

**SECTION 07 84 00
FIRESTOPPING**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Firestopping systems.
- B. Firestopping of joints and penetrations in fire resistance rated and smoke resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.2 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 07 21 00 - Thermal Insulation
- C. Section 07 92 00 - Joint Sealants
- D. Section 07 05 53 - Fire and Smoke Assembly Identification.
- E. Section 07 81 00 - Applied Fire Protection.
- F. Section 09 21 16 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

1.3 REFERENCE STANDARDS

- A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials 2020.
- B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems 2013a (Reapproved 2017).
- C. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems 2015 (Reapproved 2019).
- D. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestop Systems 2020a.
- E. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers 2020.
- F. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies 2013 (Reapproved 2017).
- G. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi 2015, with Editorial Revision (2021).
- H. ITS (DIR) - Directory of Listed Products Current Edition.
- I. FM (AG) - FM Approval Guide current edition.
- J. SCAQMD 1168 - Adhesive and Sealant Applications 1989, with Amendment (2017).

- K. UL 1479 - Standard for Fire Tests of Penetration Firestops Current Edition, Including All Revisions.
- L. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems Current Edition, Including All Revisions.
- M. UL (DIR) - Online Certifications Directory Current Edition.
- N. UL (FRD) - Fire Resistance Directory Current Edition.

1.4 SUBMITTALS

- A. Product Data: Provide data on product characteristics, performance ratings, and limitations.
- B. Sustainable Design Submittal: Submit VOC content documentation for all non-preformed materials.
- C. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Material Safety Data Sheets (MSDS).
- F. ICC-ES Evaluation Report.
- G. Shop Drawings: For each firestop system, show construction conditions, relationships to adjoining construction, anchorage methods, hardware and installation procedures including:
 - 1. Each sub contractor & General Contractor shall submit a tested rated assembly (UL or manufacturer's tested) for each type of rated penetration required for their work for the entire project.

1.5 QUALITY ASSURANCE

- A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with ASTM E814.
 - 1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.

1.6 FIELD CONDITIONS

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.1 STANDARD TEST METHODS

- A. Walls: Firestop Products used must have an F-rating of not less than the required fire resistance rating of the wall penetrated, as tested in accordance with ASTM E-814 or UL 1479.

- B. Floors: Firestop Products used must have an F-rating and a T-rating of not less than the required fire resistance rating of the wall penetrated, as tested in accordance with ASTM E-814 or UL 1479.

2.2 PRODUCTS AND MANUFACTURERS

A. FIRESTOP FOAM, SEALANTS AND CAULKING PRODUCT MANUFACTURERS:

1. 3M Fire Protection Products: www.3m.com/firestop/#sle.
2. A/D Fire Protection Systems Inc: www.adfire.com/#sle.
3. Tremco Commercial Sealants & Waterproofing; TREMstop Acrylic: www.tremcosealants.com/#sle.
4. FOMO Handi-Foam E-84 Low Pressure Polyurethane Foam, 2-part system available as a kit, www.fomofoam.com
5. Abesco FP200 Fire Rated Expanding Foam, www.abesco.net
6. DOW Corning 3-6548 Silicone RTV Foam Kit, www.dowcorning.com
7. Fastenal Intumescent Firestop Sealant, www.fastenal.com
8. Gypsum Board manufacturer's tested finish, sealant and caulking materials.

B. FIREBLOCK PRODUCTS AND MANUFACTURERS

1. Great Stuff - Pro Gaps & Cracks (fireblock) penetration sealing foam for use in Type V wood frame construction; manufactured by The Dow Chemical Company.
2. 2" nominal lumber or 2 thicknesses of 1" nominal lumber with broken lap joints.
3. 3/4" particleboard sheathing with joints backed by 3/4" particleboard sheathing.
4. 1/2" Gypsum Board.
5. Cement Fiber Board.
6. Batts or blankets of mineral wool or Glass Fiber which can be securely fastened in place.

C. DRAFTSTOP PRODUCTS AND MANUFACTURES

1. 1" nominal lumber.
2. 3/8" particleboard sheathing.
3. 1/2" Gypsum Board.
4. Cement Fiber Board.
5. Batts or blankets of mineral wool or Glass Fiber which can be securely fastened in place.

2.3 MATERIALS

- A. Firestopping, Fire Blocking, and Draftstopping Materials: Any materials meeting requirements.

- B. Prohibited Materials: Do not use loose fill material.
- C. Volatile Organic Compound (VOC) Content: Provide products having VOC content lower than that required by SCAQMD 1168.
- D. All caulks and sealants must comply with Regulation 8, Rule 51, of the Bay Area Air Quality Management District (BAAQMD).
- E. Mold and Mildew Resistance: Provide firestopping materials with mold and mildew resistance rating of zero(0) in accordance with ASTM G21.
- F. Fire Ratings: Refer to drawings for required systems and ratings.

2.4 FIRESTOPPING ASSEMBLY REQUIREMENTS

- A. Head-of-Wall Joint System Firestopping at Joints Between Fire-Rated Wall Assemblies and Non-Rated Horizontal Assemblies: Use system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of floor or wall, whichever is greater.
- B. Floor-to-Floor, Wall-to-Wall, and Wall-to-Floor Joints, Except Perimeter, Where Both Are Fire-Rated: Use system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
 - 1. Movement: Provide systems that have been tested to show movement capability as indicated.
 - 2. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
 - 3. Watertightness: Provide systems that have been tested to show W Rating as indicated.
 - 4. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.
- C. Through Penetration Firestopping: Use system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
 - 1. Temperature Rise: Provide systems that have been tested to show T Rating as indicated.
 - 2. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
 - 3. Watertightness: Provide systems that have been tested to show W Rating as indicated.
 - 4. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify openings are ready to receive the work of this section.

3.2 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.
- B. Remove incompatible materials that could adversely affect bond.
- C. Install backing materials to prevent liquid material from leakage.

3.3 INSTALLATION

- A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
- B. Do not cover installed firestopping until inspected by authorities having jurisdiction.
- C. Install labeling required by code.

3.4 FIRESTOPPING LOCATIONS

- A. Firestop Membrane and Through-penetrations of rated floors, walls, partitions, ceilings, and roofs.
- B. Use firestop devices, forming materials, and fill, void or cavity materials at all penetrations through rated construction where:
 - 1. Located outside of a fire-resistive shaft enclosure.
 - 2. Located in construction containing fire-protection-rated openings.
 - 3. Penetrating items are larger than 4 inches diameter nominal pipe or 16 square inches overall cross-sectional area.
- C. Protect annular spaces around pipes, wires, sleeves, etc. Fire-stop material shall be packed tight, and completely fill clearances between pipe, sleeves and structure.

3.5 FIREBLOCKING LOCATIONS

- A. Provide fireblocking in concealed spaces of stud walls and partitions, including furred spaces at masonry walls, and parallel rows of studs or staggered studs, as follows:
 - 1. Vertically at the ceiling and Floor levels, including where pipes, wires conduits, etc. penetrate the floor or ceiling plane.
 - 2. Horizontally at intervals not exceeding 10'.
- B. Fireblocking shall be provided at interconnections between concealed vertical stud walls and horizontal spaces created by an assembly of floor joists and trusses and between concealed vertical and horizontal spaces such as soffits, dropped ceiling, cove ceilings and similar locations.
- C. At penetrations through top and bottom plates in wood construction.
- D. Openings at wires, vents, pipes, conduits, chimneys and fireplaces in non-rated walls and ceilings.

- E. At concealed spaces behind architectural trim at maximum intervals of 20', with no open space exceeding 100 sf.
- F. Concealed sleeper spaces.

3.6 DRAFTSTOPPING LOCATIONS

- A. Concealed spaces of attics.
- B. Concealed spaces of floor systems.

3.7 MARKING AND IDENTIFICATION

- A. Fire Walls, Fire Barriers, Fire Partitions, smoke barriers and smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling. Such identification shall:
 - 1. Be located in accessible concealed floor, floor-ceiling or attic spaces;
 - 2. Be located within 15 feet of the ends of each wall and at intervals not exceeding 30 feet measured horizontally along the wall or partition; and
 - 3. Include lettering not less than 3" high with a minimum 3/8" stroke in a contrasting color incorporating the suggested wording "FIRE AND/OR SMOKE BARRIER- PROTECT ALL OPENINGS".
 - 4. This is not required in R-2 occupancies that do not have a removable decorative ceiling allowing access to the concealed space.

3.8 FIELD QUALITY CONTROL

- A. Independent Testing Agency: Inspection agency employed and paid by Client Agency, will examine penetration firestopping in accordance with ASTM E2174, and ASTM E2393.
- B. Repair or replace penetration firestopping and joints at locations where inspection results indicate firestopping or joints do not meet specified requirements.

3.9 CLEANING

- A. Clean adjacent surfaces of firestopping materials.

3.10 PROTECTION

- A. Protect adjacent surfaces from damage by material installation.

END OF SECTION