

SECTION 078413
PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Penetrations in fire-resistance-rated walls.
2. Penetrations in horizontal assemblies.
3. Penetrations in smoke barriers.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Product Schedule: For each penetration firestopping system. Include location and design designation of qualified testing and inspecting agency.

1. Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping condition, submit illustration, with modifications marked, approved by penetration firestopping manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

1.3 INFORMATIONAL SUBMITTALS

A. Installer Certificates: From Installer indicating penetration firestopping has been installed in compliance with requirements and manufacturer's written recommendations.

B. Product test reports.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."

B. Fire-Test-Response Characteristics: Penetration firestopping shall comply with the following requirements:

1. Penetration firestopping tests are performed by UL.
2. Penetration firestopping is identical to those tested per testing standard referenced in "Penetration Firestopping" Article. Provide rated systems bearing marking of qualified testing and inspection agency.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. A/D Fire Protection Systems Inc.
 2. Grace Construction Products.
 3. Hilti, Inc.
 4. Johns Manville.
 5. Nelson Firestop Products.
 6. NUCO Inc.
 7. Passive Fire Protection Partners.
 8. RectorSeal Corporation.
 9. Specified Technologies Inc.
 10. 3M Fire Protection Products.
 11. Tremco, Inc.; Tremco Fire Protection Systems Group.
 12. USG Corporation.

2.2 PENETRATION FIRESTOPPING

- A. Provide penetration firestopping that is produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
- B. Penetrations in Fire-Resistance-Rated Walls: Ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).
1. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- C. Penetrations in Horizontal Assemblies: Ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).
1. F-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated.

2. T-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
- D. Penetrations in Smoke Barriers: Provide penetration firestopping with ratings determined per UL 1479.
1. L-Rating: Not exceeding 5.0 cfm/sq. ft. (0.025 cu. m/s per sq. m) of penetration opening at 0.30-inch wg (74.7 Pa) at both ambient and elevated temperatures.
- E. Exposed Penetration Firestopping: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- F. VOC Content: Penetration firestopping sealants and sealant primers shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
1. Sealants: 250 g/L.
 2. Sealant Primers for Nonporous Substrates: 250 g/L.
 3. Sealant Primers for Porous Substrates: 775 g/L.
- G. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping manufacturer and approved by qualified testing and inspecting agency for firestopping indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. Install penetration firestopping to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.
- C. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestopping.

- D. Install fill materials for firestopping by proven techniques to produce the following results:
1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.2 IDENTIFICATION

- A. Identify penetration firestopping with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of firestopping edge so labels will be visible to anyone seeking to remove penetrating items or firestopping. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
 2. Contractor's name, address, and phone number.
 3. Designation of applicable testing and inspecting agency.
 4. Date of installation.
 5. Manufacturer's name.
 6. Installer's name.

3.3 FIELD QUALITY CONTROL

- A. Owner will engage a qualified testing agency to perform tests and inspections.
- B. Where deficiencies are found or penetration firestopping is damaged or removed because of testing, repair or replace penetration firestopping to comply with requirements.
- C. Proceed with enclosing penetration firestopping with other construction only after inspection reports are issued and installations comply with requirements.

3.4 PENETRATION FIRESTOPPING SCHEDULE

- A. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory" under product Category XHEZ.
- B. Where Intertek ETL SEMKO-listed systems are indicated, they refer to design numbers in Intertek ETL SEMKO's "Directory of Listed Building Products" under "Firestop Systems."

- C. Where FM Global-approved systems are indicated, they refer to design numbers listed in FM Global's "Building Materials Approval Guide" under "Wall and Floor Penetration Fire Stops."

- D. Firestopping with No Penetrating Items:
 - 1. UL-Classified Systems: 0001-0999.
 - 2. Type of Fill Materials: One or more of the following:
 - a. Latex sealant
 - b. Silicone sealant
 - c. Intumescent putty
 - d. Mortar

- E. Firestopping for Metallic Pipes, Conduit, or Tubing:
 - 1. UL-Classified Systems: 1001-1999.
 - 2. Type of Fill Materials: One or more of the following:
 - a. Latex sealant
 - b. Silicone sealant
 - c. Intumescent putty
 - d. Mortar
 - 3.

- F. Firestopping for Nonmetallic Pipe, Conduit, or Tubing:
 - 1. UL-Classified Systems: 2001-2999.
 - 2. Type of Fill Materials: One or more of the following:
 - a. Latex sealant
 - b. Silicone sealant
 - c. Intumescent putty
 - d. Intumescent wrap strips
 - e. Firestop device
 - 3.

- G. Firestopping for Electrical Cables:
 - 1. UL-Classified Systems: 3001-3999.
 - 2. Type of Fill Materials: One or more of the following:
 - a. Latex sealant
 - b. Silicone sealant
 - c. Intumescent putty
 - d. Silicone foam
 - e. Pillows/bags

- H. Firestopping for Cable Trays with Electric Cables:
 - 1. UL-Classified Systems: 4001-4999.
 - 2. Type of Fill Materials: One or more of the following:

- a. Latex sealant
 - b. Intumescent putty
 - c. Silicone foam
 - d. Pillows/bags
 - e. Mortar
- 3.
- I. Firestopping for Insulated Pipes:
1. UL-Classified Systems: 5001-5999.
 2. Type of Fill Materials: One or more of the following:
 - a. Latex sealant
 - b. Intumescent putty
 - c. Silicone foam
 - d. Pillows/bags
 - e. Mortar
- J. Firestopping for Miscellaneous Electrical Penetrants:
1. UL-Classified Systems: 6001-6999.
 2. Type of Fill Materials: One or more of the following:
 - a. Latex sealant
 - b. Intumescent putty
 - c. Mortar
- K. Firestopping for Miscellaneous Mechanical Penetrants:
1. UL-Classified Systems: 7001-7999.
 2. Type of Fill Materials: One or more of the following:
 - a. Latex sealant
 - b. Mortar
- L. Firestopping for Groupings of Penetrants:
1. UL-Classified Systems: 8001-8999.
 2. Type of Fill Materials: One or more of the following:
 - a. Latex sealant
 - b. Mortar
 - c. Intumescent wrap strips
 - d. Firestop device
 - e. Intumescent composite strip

END OF SECTION 078413