

**SECTION 07840
FIRESTOPPING**

PART 1 - GENERAL

1.1 SUMMARY

1. Provide firestopping and smoke seals as indicated on drawings at fire separations, walls, ceilings, and floors, and as required by Code.
2. Coordinate the supply and installation of fire stopping and smoke seals specified here and in Related Sections.

1.2 RELATED SECTIONS

1. 06100 Rough Carpentry.
2. 09210 Gypsum Board Assemblies.
3. Division 15 Mechanical for specification of firestopping and smoke seals in mechanical assemblies.
4. Division 16 Electrical for specification of firestopping and smoke seals in electrical assemblies (i.e. inside cable trays).

1.3 REFERENCES

1. CAN/ULC S101-M89 Fire Endurance Tests of Building Construction and Materials.
2. ULC-S115-95 (R2001) Fire Tests for Fire Stop Systems.

1.4 SYSTEM DESCRIPTION

1. Firestopping and smoke seals shall be listed by Underwriters Laboratories of Canada (ULC) and shall form a draft tight barrier to retard the passage of smoke, flame and hose stream as noted in the appropriate ULC classification.
2. Fully coordinate mechanical and electrical penetrations through fire resistance rated floor, roof and wall assemblies inclusive of cable trays, receptacles, conduits, pipes, sleeves and poke through devices with Division 15 and 16 respectively.

1.5 DESIGN REQUIREMENTS

1. Installation and materials shall be to the satisfaction of the Consultant and authorities having jurisdiction.
2. Firestopping for this project shall conform to 'F' rating as per the B.C. Building Code, except areas of firewalls to conform to FT rating, unless indicated otherwise.
3. Fire protection ratings per ULC-S115 in seals.
4. FTH fire protection ratings per ULC-S115 in cable (in excess of 20 mm O.D.) and cable tray penetrations.
5. Minimum 10% operational movement of joints and annuals of mechanical piping and electrical bus duct penetrations.
6. Flexible seals for fire damper perimeters and mechanical piping penetrations.
7. Complete fire-tested (ULC-S115) compatibility and operational compatibility without stress corrosion and/or any weakening effects within the following materials and/or combinations thereof in their respective applications:
 - .1 Black Steel (Piping, Sleeving and Structural).
 - .2 Copper (Piping).
 - .3 Aluminum (Cable Tray).
 - .4 Galvanized Steel.
 - .5 Cast Iron (Piping).
 - .6 ASJ Vapour Barriers (Insulation, Jacketing).

- .7 Concrete.
- .8 Masonry.
- .9 Power Cables (Min. 40% tray fill area rating).
- .10 Communication Cables (minimum 40% tray fill area rating).
- 8. Facilitate inspection of installations by using identifiable material colours such as orange or yellow.
- 9. Water pressure resistance: 25 mm (1") Head (0.0025 kg/cm⁵) required for fire stop seals.
- 10. Non-slump ability in wall and overhead applications.
- 11. Re-enterability in cable and cable tray penetrations without use of power tools.
- 12. Minimum 250 psi (17.6 Kg/cm²) compression strength in cable and cable tray penetration.

1.6 SUBMITTALS

- 1. Submit in accordance with Section 01330 Submittal Procedures.
- 2. Product Data: for each product specified.
 - .1 Material Booklet: Prepare and keep on site at all times for Consultant's reference and authorities having jurisdiction, a materials booklet showing ULC ratings and test numbers and installation details for each product installed.
- 3. Shop Drawings:
 - .1 Submit complete shop drawings using architectural floor plans. Indicate locations of firestop seals including Division 15 and 16 seals. Indicate applicable listed ULC system and design number as applicable. Show fire rated walls and floor penetrations. Show penetrations and develop an indexing (identification) system. Consultant will submit reviewed documents to authority having jurisdiction.
 - .2 Submit and have reviewed prior to forming of concrete openings and placement of sleeves by Division 15 and 16.
 - .3 Submit firestop seal details and confirmation of ULC system listings. Show variations if any, limitations, or areas where listings are expected to be exceeded.
 - .4 Provide copies of reviewed shop drawings to Division 15 and 16 subtrades.
- 4. Maintenance Manuals:
 - .1 Upon completion, submit 3 copies of maintenance manuals for the Owners' future use. Include product names, applicator, installation instructions, ULC listings, and manufacturer's literature.
- 5. Letters of Assurance:
 - .1 Submit upon completion, signed copies of letters of assurance confirming conformity to reviewed shop drawings and complete firestopping and smoke seal system including Division 15 and 16.

PART 2 - PRODUCTS

2.1 MATERIALS

- 1. Firestop Caulking (Sealants) Compound: Products tested, approved and listed in the ULC - List of Equipment and Materials - Volume II – Building Construction used only within specific firestop joint locations as listed.
- 2. Fire stopping and smoke seal systems: In accordance with BCBC 1998 and CAN/ULC S101.
 - .1 Asbestos-free materials and systems capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of CAN/ULC S101 and not to exceed opening sizes for which they are intended.
 - .2 Firestop system rating: as indicated on the drawings.
- 3. Service penetration assemblies: Certified by ULC in accordance with ULC-S115 and listed in ULC Guide No. 40 U19.

4. Fire-resistance rating of installed fire stopping assembly not less than the fire-resistance rating of surrounding floor and wall assembly.
5. Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal; do not use cementitious or rigid seal at such locations.
6. Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal; do not use a cementitious or rigid seal at such locations.
7. Primers: to manufacturer's recommendation for specific material, substrate, and end use.
8. Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.
9. Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.
10. Sealants for vertical joints: non-sagging.

PART 3 - EXECUTION

3.1 PREPARATION

1. Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials. Ensure substrates and surfaces are clean, dry and frost free.
2. Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.
3. Maintain insulation around pipes and ducts penetrating fire separation without interruption to air and vapour barriers.
4. Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

3.2 SEQUENCING

1. Do not proceed with installation until review and return of shop drawings has been completed.
2. Fire stopping to floor and roof penetrations shall precede drywall track installation.
3. Fire stopping at slab edge detail to exterior wall panels and at window panels must be done with wall panel installations.
4. Fire stopping must precede mechanical pipe insulation (vapour barriers must be continued along with FPI - ASJ jacketing).

3.3 INSTALLATION

1. Install fire stopping and smoke seal material and components in accordance with ULC certification and manufacturer's instructions.
2. Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.
3. Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
4. Tool or trowel exposed surfaces to a neat finish.
5. Remove excess compound promptly as work progresses and upon completion.

3.4 INSPECTION

1. Notify Consultant when ready for inspection and prior to concealing or enclosing fire stopping materials and service penetration assemblies.

3.5 SCHEDULE

1. Fire stop and smoke seal at:
 - .1 Penetrations through fire-resistance rated gypsum board partitions and walls.

- .2 Attic compartments.
- .3 Top of fire-resistance rated masonry and gypsum board partitions.
- .4 Intersection of fire-resistance rated gypsum board partitions.
- .5 Openings and sleeves installed for future use through fire separations and attic fire stopping.
- .6 Around mechanical and electrical assemblies penetrating fire separations, through walls, floors, ceilings, wood studs – top and bottom.
- .7 Rigid ducts: greater than 129 cm²: fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

3.6 CLEANING

1. Remove excess materials and debris and clean adjacent surfaces immediately after application.
2. Remove temporary dams after initial set of fire stopping and smoke seal materials.

END OF SECTION