

SECTION 07270

FIRESTOPPING AND SMOKE BARRIER CAULKING

PART 1 GENERAL

1.01 SUMMARY

A. Related Sections:

1. 03300 - Cast-In-Place Concrete.
2. 04220 - Concrete Unit Masonry.
3. 09250 - Gypsum Wallboard.
4. 15330 - Automatic Sprinkler Systems.
5. 15371 - Kitchen Hood and Duct Fire Protection.
6. 15375 - Standpipe and Hose System.
7. 15410 - Piping (Plumbing).
8. 15510 - Piping (HVAC).
9. 15515 - Valves, Hangers, and Specialties.
10. 15890 - Ductwork.
11. 15970 - HVAC Control System
12. 16112 - Raceways and Conduits.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. E84-96a Test Method for Surface Burning Characteristics of Building Materials.
2. E119-95a Test Methods for Fire Tests of Building Construction and Materials.
3. E814-94b Test Method for Fire Tests of Through-penetration Fire Stops.

B. Underwriters Laboratories, Inc. (UL) 1479 and 2079.

1.03 SUBMITTALS

A. Submit properly identified product data including material specifications, published installation details, material safety data sheets (MSDS), and directions. Provide UL classified fire test data for each slab edge, floor penetration, and fire wall penetration condition.

B. Shop drawings shall show typical installation details for methods of installation and type of firestop materials used.

1.04 QUALITY ASSURANCE

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- A. Applicator: Acceptable to firestopping and smoke barrier caulking manufacturer.
- B. Fire safing insulation, fire and smoke barrier caulk, putty, fire barrier wrap/strips, fire prevention pillows, fire barrier partitions, fire barrier covers complete with necessary metal clips, supports, fastenings, and covers shall meet ASTM E814 for a [2] [3] hour fire rating for floors and roofs and [1] [2] [3] hour fire rating for fire walls as indicated.
- C. Materials shall be listed in UL Building Materials Directory - Through Penetration Fire Stops Systems and Fill Void or Cavity Materials.
- D. Firestopping materials shall not contain lead, PCBs, ethylene glycol, or lead.
- E. Products containing solvents or requiring hazardous waste disposal are not allowed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Firestopping and Smoke Barrier Caulking:
 - 1. AD Firebarrier.
 - 2. Bio Fireshield.
 - 3. Enerstop.
 - 4. Hilti.
 - 5. U.S. Gypsum Company (USG).
 - 6. Specified Technologies Inc. (STI)
 - 7. 3M.
 - 8. Tremco.

2.02 MATERIALS

- A. Fire Safing Insulation:
 - 1. USG Thermafiber safing insulation complete with impaling clips for slab edges and firestop sealant.
 - 2. Accepted equivalent.
- B. Fire and Smoke Barrier Caulk:
 - 1. AD Firebarrier Silicone.
 - 2. Bio Fireshield: Biostop 500+ Sealant, Biotherm 100/200 Sealant:

3. Enerstop: 100 SL Sealant, 200 G Sealant, 300 C Compound.
4. Hilti: FS 601 Sealant, FS 604 Sealant, FS-ONE.
5. STI: Spec Seal Series 100, Pensil 300, Firedam 150+.
6. 3M: CP 25 Fire Barrier Caulk, 303 Fire Barrier Putty, Flame Stop V, Flame Stop VI.
7. Tremco: Fyre Shield, Fyre Sil, WBM, or acrylic.

C. Fire Barrier Wrap/Strip:

1. Bio Fireshield: Biostop Wrap Strip.
2. Enerstop: 400 MW Mineral Wool, 600 P.I. Pipe Insulation.
3. STI: Spec Seal Wrap/Strip.
4. 3M FS-195 Wrap/Strip.
5. Tremco: Intumescent Wrap Strip.

D. Trowelable Fire Barrier Compound:

1. AD Firebarrier Silicone.
2. Bio Fireshield: Bio K-10, Biostop Fire Rated Putty and Putty Pads.
3. Hilti FS 635.
4. STI: Spec Seal mortar, putty, putty pads.

E. Sheet Metal Fire Barrier Restricting Collars: Provide suitable galvanized bolts and expansion anchors.

1. STI: Spec Seal metal restraining collars.
2. 3M: Restricting Collar RC-1.
3. Tremco: MCR.

F. Prefabricated Firestop Collar:

1. AD Firebarrier Collars.
2. Bio Fireshield: Biostop Pipe Collar.
3. Hilti: CP 642.
4. STI: Spec Seal plastic pipe collars.
5. 3M: PPD.
6. Tremco: Tremstop D Firestop Collars.

G. Fire Prevention Pillows: Meeting ASTM E814 requirements and classified by UL.

1. Bio Fireshield: Bio Firestop Pillows.
2. Hilti: FS 657 Fire Block.
3. STI: Spec Seal.
4. Tremco: Tremstop.

H. Fire and Smoke Barrier Spray.

1. Bio Fireshield: Biostop 700, Biostop 750.

2. 3M: Fire Dam Spray.
3. Accepted equivalent.

- I. Hose Clamps for Restricting Collars: Standard galvanized steel or stainless steel hose clamps.
- J. Fire Barrier Partitions and Covers: 3M type PSS-7904 R device complete with front and back covers of 3M composite sheet CS-195 or accepted equivalent, all necessary related galvanized steel supports, cover plates and fastenings.
- K. Metal Supports for Firesafing "Packing Material":
 1. 30 gage by 1 inch wide galvanized sheet steel "Z" shaped clips to support "packing material" around floor penetrations.
 2. 10 gage galvanized steel wire hat shaped support hangers to support "damming material" or "packing material" at floor penetrations.
 3. Hardware cloth of 19 gage galvanized 1" mesh wire.

PART 3 EXECUTION

3.01 PREPARATION

- A. Masonry, concrete, and gypsum board surfaces shall be smooth, clean, and free of loose debris, holes, and projections.

3.02 APPLICATION

- A. Apply fire safing insulation, fire and smoke barrier caulk, and fire barrier wrap/strips according to manufacturer's published installation details, directions, UL classified fire test data, and as specified.
- B. Gaps at Floor and Roof Edges Abutting Exterior Walls:
 1. Install specified fire safing insulation continuously at each floor level above first floor and at roof between back of precast concrete wall panels, concrete beams, and columns of depth to achieve a [2] [3] hour minimum fire resistance according to manufacturer's directions.
 2. Install fire stop insulation across exterior faces of columns at each floor level above first floor including roof before erection of precast concrete wall panels. Secure insulation in place across columns with suitable waterproof adhesive with flame spread rating of 25 or less and with impaling clips at each side of columns.

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3. Secure fire safing insulation to exterior faces of slab edges and beams with suitable impaling clips spaced 24 inches o.c. and adhesive with flame spread rating of 25 or less.
4. Provide fire safing insulation of required thicknesses as required to compress insulation in joints.
5. Where gap is less than approximately 2 inches, bend clips slightly upward. Where gap is less than approximately 1 inch, apply adhesive to sides of joint and tightly pack safing insulation into joint.
6. Recess top surface of fire safing insulation [0] [1] inch to receive fire and smoke barrier caulk to provide [2] [3] hour fire resistance according to manufacturer's directions.
7. Apply specified fire and smoke barrier caulk of required [0] [1] inch uniform depth over horizontal surfaces of fire safing insulation at each floor level above first floor and roof. Smooth surface of caulk at exposed areas.

C. Floor and Roof Expansion Joints:

1. Provide 10 gage galvanized steel hat shaped wire support hangers at 8 inches o.c. with bottom of wire near bottom of slab or beam.
2. Install specified fire safing insulation tightly packed in each suspended floor expansion joint and roof expansion joint with insulation resting on hardware cloth support and of depth to provide a [2] [3] hour minimum fire resistance according to manufacturer's directions.
3. Apply fire and smoke barrier caulk of required [1/2] [1] inch uniform depth over horizontal surfaces of fire safing insulation packed in suspended floor expansion joints. Fire and smoke barrier caulk is not required in roof expansion joints.

D. Gaps at Tops of Non-Load Bearing Masonry Fire Walls:

1. Coordinate installation of solid concrete block or solid brick top course to provide solid back up for fire safing insulation.
2. Pack space between top of masonry and underside of overhead structure with specified fire safing insulation. Recess insulation [1/2] [1] inch on each side of wall to receive fire and smoke barrier caulk to provide [2] [3] hour fire resistance, according to caulk manufacturer's directions.
3. Apply specified fire and smoke barrier caulk or putty of required [1/2] [1] inch uniform thickness on each side

of walls to provide [1] and [2] [3] hour fire resistance as indicated according to manufacturer's directions.

E. Floor and Fire Wall Penetrations - Metal Pipes, Conduits, and HVAC Duct Perimeters:

1. Where gaps between metal pipes, conduits, and duct openings are 1/4" or less, seal gaps with specified fire and smoke barrier caulk.
2. Where gaps between metal pipes, conduits and ducts are more than 1/4":
 - a. Pack space between opening and pipe, conduit and duct with specified fire safing insulation and of depth of insulation to provide a [1] and [2] [3] hour minimum fire resistance as indicated according to fire safing manufacturer's directions.
 - b. Apply specified fire and smoke barrier caulk of required [1/2] [1] inch uniform depth over fire safing insulation support. Smooth surface of caulk at exposed areas.
 - c. In place of specified fire and smoke barrier caulk, provide fire and smoke barrier wrap/strips, wire tied in place and covered with of specified fire and smoke barrier caulk according to manufacturer's directions.

F. Floor and Fire Wall Penetrations - Plastic Pipe and Conduit Perimeters and Insulated Metal Pipe Perimeters:

1. Where gaps between plastic pipes and plastic conduits and floor and wall openings are 1/4" or less and where insulated metal pipes occur, provide sheet metal fire barrier restricting collar wrap/strip with fire and smoke barrier caulk on both sides of wall and at bottom of floor only to provide [1] [2] [3] hour fire resistance as indicated according to manufacturer's directions.
 - a. Provide number of wrap/strips around pipes and conduits according to wrap/strip manufacturer's tables.
 - b. Enclose wrap/strips with sheet metal restricting collars bolted to each side of wall for fire wall penetrations and to underside of floor for floor penetrations. Bend support tabs back to pipe or insulation and secure collar with metal hose clamp.
 - c. Seal all seams and edges at wall and floor with 1/4" bead of specified fire and smoke barrier caulk.

2. Where gaps between plastic pipes and plastic conduits and floor openings are more than 1/4":
 - a. Pack space between floor opening and pipe or conduit with specified fire safing insulation and of depth of insulation to provide [2] and [3] hour minimum fire resistance rating. Recess insulation 2-1/4" below floor to receive fire barrier wrap/strips to provide [2] [3] hour fire resistance according to wrap/strip manufacturer's directions.
 - b. Support fire safing insulation with "Z" shaped galvanized sheet metal clips at 3 locations around pipes and conduits.
 - c. Provide number of specified fire barrier wrap/trips around pipes and conduits according to wrap/strip manufacturer's tables. Wire wrap/strips in place and slide down into opening to proper depth.
 - d. Cover surface and seams of wrap/strip around pipe or conduit with uniform 1/4" depth of specified fire and smoke barrier caulk.

3. Plastic pipe and insulated cable penetrations to fire walls:
 - a. Provide galvanized steel pipe sleeves equivalent to EMT, sized to allow annular space of not less than 3/4" around pipe or cable. Project pipe sleeve 3 inches on each side of wall. Tightly fit pipe sleeves to wall. Grout sleeves into masonry and fill openings in gypsum board with firecaulk.
 - b. Fill space around pipe and cable to within 2-1/4" of end of pipe sleeve with fire safing insulation.
 - c. Provide number of specified fire barrier wrap/trips around pipes and cable on each side of wall according to wrap/strip manufacturer's table to provide [1] and [2] [3] hour fire resistance as indicated according to wrap/strip manufacturer's directions. Wire wrap/strips in place and slide into pipe sleeve, recessing 1/4".
 - d. Cover surface of wrap/strip around pipe and cable with uniform 1/4" depth of specified fire and smoke barrier caulk.

G. Floor and Fire Wall Penetrations - Bus Ducts:

1. Where cable trays and bus ducts penetrate floors and fire walls, provide necessary fiber packing and other materials required by manufacturers installation details

and appropriate for conditions encountered to provide [1] [2] [3] hour fire resistance.

2. Where "packing material" is shown on the manufacturer's details, only specified fire stop mineral wool shall be used. Depth of "packing material" shall be of minimum 1 inch depth.

H. Floor and Fire Wall Penetrations - Cable Trays:

1. Where cable trays penetrate floors and fire walls, provide fire prevention pillow system placed into opening in a staggered brick style and other materials required by the manufacturer.

3.03 PROTECTION

- A. Protect finished firestopping and fire retardant caulking from tears and punctures. Replace torn or pierced firestopping and caulking material.

END OF SECTION