SECTION 07 84 00

FIRESTOPPING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section describes the requirements for furnishing and installing firestopping.

B. Related Sections:

1. Cementitious fireproofing is specified in Section 07 81 16.

2. Joint sealants are specified in Section 07 92 00.

3. Non-structural metal framing is specified in Section 09 22 16.

4. Gypsum board is specified in Section 09 29 00.

5. Acoustic insulation is specified in Section 09 81 00.

6. Plumbing is specified in Division 22.

7. Electrical is specified in Division 26.

1.02 SYSTEM PERFORMANCE REQUIREMENTS

A. General: Provide firestopping systems capable of closing or filling through-penetrations created by the burning or melting of combustible pipes, cable jacketing, or pipe insulation materials, or by the deflection of sheet metal due to thermal expansion.

B. For firestopping exposed to view, traffic, moisture, and physical damage, provide products that do not deteriorate when exposed to these conditions.

C. For firestopping exposed to view, provide products when flame-spread values of less than 25 and smoke-developed values of less than 450, when tested in accordance with ASTM E84.

1.03 SUBMITTALS

A. Product Data: Manufacturer's descriptive, technical data and illustrations. Include manufacturer's installation instructions.

B. Certification:

1. Manufacturer's certification that products comply with local regulations controlling use of volatile organic compounds (VOC's) and are nontoxic to building occupants.

2. Manufacturer's certification that firestopping materials comply with ASTM E814 and UL 147.

C. UL Design Numbers: Furnish UL Design No. from the "Fire Resistance Directory - Volume II" for each required penetration type and configuration. Indicate which materials will be used in firestopping the penetration. Reference architectural, mechanical, plumbing and electrical drawings.

D. Furnish documentation indicating deflection and elongation capacity of all head of wall assemblies are equivalent in capacity to design assemblies.

E. LEED Submittals:

1. Credit IEQ 4.1: Product data for adhesives and sealants used inside the weatherproofing system indicating VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D.

a. Furnish LEED Online Credit Template listing the adhesives and sealants used in the building and declaring that they meet the specified LEED requirements.

b. Required Audit Documentation:

1) Product data sheets and MSDS for each adhesive/sealant used on the interior, with the VOC content in g/L circled and indicating VOC content of each product used.

2) Summary table comparing credit VOC requirements and actual VOC levels for each product.

1.04 QUALITY ASSURANCE

A. Firestopping materials and systems shall be listed and labeled in accordance with requirements of Underwriters Laboratories, Inc. (UL) Building Materials Directory.

B. Firestopping materials shall conform to California Building Code (CBC) for fire resistance standards and requirements for penetrations in walls, partitions, and floor/ceiling and floor/roof assemblies.

C. Firestopping materials shall comply with ASTM E814 and UL 1479.

D. Firestopping sealants shall comply with ASTM C719 and ASTM C920.

E. Form materials to remain in place in the completed work and sealant used for firestopping work shall be UL listed and labeled.

F. Firestopping materials shall be rated as required when tested in accordance with ASTM E119.

G. Firestopping materials shall be asbestos free and shall not incorporate nor require the use of hazardous solvents.

H. Firestopping materials shall not shrink upon drying as evidenced by cracking or pulling back from contact surface.

I. Installer shall have a minimum of 5-years experience installing UL listed firestop systems in similar type construction.

1.05 ENVIRONMENTAL QUALITY ASSURANCE

A. Credit IEQ 4.1: Adhesives and sealants used on the interior of the building (defined as inside of the weatherproofing system and applied on-site) shall comply with the requirements of the following reference standards:

1. Adhesives, Sealants and Sealant Primers: Comply with South Coast Air Quality Management District (SCAQMD) Rule #1168. VOC limits as follows:

Architectural Applications	VOC Limit g/L less water	Specialty Applications	VOC Limit g/L less water
Indoor Carpet Adhesives	50	PVC welding	510
Carpet pad adhesives	50	CPVC welding	490
Wood flooring adhesives	100	ABS welding	325
Rubber floor adhesives	60	Plastic cement welding	250
Subfloor adhesives	50	Adhesive primer for plastic	550
Ceramic tile adhesives	65	Contact adhesive	80
VCT and asphalt adhesives	50	Special purpose contact adhesive	250
Drywall and panel adhesives	50	Structural wood member adhesive	140
Cove base adhesives	50	Sheet applied rubber lining operations	850
Multipurpose construction adhesives	70	Top and trim adhesive	250
Structural glazing adhesives	100		
Substrate Specific Applications	**VOC Limit g/L less water**	**Sealants**	**VOC Limit g/L less water**
Metal to Metal	30	Architectural	250
Plastic foams	50	Nonmembrane roof	300
Porous material (except wood)	50	Roadway	250
Wood	30	Single-ply roof membrane	450
Fiberglass	80	Other	420

Sealant Primers	VOC Limit (g/L less water)		
Architectural, nonporous	250		
Architectural, porous	775		
Other	750		

2. Aerosol Adhesives: Green Seal Standard for Commercial Adhesives GS-36 requirements in effect on October 19, 2000.

Aerosol Adhesives	VOC Limit
General purpose mist spray	65% VOCs by weight
General purpose web spray	55% VOCs by weight
Special purpose aerosol adhesives (all types)	70% VOCs by weight

B. Applicable LEED Credits:

1. Credit IEQ 4.1 – Low-Emitting Materials - Adhesives and Sealants.

1.06 JOB CONDITIONS

A. Follow manufacturer's instructions for temperature, ventilation, and other conditions for mixing and installing foam seals.

B. Observe and follow manufacturer's precautions when using materials considered toxic and hazardous.

C. Maintain current copy of UL "Fire Resistance Directory" on Project site.

D. Installation of firestopping shall precede finishing of gypsum board.

1.07 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in the manufacturer's unopened containers and packages with manufacturer's name, labels, product identification, lot numbers, and mixing and installation instructions, as applicable.

B. Store materials in unopened containers and packages, and under conditions recommended by manufacturer.

C. Store and handle firestopping materials in accordance with manufacturer's Material Safety Data Sheets.

1.08 PROJECT CONDITIONS

A. Environmental Conditions: Do not install firestopping when ambient or substrate temperatures are outside limits permitted by firestopping manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Ventilation: Ventilate firestopping in accordance with manufacturers' instructions by natural means or forced air circulation.

1.09 SEQUENCING AND SCHEDULING

A. Perform work of this and other Sections in proper sequence to prevent damage to the firestopping materials and to ensure that their installation will occur prior to enclosing or concealing work.

B. Do not cover firestopping materials until they have been properly inspected and accepted by the authority having jurisdiction.

PART 2 - PRODUCTS

2.01 FIRESTOPPING, GENERAL

A. Compatibility: Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the penetrating items.

B. Accessories: Provide components of each firestopping system required to install fill materials. Use only components specified by firestopping manufacturer and which are approved by UL for the designated fire-resistance-rated system.

C. Manufacturers or systems not listed in UL "Fire Resistance Directory" but who can furnish certification of UL approval may be used in the work.

2.02 THROUGH-PENETRATION FIRESTOPPING MATERIALS

A. General: Listed manufacturers of through-penetration firestopping are intended as guidelines only; manufacturer and material type shall be as required by the UL Design No. for each penetration to receive firestopping.

B. Approved Manufacturers: Hilti Construction Chemicals, Inc., International Protective Coatings Corp., Specified Technologies, Inc., The RectorSeal Corporation, Tremco, Inc., 3M Fire Protection Products or approved equal.

C. Provide mortar, sealants and caulk, putty, wrap strips, pillows, bags, and other types required for UL Design No. for each penetration to receive firestopping.

2.03 MINERAL FIBER FIRESTOPPING MATERIALS

A. Material: Semirigid mineral fiber insulation, minimum 4-pcf density; USG Interiors "Thermafiber Safing", Johns Manville "Insul-Shield", Thermal Ceramics Inc. "Cerablanket F.S" or approved equal.

B. Support Clips: Manufacturer's standard impaling clips or custom designed to suit installation conditions, fabricated from galvanized sheet steel.

2.04 FIRESTOPPING AT ELECTRICAL BOXES AND UTILITY OUTLETS

A. Utility penetrations in walls, ceilings, or floors requiring protected openings shall be firestopped and sealed with an approved material securely installed, capable of maintaining its integrity when subjected to test temperatures specified in ASTM E814.

B. Steel electrical outlet boxes on opposite sides of walls requiring protected openings shall be separated by a horizontal distance of 24-inches.

C. Steel electrical outlet boxes which occur in combination with outlet boxes of any size such that the aggregate area of unprotected outlet boxes exceeds 100-square inches in any 100-square feet of wall area shall be protected by an approved material or detail to decrease the aggregate area of unprotected utility boxes to less than 100-square inches in any 100-square feet of wall.

D. Steel electrical outlet boxes which exceed 16-square inches in area shall be protected by 3M "Moldable Putty Pads", Specified Technologies, Inc. "SpecSeal Series SSP Putty Pads" or approved equal.

E. Utility and electrical outlets or boxes shall be securely fastened to the stud or framing of the wall or ceiling assembly. The opening in the gypsum board shall be cut so that the clearance between the box and the gypsum board does not exceed 1/8-inch.

1. Fill the 1/8-inch gap with an approved fire-rated sealant.

2.05 FIRESTOPPING AT METAL DECK FLUTES

A. Steel Deck Insert: Fyre Sleeve Industries, Inc., “Q-Stop” or approved equal one-piece fire-retardant plug for steel deck flutes.

B. Fire-Rated Sealant: Grace Construction Products “FS-3000”, Hilti “CP-672 Speedspray”, 3M “Firedam Spray”, Tremco “Tremstop Acrylic” or approved equal.

C. Mineral Wood: Minimum 4-pcf density.

2.06 MIXING

A. For those products requiring mixing prior to application, comply with manufacturer's instructions.

2.07 ESCUTCHEONS

A. Provide brushed stainless steel escutcheon plates at pipes and conduit exposed to view. Size to suit penetration.

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspect openings and voids to be sealed to determine if conditions are satisfactory for the proper installation of firestopping. Do not commence work until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface Cleaning: Clean out openings and joints immediately prior to installing firestopping to comply with recommendations of firestopping manufacturer.

1. Remove foreign materials from surfaces of opening and joint substrates and from penetrating items that could interfere with adhesion of firestopping.

2. Clean opening and joint substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with firestopping.

3. Remove laitance and form release agents from concrete.

B. Priming: Prime substrates where recommended by manufacturer using manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking: Use masking tape to prevent firestopping from contacting adjoining surfaces that will remain exposed upon completion of the work. Remove tape as soon as possible.

3.03 EXTENT OF FIRESTOPPING WORK

A. General: Provide solid continuous firestopping wherever the penetration or addition of a construction element through or adjacent to a fire-rated floor, wall or partition, or roof creates a discontinuity of such a rated separation. Application limited in size and configuration to tested systems. Do not install insulation types specified in other Sections in lieu of specified firestopping materials.

B. Interior Walls and Partitions: Where top edge of a fire-rated wall or partition abuts a fluted-type metal deck, provide mineral fiber and fire-rated sealant to fill flute spaces for the full depth or width of the wall or partition.

C. Penetrations:

1. Penetrations include conduit, cable, wire, pipe, duct, and other elements which pass through one or both outer surfaces of a fire-rated floor, roof, wall, or partition.

2. Verify that annular space around sprinkler pipes through fire-rated walls and floors is provided as required by NFPA 13.

D. Fire Rated Partitions:

1. Gaps exceeding 1/1-inch at smoke rated and fire-rated partitions shall be firestopped with a firestop sealant as listed in UL "Fire Resistance Directory" and as specified. Apply minimum 3/8-inch bead at intersection of finish material and adjacent surface, both sides and along entire perimeter.

2. Intersections at fire-rated partitions and steel deck type floor-ceiling or roof-ceiling assemblies shall be firestopped as required.

E. Provide firestopping to fill miscellaneous voids or openings at fire-rated construction as specified.

3.04 INSTALLATION

A. Do not install firestopping until building is sufficiently enclosed or protected against adverse weather conditions, applied fireproofing work, including repairs, has been completed, and supporting framing and surrounding construction is in a dry condition.

B. Prepare and install firestopping in accordance with manufacturer's instructions.

C. Mineral Fiber:

1. Provide in thickness for compressing into voids for a tight friction fit when installed.

2. Provide in width sufficient to fill the depth of the void space using single width pieces.

3. Install with ends tight against terminal end construction, and with intermediate joints well compressed together and tight.

4. For vertical void spaces, provide support clips near each end, spaced not over 24-inches on center.

D. Foam:

1. Provide form materials to retain foam when placed.

2. Prime contact surfaces as recommended by foam manufacturer.

3. Inject foam into void spaces so foam develops full and complete contact with adjoining surfaces, and the space is free from air pockets.

4. Cure foam 24-hours, remove form materials not required to remain, and inspect.

5. Provide additional foam or sealant to fill insufficient depth and remaining voids.

E. Sealants:

1. Prepare penetrations in vertical and horizontal surfaces as required to receive finish products.

2. Install damming materials as required.

3. Apply caulk or putty in accordance with manufacturer's recommendations.

F. Steel Deck Plugs: Provide at steel deck flutes at all full-height sound-rated partitions.

G. Finish surfaces of exposed to view firestopping to a uniform and level condition.

H. Firestopping shall not extend past edges of cover plates, escutcheons, etc. or where it will be exposed to view in the final assembly.

I. Install escutcheon plates at pipes and conduit exposed to view.

3.05 FIELD QUALITY CONTROL

A. Identify firestop systems after installation. Identify the firestop system that has been installed and include the appropriate UL Design Number.

3.06 CLEANING

A. Remove spilled and excess materials without damaging adjacent surfaces.

B. Leave finished work in neat, clean condition with no evidence of spill-overs or damage to adjacent surfaces.

3.07 WASTE MANAGEMENT

A. General: Comply with Section 01 74 19.

B. Close and seal tightly all partly used sealant containers and store protected in well ventilated fire-safe area at moderate temperatures.

C. Place used sealant tubes and containers in areas designated for hazardous materials.

END OF SECTION