

**OKLAHOMA STATE UNIVERSITY - BUILDING DESIGN STANDARDS**

PART 1 GENERAL

1.01 SYSTEM PERFORMANCE REQUIREMENTS:

A. General:

1. Provide firestopping systems that are produced and installed to resist the spread of fire and the passage of smoke and other gases.

B. F-Rated Through-Penetration Firestop Systems:

1. Provide through-penetration firestop systems with F ratings required, as determined per ASTM E 814, but not less than that equaling or exceeding the fire-resistance rating of the constructions penetrated.

C. T-Rated Through-Penetration Firestop Systems:

1. Provide through-penetration firestop systems with T ratings, in addition to F-ratings, as determined per ASTM E 814, where systems protect penetrating items exposed to contact with adjacent materials in occupiable floor areas. T-rated assemblies are required where the following conditions exist:
  - a. Where firestop systems protect penetrations located outside of wall cavities.
  - b. Where firestop systems protect penetrations located outside fire-resistive shaft enclosures.
  - c. Where firestop systems protect penetrations located in construction containing doors required to have a temperature rise rating.
  - d. Where firestop systems protect penetrating items larger than a 4-inch-diameter nominal pipe or 16 sq. in. in overall cross-sectional area.

D. Fire-Resistive Joint Sealants:

1. Provide joint sealants with fire-resistance ratings required, as determined per ASTM E 119, but not less than that equaling or exceeding the fire-resistance rating of the construction in which the joint occurs.
2. **LEED EQ Credit 4.1: Low-Emitting Materials: Adhesives & Sealants. All sealants shall meet or exceed the VOC limits of South Coast Air Quality Management District (SCAQMD) Rule #1168.**

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E. Exposed-to-View Firestopping Materials:

1. For firestopping exposed to view, traffic, moisture, UV radiation and physical damage, provide products that do not deteriorate when exposed to these conditions.
  - a. For piping penetrations for plumbing and wet pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
  - b. For floor penetrations with annular spaces exceeding four inches or more in width and exposed to possible loading and traffic, provide firestop systems capable of supporting the floor loads involved either by installing floor plates or by other means.
  - c. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.
2. For firestopping exposed to view, provide products with flame spread values of less than twenty-five and smoke developed values of less than 450, as determined per ASTM E 84.

1.02 SUBMITTALS:

A. Certifications:

1. Submit manufacturer's certification that materials supplied are in accordance with the specifications and requirements of the authorities having jurisdiction.
2. Submit certification that materials supplied are VOC compliant and are non-toxic to building occupants.

B. Test Reports:

1. Submit product test reports from a qualified testing and inspecting agency, who is acceptable to ICBO and the Oklahoma State University Department of Environmental Health and Safety.

C. Penetrations Schedule:

1. Submit a schedule showing typical penetrations of each penetrating material type, firestopping type to be used, F ratings, T ratings, UL or other acceptable testing agency reference numbers and other pertinent data.

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1.03 QUALITY ASSURANCE:

A. Fire-Test Response Characteristics:

1. Provide firestopping that complies with the following requirements and those specified under the "System Performance Requirements" article:
  - a. Perform firestopping tests by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL, Warnock Hersey or another agency performing testing and follow-up inspection services for firestop systems that is acceptable to the Oklahoma State University Department of Environmental Health and Safety.
  - b. Through-penetration firestop systems must be identical to those tested per ASTM E 814 under conditions, where positive furnace pressure differential of a least 0.01 inch of water is maintained at a distance of 0.78 inch below the fill materials surrounding the penetrating items in the test assembly. Provide rated systems complying with the following requirements:
    - i Furnish products bearing classification marking of qualified testing and inspecting agency.
    - ii Furnish firestop systems corresponding to those indicated by reference to system designations listed by UL in their "Fire Resistance Directory" or by Warnock Hersey.
  - c. Fire-resistive joint sealant systems must be identical to those tested for fire response characteristics per ASTM E 119 under conditions where the positive furnace pressure differential is at least 0.01 inch of water, as measured 0.78 inch from the face exposed to furnace fire. Provide systems complying with the following requirements:
    - i Fire-Resistance Ratings of Joint Sealants: As indicated by reference to design designations listed by UL in their "Fire Resistance Directory."
    - ii Furnish joint sealants, including backing materials bearing classification marking of qualified testing and inspection agency.

B. Information on Drawings:

1. Drawings refer to specific design designations of through-penetration firestop systems intended to establish requirements for performance based on conditions that are expected to exist during installation. Any changes in conditions and designated systems require the Architect's prior approval. Submit documentation showing performance of proposed substitutions equals or exceeds that of systems they would replace and are acceptable to authorities having jurisdiction.

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C. Standards:

1. Conform to applicable standards, including, but not limited to:
  - a. ASTM E119 Method for Fire Tests of Building Construction and Materials.

*REVISE BELOW IF INFORMATION IS INDICATED OTHER THAN ON THE DRAWINGS.*

- b. ASTM E814 Test Method of Fire Tests of Through-Penetration.
  - c. Firestops.

D. Installer Qualifications:

1. Installer who has successfully completed within the last three years at least three firestopping applications similar in type and size to that of this project.

E. Single Source for Materials:

1. Obtain firestopping materials from a single manufacturer for each different product required.

F. Preconstruction Laboratory Tests:

1. Submit substrate materials representative of actual joint surfaces to be sealed to manufacturer of firestopping products for laboratory testing of firestop materials for adhesion to primed and unprimed substrate joints and for compatibility with secondary seals, if required, as indicated below:
  - a. Use test methods standard with manufacturer to determine if priming and other specific substrate preparation techniques are required to obtain rapid, optimum adhesion of firestopping to substrate joints under environmental conditions that will exist during actual installation.
  - b. Testing will not be required when firestopping manufacturer is able to submit preparation data required above which is based on previous testing of current firestopping products for adhesion to, and compatibility with, substrates matching those submitted.

G. Detectable Asbestos:

1. Provide firestopping products containing no detectable asbestos as determined by the method specified in 40 CFR Part 763, Subpart F, Appendix A, Section 1, "Polarized Light Microscopy."

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1.04 WARRANTY:

- A. Submit two copies of written two -year warranty agreeing to repair or replace firestopping which fails to perform as airtight and watertight joints; or fails in joint adhesion, cohesion, abrasion resistance, weather resistance, extrusion resistance, migration resistance, stain resistance, or general durability; or appears to deteriorate in any other manner not clearly specified by submitted manufacturer's data as an inherent quality of the material for the exposure indicated.
- B. Provide warranty signed by the Installer and Contractor.

PART 2 PRODUCTS

2.01 MANUFACTURERS:

- A. Provide products by one of the following for each different product required:
  - 1. 3M Fire Protection Products.
  - 2. BioFiresield Inc.
  - 3. Tremco, Inc.
  - 4. An approved equal.

2.02 MATERIALS:

- A. Compatibility:
  - 1. Provide firestopping, joint fillers, dams and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by testing and field experience.
- B. Accessories:
  - 1. Provide components for each firestopping system that are needed to install fill materials and to comply with "System Performance Requirements" article in Part 1.01.
    - a. Use only components specified by the firestopping manufacturer and approved by the qualified testing and inspecting agency for designated fireresistancerated systems. Accessories include but are not limited to the following items:

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2. Permanent forming/damming/backing materials including the following:
  - a. Semi-refractory fiber (mineral wool) insulation.
  - b. Ceramic fiber.
  - c. Sealants used in combination with other forming/damming materials to prevent leakage of fill materials in liquid state.
    - i Fire-rated formboard.
    - ii Joint fillers for joint sealants.
  - d. Fire-Rated Backup for Fire-Resistant Joint Sealers: "Ultra Block" by Backer Rod Manufacturing and Supply Co.
  - e. Temporary forming materials.
  - f. Substrate primers.
  - g. Collars.
  - h. Steel sleeves.
- C. Applications:
  1. Provide firestopping systems composed of materials specified in this Section that comply with system performance and other requirements.

**END OF SECTION 07840**