that materials furnished comply with requirements.
- C. 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.

1.6 QUALITY ASSURANCE

- A. General: All firestop systems shall be installed with approved methods using materials that have been tested and classified to produce an approved assembly.
- B. 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.
- C. Installer Qualifications: Firm must be qualified by having experience, staff, and be properly trained to install the specified products, and meets the following criteria:
 - 1. Contractor is a Certified 3M Trained contractor.
 - 2. Contractor is acceptable to manufacturer.

3. Contractor is acceptable to authority having jurisdiction.
 4. Contractor has completed the manufacturer's certified product installation training.
 5. Certificate: Contractor should provide certificate of qualification.
- D. Codes: Where manufacturer's application procedures are in conflict with those of the code authority having jurisdiction, the more strict guidelines will prevail.
- E. Pre-installation Meetings: Meetings to agree on firestop requirements, conditions, manufacturer's instructions.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. 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 and listing agency's classification marking.
- B. 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.
- C. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

1.8 PROJECT CONDITIONS

- A. 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.
- B. Do not install firestop systems that require ventilation or emit VOCs.
- C. Do not install firestop products that contain solvents or require solvents during clean up.
- D. Provide ventilation as required by firestopping manufacturer, including mechanical ventilation if required.

1.9 WARRANTY

- A. 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.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: 3M Fire Protection Products, which is located at: 3M Center Bldg. 220-5N-65; St. Paul, MN 55144-1000; Toll Free Tel: 800-328-1687; Email: firetech1@mmm.com; Web: www.3m.com/firestop
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.
- C. 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.

2.2 SCOPE/APPLICATION

- A. Provide installed firestop protects that limit the spread of fire, heat, smoke, water and sound through otherwise unprotected linear openings in rated assemblies, including head-of-wall, wall-to-wall, floor-to-floor, bottom-of-wall, perimeter joint and similar locations restoring the integrity of the fire rated construction to its original fire rating.
- B. Provide firestopping systems listed for linear construction joints 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 E1966 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.

2.3 FIRESTOPPING FOR CONSTRUCTION JOINTS

- A. 3M Fire and Water Barrier Tape: Water based tape for use at head-of-wall, wall-to-wall, floor-to-floor, bottom-of-wall and perimeter joints. Paintable, emits no VOCs.
 - 1. Compression/Extension Recovery: +/- 50 percent of joint width.
 - 2. Fire Resistance: For use in 1, 2 or 3 hour fire rated systems.

PART 3 EXECUTION

3.1 EXECUTION

- A. Do not begin installation until substrates have been properly prepared.
- B. 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.
- C. 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.
- D. Verify that environmental conditions are safe and suitable for installation of firestopping.
- E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Prepare substrates in accordance with manufacturer's instructions and recommendations.
- B. Install masking and temporary coverings as required to prevent contamination or defacement of adjacent surfaces due to firestopping installation.

3.3 INSTALLATION

- A. Install in strict accordance with manufacturer's detailed installation instructions and procedures.
- B. Install so that openings are completely filled and material is securely adhered.
- C. Repair or replace defective installations to comply with requirements.
- D. 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.

- E. Do not cover firestopping with other construction until approval of authority having jurisdiction has been received.

3.4 FIELD QUALITY CONTROL

- A. Owner shall engage an independent testing agency to inspect installed firestopping in accordance with ASTM E2393, "Standard Practice for On Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers."

3.5 CLEANING AND PROTECTION

- A. Remove left over material and debris from Work area. Use necessary means to protect tape before, during, and after installation.
- B. Touch-up, repair or replace damaged products before Substantial Completion.
- C. Installed tape for the purposes of firestopping shall contain the following information on the tape. Installers shall complete the information per the applicable UL, Intertek or 3rd Party Testing Agencies system:
 1. The words "Warning Do Not Remove"
 2. Listing agency's system number or designation.
 3. Installer's name, address, and phone number.
 4. Date of installation.

END OF SECTION