

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Fireproof firestopping and fire-safing materials and accessories.

1.2 REFERENCES

- .1 All Standards listed below are to be the most current edition at the time of tender regardless of any older dates that may be listed herein unless specifically noted otherwise. Withdrawn or obsolete standards may still apply unless it has been replaced with a different Standard in which case the new Standard shall apply. Report any withdrawn Standards to the Departmental Representative for instructions.
- .2 **NOTE:** *Canadian standards govern over American standards for applicable materials.*
- .3 [ASTM E84](#) -15: Standard Test Method for Surface Burning Characteristics of Building Materials.
- .4 [ASTM E119](#) -14: Standard Test Methods of Fire Tests of Building Construction and Materials.
- .5 [ASTM E605](#) -93(2011): Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members.
- .6 [ASTM E736](#) -00(2011): Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members.
- .7 [ASTM E761](#) -92(2011): Standard Test Method for Compressive Strength of Sprayed Fire-Resistive Material Applied to Structural Members.
- .8 [ASTM E814](#) -13a: Standard Test Method for Fire Tests Through Penetration Fire Stops.
- .9 [ASTM E1966](#) -07(2011): Standard Test Method for Fire-Resistive Joint Systems.
- .10 [ASTM E2837](#) -13: Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies.
- .11 [ASTM E2923](#) -14: Standard Practice for Longevity Assessment of Firestop Materials Using Differential Scanning Calorimetry.
- .12 [ASTM E2785](#) -14: Standard Test Method for Exposure of Firestop Materials to Severe Environmental Conditions.
- .13 [UL 1479](#): Standard for Fire Tests of Through-Penetration Firestops.
- .14 [ASME A112.20.2](#) -2004: Qualification of Installers of Firestop Systems and Devices for Piping Systems.
- .15 [CAN/ULC-S101](#) -14: Standard Method of Fire Endurance Tests of Building Construction and Materials.

- .16 [CAN/ULC S102](#) -10: Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .17 [CAN/ULC S115](#) -11: Standard Method of Fire Tests of Firestop Systems.
- .18 [ULC S135](#) -04: Standard Test Method for the Determination of Combustibility Parameters of Building Materials Using an Oxygen Consumption Calorimeter (Cone Calorimeter), Includes Amendment 1.
- .19 [UL Directory C](#): Fire Resistance Directory, Directory C.
- .20 ULC: List of Equipment and Materials.
- .21 FM (Factory Mutual) Approvals 4990: Firestopping.
- .22 FM (Factory Mutual) Approvals 4991: Approval of Firestop Contractors.
- .23 If requested by the Departmental Representative provide a PDF digital copy of any or all of the Standards above as selected by the Departmental Representative at no additional cost.

1.3 DEFINITION

- .1 Firestopping (Fire-Safing): A sealing or stuffing material or assembly placed in spaces between building materials to arrest the movement of smoke, heat, gases, or fire through wall or floor openings.

1.4 SYSTEM DESCRIPTION

- .1 Firestopping systems installed to resist spread of fire and passage of smoke and other gases at penetrations through fire resistance rated wall, floor assemblies, materials and components.

1.5 PERFORMANCE REQUIREMENTS

- .1 Materials, accessories and application procedures listed by ULC, cUL, WHI (Intertek/Warnock Hershey) or OPL (Omega Point Laboratories), or tested in accordance with CAN/ULC-S115 to comply with building code requirements.
- .2 Fire-Resistive Joint Systems:
 - .1 Generally, use listed assembly types F, FT, FH or FTH, as applicable.
- .3 Firestopping Materials: CAN/ULC-S101, ASTM E119, ASTM E814 and ASTM E1966, and to achieve fire ratings indicated.
- .4 Surface Burning of Exposed Materials: CAN/ULC-S102 and ASTM E84 with a minimum flame spread/smoke developed rating of 25/450, unless otherwise required by applicable code.

1.6 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination: Coordinate with other work having a direct bearing on work of this Section.
 - .1 Coordinate construction of openings and penetrating items to ensure that firestopping is installed according to specified requirements.
 - .2 Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate firestopping.
 - .3 Notify Departmental Representative's testing agency at least seven days in advance of firestopping installations; confirm dates and times on day preceding each series of installations.
 - .4 Notify inspection authorities when ready for inspection and prior to concealing or enclosing firestopping materials and service penetration assemblies.
- .2 Pre-installation Conference: Convene three weeks before starting work of this Section.
 - .1 Include parties directly affecting work of this Section, including, firestopping manufacturers technical representative, installer's job foreman.
 - .2 Review submittals.
 - .3 Review maximum and minimum clearances for firestopping systems in accordance with System Design Listings.
 - .4 Review staging and sequencing of work.
 - .5 Record and submit copies of minutes including discussions, decisions, agreements, and disagreements to each party attending and concerned parties not in attendance.

1.7 SUBMITTALS

- .1 Section 01 33 00 - Submission Procedures.
- .2 Product Data: Provide data on product characteristics, performance and limitation criteria, and indicating construction details accurately illustrating Project conditions.
- .3 System Design Listings: Submit system design listings, including illustrations from a qualified testing and inspection agency that is applicable for each firestop configuration.
 - .1 Where Project conditions require modification to a qualified testing agency's illustration for a particular firestopping system condition, submit illustration, with modifications marked, approved by firestopping manufacturer's fire protection engineer as an engineering judgment or equivalent fire resistance rated assembly.
- .4 Submit a complete firestopping and smoke seal schedule within fourteen (14) days of award of Contract to the Departmental Representative for review. Schedule is to include complete details, cut sheets, system descriptions, all relevant cUL/ULC listings and location of each proposed firestopping and smoke seal application. Alter schedule as recommended by the Departmental Representative and resubmit as required.

- .5 Include in the Project Record documents, a complete list of all relevant cUL/ULC listings used for firestopping and smoke seal for this project.
- .6 Upon completion of the Work of this Section the manufacturer(s) of the firestopping systems used must inspect the firestopping work and submit written reports and verifications/approval of the installation of their products and systems and the products are installed to the manufacturer's requirements to achieve the required fire ratings.
- .7 Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- .8 Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- .9 Provide certificate of compliance from Authority Having Jurisdiction indicating approval of materials used.

1.8 QUALIFICATIONS

- .1 Applicator: Company specializing in performing Work of this section approved and trained by firestopping system manufacturer.

1.9 REGULATORY REQUIREMENTS

- .1 Conform to applicable code for fire resistance ratings and surface burning characteristics.
- .2 Certificate of compliance from Authority Having Jurisdiction indicating approval of materials used.

1.10 PRE-INSTALLATION CONFERENCE:

- .1 Conduct conference at Project site to discuss firestopping components and assemblies to be used on the Project that comply with this specification.
- .2 Seminar: Provide a manufacturer's seminar, one (1) hour duration, on components and systems to be used on the Project.
- .3 In attendance: Manufacturer's representative, Contractor's superintendent, installers, Departmental Representative.
- .4 Conference to be followed by mock-up to demonstrate systems.

1.11 QUALITY ASSURANCE

- .1 Products of This Section: Manufactured to ISO 9000 certification requirements.
- .2 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this Section with minimum five (5) years documented experience and FCIA (Firestop Contractors International Association) Manufacturer Member in good standing.

- .3 Applicator Qualifications: Company specializing in performing the work of this Section and as follows:
 - .1 FM approved in accordance with FM standard 4991 - Approval of Firestop Contractors.
 - .2 FCIA Member in good standing.
 - .3 Licensed by the province or local authority where applicable.
 - .4 Successfully completed not less than five (5) comparable scale projects.
- .4 Single Source Responsibility: Obtain firestop systems for each type of penetration and construction situation from a single primary firestop systems manufacturer.

1.12 MOCK-UP

- .1 Provide mock-up of applied firestopping assemblies.
- .2 Conduct mock-up immediately after seminar.
- .3 Demonstrate each component or system to be used on the Project.
- .4 Apply 1.0 sq. m to a representative substrate surface.
- .5 Apply firestop material to a representative penetrated masonry, concrete, and stud wall substrate surface.
- .6 If accepted, mock-up will demonstrate minimum standard for the Work.
- .7 Mock-up may remain as part of the Work.

1.13 ENVIRONMENTAL REQUIREMENTS

- .1 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.
- .2 Do not apply multi-component foams when temperature of substrate material and ambient air is below 15 degrees C. Maintain this minimum temperature before, during, and for three (3) days after installation of materials.
- .3 Provide ventilation to manufacturer's instructions in areas to receive solvent cured materials.

1.14 FIRESTOPPING REVIEW

- .1 Prior to concealing or enclosing firestopping materials and service penetration assemblies notify Departmental Representative for review of firestopping installation.
- .2 Notify Departmental Representative seventy-two (72) hours when ready for review.

PART 2 PRODUCTS

2.1 MATERIALS - GENERAL

- .1 Low Emitting Materials:
 - .1 Provide sealant type firestopping with maximum VOC content of 250g/l.
 - .2 Provide primer for sealant type firestopping with a maximum VOC content of 750 g/l.
- .2 Select exposed firestopping products in walls and ceilings, capable of receiving specified paints.
- .3 Do not use cementitious or rigid seals for:
 - .1 Re-entry penetrations.
 - .2 Penetrations in sound and vibration control assemblies.

2.2 MANUFACTURERS

- .1 Subject to compliance with requirements provide products of one of the following manufacturers:
 - .1 A/D Fire Protection Systems Inc. Firestop Systems.
 - .2 Hilti Canada Ltd.
 - .3 Dow Corning Corporation.
 - .4 3M Fire Protection Products.
 - .5 Specified Technologies Inc.
 - .6 Tremco Sealants & Coatings.

2.3 MATERIALS

- .1 All Fire stop systems and Listed Systems Designs selected for use shall be listed, tested and capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of CAN/ULC S115 and not to exceed opening sizes for which they are intended.
- .2 All Smoke Seal materials shall have been tested in compliance with requirements of CAN/ULC S102 and have a flame spread classification of 25 or less.
- .3 Fire resistance ratings of installed Fire stop systems shall not be less than the fire resistance rating of the surrounding Fire Separation or Fire Wall.
- .4 All Fire stop materials and Smoke Seals shall have elastomeric characteristics to allow for building settling and seismic movement.
- .5 All Fire stop materials and Smoke Seals shall be free of asbestos.
- .6 All Listed Systems Designs used must provide a Flame (F), Temperature (T) and Hose (H) stream rating in accordance with those outlined in the Alberta Building Code 2014 include any additional requirements of the Work in this Section.
- .7 Use only one (1) manufacturer for firestopping material on project.

2.4 COMPONENTS

- .1 Mineral Wool Backing Insulation: ULC or cUL labelled, preformed non-combustible materials.
- .2 Retainers: clips to support mineral wool.
- .3 Firestopping Sealant: ULC or cUL labelled, single component silicone based.
- .4 Firestopping Seal: ULC or cUL labelled, single component water-based seal.
- .5 Firestopping Foam: ULC or cUL labelled, two (2) component silicone foam.
- .6 Firestopping Mortar: ULC or cUL labelled, fibre reinforced, foamed cement mortar.
- .7 Damming Material: Mineral fibreboard matting, plywood or particle board, removable and in accordance with tested assembly being installed as acceptable to Authorities Having Jurisdiction.
- .8 Firestop Pillows: ULC or cUL labelled, formed mineral fibre pillows.

2.5 ACCESSORIES

- .1 Primer: Type recommended by firestopping manufacturer for specific substrate surfaces.
- .2 Dam Material: Permanent:
 - .1 Mineral fibreboard.
 - .2 Mineral fibre matting.
 - .3 Sheet metal.
 - .4 Plywood or particle board.
 - .5 Alumina silicate fire board.
- .3 Installation Accessories: Clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

2.6 FINISHES

- .1 Colour in visible non-service areas: White, generally matching adjacent finished surface colour. Where colour cannot be matched, provide paintable firestopping.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verify existing conditions before starting work.
- .2 Verify opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping are ready to receive the work of this Section.
- .3 Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- .1 Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter which may affect bond of firestopping material.
- .2 Remove incompatible materials which may affect bond.
- .3 Examine sizes and conditions of voids to be filled to establish correct thickness and installation of materials. Ensure that substrates and surfaces are clean, dry and frost free.
- .4 Prepare surfaces in contact with firestopping materials and smoke seals to manufacturers' instructions.
- .5 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.
- .6 Install backing or damming materials to arrest liquid material leakage.
- .7 Install clips and retainers for mineral wool stuffing insulation.

3.3 APPLICATION

- .1 Install material at walls or partition openings which contain penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.
- .2 Apply primer and materials in accordance with manufacturer's instructions.
- .3 Apply firestopping material in sufficient thickness to achieve rating, to uniform density and texture.
- .4 Seal holes or voids made by through penetrations, poke-through termination devices, and un-penetrated openings or joints to ensure continuity and integrity of fire separation are maintained.
- .5 Compress fibred material to achieve a density of 40% of its uncompressed density.
- .6 Place foamed material in layers to ensure homogenous density, filling cavities and spaces. Place sealant to completely seal junctions with adjacent dissimilar materials.

- .7 Place intumescent coating in sufficient coats to achieve rating required.
- .8 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
- .9 Tool or trowel exposed surfaces to a smooth, neat and tidy finish where required and exposed to view.
- .10 Remove excess compound promptly as work progresses and upon completion.
- .11 Dam material to remain.
- .12 Notify Departmental Representative when ready for inspection and prior to concealing or enclosing firestopping materials and service penetration assemblies.

3.4 FIELD QUALITY CONTROL

- .1 Inspections and Tests: Engage qualified independent testing agency to perform the following special inspections and tests, and prepare reports.
 - .1 Correct size of joint.
 - .2 Placement and anchorage of mechanical supports.
 - .3 Thickness of coatings.
 - .4 Correct use and location of backings and bond breaker materials.
 - .5 Adherence testing to verify material bond with substrate.
- .2 Testing and inspecting of completed joints and seals shall take place in successive stages, and at a rate not less than one test per day for each Installer and material type. Where deficiencies are found or firestopping is damaged or removed because of testing, repair or replace firestopping to conform to requirements.
- .3 Do not proceed with installations for the next area until test results for previously completed installations show conformance to requirements.
- .4 Indoor Air Quality: Administer testing in occupied areas, as specified in Division 01 Section, Temporary Indoor Air Quality Control.
- .5 Products and materials will be considered defective if they do not pass tests and inspections.
- .6 Proceed with enclosing firestopping with other construction only after inspection reports are issued and installations conform to requirements.

3.5 CORRECTIONS

- .1 Make corrections to defective, incomplete or missing firestopping work as determined by firestopping reviewer.
- .2 Request addition review by Departmental Representative when corrections are made.

3.6 CLEANING

- .1 Clean adjacent surfaces of firestopping and smoke seal materials.

3.7 PROTECTION OF FINISHED WORK

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

3.8 SERVICE PENETRATION FIRE STOP SYSTEMS

- .1 Firestop and smoke seal gaps and holes in all Fire Separation and Firewall construction through which conduit, wire, cables, ductwork, piping and all other protrusions pass as a result of Work using an appropriate Listed System Design identifying substrate type, penetrating material type, penetrating item size, minimum and maximum annular space and overall "FTH" ratings.
- .2 Apply Firestop Systems at un-penetrated openings and sleeves installed for future use through Fire Separations and Firewalls.
- .3 Install 6 mm to 10 mm bead of Firestop caulking at interface of retaining angles around fire dampers, where angles meet fire-rated assembly, and between retaining angles and fire damper, both sides of penetration. At floor locations, sealant bead at top of assembly is adequate.
- .4 Where necessary, remove fibreglass insulation and replace with mineral wool insulation from insulated pipes and ducts where such services penetrate a Fire Separation or Firewall unless the Listed Systems Design permits such insulation to remain within the Firestop System.
- .5 All cable tray penetrations to be removable and resettable for future cable routing without the requirement of special tools or re-application of a wet firestopping system.

3.9 SCHEDULES

- .1 Refer to Drawings for additional requirements.
- .2 Firestop and smoke seal at the following locations:
 - .1 Around all mechanical and electrical service penetrations and poke through termination devices through fire-resistance rated masonry, concrete, and gypsum board partitions and walls. Also includes HVAC, telecommunication and cable penetrations.
 - .2 Top of fire resistance rated masonry and gypsum board partitions to underside of slabs and decks.
 - .3 Concrete, masonry, and gypsum board horizontal and vertical joints with dissimilar Firewalls or Fire Separations.
 - .4 All Mechanical Damper Joints in Fire Separations and Firewalls. Completely around all wall and floor dampers, both sides of the wall on wall dampers, top side only in floor dampers.
 - .5 Openings and sleeves installed for future use through fire separations.
 - .6 All sprinkler heads protruding from fire separations.
 - .7 Rigid ducts: greater than 129 cm²: firestopping to consist of bead of firestopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

END OF SECTION

