

Part 1 General

1.1 SECTION INCLUDES

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

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 45 00 - Quality Control.
- .3 Section 01 61 00 - Common Product Requirements
- .4 Section 01 78 00 - Closeout Submittals.
- .5 Section 04 05 00 - Common Work Results for Masonry.
- .6 Section 04 22 00 - Concrete Unit Masonry
- .7 Section 06 20 00 – Finish Carpentry.
- .8 Section 06 40 00 – Architectural Woodwork
- .9 Section 09 91 23.01 – Interior Re-Painting.
- .10 Mechanical Divisions – Heating, Ventilating, and Air-Conditioning (HVAC):
Mechanical work requiring firestopping.
- .11 Electrical Divisions: Electrical work requiring firestopping.

1.3 REFERENCES

- .1 ASTM E84-09c - Test Method for Surface Burning Characteristics of Building Materials.
- .2 ASTM E119-09c - Method for Fire Tests of Building Construction and Materials.
- .3 ASTM E814-09 - Test Method of Fire Tests of Through-Penetration Fire Stops.
- .4 ASTM E1966-07 - Test Method for Fire-Resistive Joint Systems.
- .5 CAN/ULC-S101-07 - Fire Endurance Tests of Building Construction and Materials.
- .6 CAN/ULC-S102-07 - Method of Test for Surface Burning Characteristics of Building
Materials and Assemblies.
- .7 CAN/ULC-S115-05 - Fire Tests of Firestop Systems.
- .8 FM (Factory Mutual) - FM 4991, Approval of Firestop Contractors.
- .9 FCIA (Firestop Contractors International Association) - Manual of Practice.

- .10 NFPA 251 - Fire Tests of Building Construction and Materials.
- .11 OPL (Omega Point Laboratories).
- .12 UL 263 - Fire Tests of Building Construction and Materials (ASTM E119, NFPA 251).
- .13 UL 1479 - Fire Tests of Through-Penetration Firestops. (ASTM E814).
- .14 UL 1709 - Rapid Rise Fire Tests of Protection Materials for Structural Steel.
- .15 UL 2079 - Tests for Fire Resistance of Building Joint Systems.
- .16 ULC (Underwriters Laboratories of Canada) - List of Equipment and Materials for:
 - .1 Building Materials.
 - .2 Fire Resistance.
 - .3 Firestop Systems and Components.
- .17 WHI (Intertek/Warnock Hershey).
- .18 Standard Method of Fire Tests Through Penetration Fire Stops, ULC-S115-M.2005/
CAN4- S115-M.2005 or ASTM E814 Test Requirements.
- .19 Underwriters Laboratories of Canada (ULC) CAN4-S115-M.2005 under their
designation of ULC-S115-M.2005 and publishes the results in FIRE RESISTANCE
RATINGS DIRECTORY.

1.4 DEFINITIONS

- .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.

1.5 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, and floor assemblies, materials and components.

1.6 PERFORMANCE REQUIREMENTS

- .1 Materials, accessories and application procedures listed by ULC, cUL, or tested to CAN/ULC-S115 to comply with building code requirements.
- .2 Firestopping Materials: CAN/ULC-S101, ASTM E119, ASTM E814 to achieve a fire rating as noted on Drawings.

1.7 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordination: Coordinate with other work having a direct bearing on work of this section.

1.8 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Provide data on product characteristics, performance and limitation criteria.
- .3 System Design Listings: Submit system design listings, including illustrations from a qualified testing and inspection agency that is applicable for each firestop configuration.

1.9 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Submission procedures.
- .2 Installation Data: Manufacturer's special preparation and installation requirements.
- .3 Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.10 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Submission procedures.

1.11 QUALITY ASSURANCE

- .1 Products of This Section:
 - .1 Manufactured to ISO 9000 certification requirements.
- .2 Contractor 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.
- .3 Single Source Responsibility: Obtain firestop systems for each type of penetration and construction situation from a single primary firestop systems manufacturer.

1.12 REGULATORY REQUIREMENTS

- .1 Conform to applicable code for fire resistance ratings and surface burning characteristics.
- .2 Provide certificate of compliance from authority having jurisdiction indicating approval of materials used.

1.13 DELIVERY, STORAGE, AND PROTECTION

- .1 Section 01 61 00: Transport, handle, store, and protect products.
- .2 Deliver firestopping products in original, unopened containers with labels intact and legible, identifying product and manufacturer.
- .3 Store and handle firestopping materials to manufacturer's instructions.

1.14 ENVIRONMENTAL REQUIREMENTS

- .1 Sequence work to permit installation of firestopping and smoke seal materials to be installed after adjacent work is complete and before closure of spaces.
- .2 Do not install firestopping when ambient or substrate temperatures are outside limits permitted by manufacturers or when substrates are wet, due to rain, frost, condensation, or other causes.
- .3 Maintain this minimum temperature before, during and for three (3) days after installation of materials.
- .4 Ventilate firestopping per manufacturers' instructions by natural means or, where this is inadequate, forced air circulation.
- .5 During installation, provide masking and drop sheets to prevent firestopping materials from contaminating any adjacent surfaces.
- .6 Do not use materials that contain flammable solvents.
- .7 Water based products are unacceptable in wet areas or areas that may be subject to occasional flooding.

1.15 WARRANTY

- .1 Manufacturers shall warrant work of this Section against defects and deficiencies in the product material for a period of two (2) years from date of Substantial Performance, in accordance with General Conditions of Contract. Promptly correct any defects or deficiencies, which become apparent within warranty period at no expense to Owner.
- .2 Fire and smoke stop system Contractor hereby warrants workmanship on material installation for period of two (2) years from date of Substantial Performance, in accordance with General Conditions of Contract. Promptly correct any defects or deficiencies, which become apparent within warranty period at no expense to Owner.

Part 2 Products

2.1 MATERIALS

- .1 System 1:
 - .1 Firestopping at joints of floor to wall construction, filling gaps and holes in fire rated assemblies, and filling voids around service penetrations through fire rated assemblies. Install damming material where support for sealant is required.
 - .2 Materials:
 - .1 Mineral wool backing insulation: ULC labelled, preformed non combustible or intumescent composite sheet.
 - .1 Standard of Acceptance:
 - .1 3M Brand Fire Barrier CS 195 Composite Sheet.
 - .2 A/D Fire Barrier mineral wool by A/D Fire Protection.

- .2 Fire stopping sealant: ULC labelled, single component silicone based or intumescent sealant.
 - .1 Standard of Acceptance:
 - .1 3M Brand Fire Barrier Mouldable putty or CP25WB, CP 25N/S or CP 25 S/L caulk
 - .2 A/D Silicone Firebarrier by A/D Fire Protection.
 - .3 Fire Stop Sealant by Dow Corning Canada Inc.
 - .4 Tremco FYRE SIL
 - .5 Firetemp by Johns Mansville.
- .2 System 2:
 - .1 Firestopping for filling voids around multiple service penetrations through fire rated assemblies. Install damming material to temporarily contain firestopping foam.
 - .2 Materials:
 - .1 Firestopping foam: ULC labelled two component silicone foam, foam mortar or intumescent firestopping.
 - .1 Standard of Acceptance:
 - .1 3M Brand Fire Barrier FS 195 Wrap/Strip, 7904 Series system or CS 195 Composite sheet with CP 25 S/L elastomer or mouldable putty.
 - .2 A/D firebarrier mortar or A/D Silicone over A/D firebarrier Mineral Wool Firestopping.
 - .3 Dow Corning 3 6548 Silicone RTV Foam or Dow Corning Fire Stop Intumescent Wrap Strip over damming material.
- .3 System 3:
 - .1 Firestopping PVC, CPVC and ABS plastic pipe penetration through fire rated assemblies.
 - .2 Materials:
 - .1 Intumescent UL classified as a through penetration firestop device when tested in accordance with ASTM E814 (UL 1479). Complete with retainer clip.
 - .1 Standard of Acceptance:
 - .1 3M Firebarrier Plastic Pipe Device utilizing FS 195 Wrap/Strip and RC 1 Restricting collar.
 - .4 Damming material: Provide permanent or removable mineral wool, mineral fibreboard, sheet metal, plywood, particleboard, or calcium silicate board to temporarily support firestopping in accordance with tested assembly being installed and as acceptable to authority having jurisdiction.
 - .5 Retainers: 24mm (15/16") wide x 24 ga. steel Z formed configuration with bottom dimensions conforming to opening size listed in manufacturer's sizing chart.
 - .6 Acceptable Manufacturers:
 - .1 AD Fire Protection Systems Inc.

- .2 Hilti Fire Stop Systems.
- .3 3M Fire Protection Products.
- .4 Tremco, Tremstop, Firestop Systems.
- .5 Rectorseal, Bio Fireshield.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping are ready to receive the work of this section.
- .2 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 Install backing or damming materials to arrest liquid material leakage.

3.3 APPLICATION

- .1 Apply primer and materials to manufacturer's written instructions.
- .2 Install material at walls or partition openings which contain penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.
- .3 Apply firestopping material in sufficient thickness to achieve rating as listed in manufacturer's technical literature and to uniform density and texture. Fire resistance rating of fire stopping material assembly must meet or exceed the fire resistance rating of the floor or wall assembly being penetrated.
- .4 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.
- .5 Tool or trowel exposed surfaces to a neat finish where required.
- .6 Remove excess compound promptly as work progresses and upon completion.

3.4 CLEANING

- .1 Clean adjacent surfaces of firestopping materials.
- .2 Remove equipment, excess materials and debris and clean adjacent surfaces immediately after application. Use methods and cleaning materials approved by manufacturer.

- .3 Protect firestopping during and after curing period from contact with contaminating substances. If damage caused by others, Owner Contractor, the Contractor shall instruct the Firestop Sub-Trade to make appropriate repairs and charge to appropriate trades.
- .4 Remove temporary dams after initial set of fire stop and smoke seal materials.

3.5 SCHEDULES

- .1 Refer to RCP.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Materials, preparation and application for caulking and sealants.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 45 00 - Quality Control.
- .3 Section 01 78 00 - Closeout Submittals.
- .4 Section 06 20 00 - Finish Carpentry.
- .5 Section 08 11 00 - Metal Doors and Frames.
- .6 Section 09 21 16 - Gypsum Board Assemblies.

1.3 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C919-02, Standard Practice for Use of Sealants in Acoustical Applications.
- .2 Canadian General Standards Board (CGSB)
 - .1 CGSB 19-GP-5M-1984, Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).
 - .2 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
 - .3 CGSB 19-GP-14M-1984, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).
 - .4 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
 - .5 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .4 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).

1.4 SUBMITTALS

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

- .2 Manufacturer's product to describe.
 - .1 Caulking compound.
 - .2 Primers.
 - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
- .3 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Submit duplicate samples of each type of material and colour.
- .5 Cured samples of exposed sealants for each color where required to match adjacent material.
- .6 Submit manufacturer's instructions in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Instructions to include installation instructions for each product used.

1.5 QUALITY ASSURANCE/MOCK-UP

- .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
- .2 Construct mock-up to show location, size, shape and depth of joints complete with back-up material, primer, caulking and sealant.
- .3 Mock-up will be used:
 - .1 To judge workmanship, substrate preparation, operation of equipment and material application.
 - .2 To ensure acoustic integrity is maintained at all sound attenuated walls.
- .4 Locate where directed.
- .5 Allow 24 hours for inspection of mock-up by Departmental Representative before proceeding with sealant work.
- .6 When accepted, mock-up will demonstrate minimum standard of quality required for this Work. Approved mock-up may remain as part of finished Work.

1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.7 PROJECT CONDITIONS

- .1 Environmental Limitations:
 - .1 Do not proceed with installation of joint sealants under following conditions:

- .1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.
- .2 When joint substrates are wet.
- .2 Joint-Width Conditions:
 - .1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
- .3 Joint-Substrate Conditions:
 - .1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.8 ENVIRONMENTAL REQUIREMENTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Labour Canada.
- .2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.
- .3 Departmental Representative will arrange for ventilation system to be operated on maximum outdoor air and exhaust during installation of caulking and sealants. Ventilate area of work as directed by Departmental Representative by use of approved portable supply and exhaust fans.]

Part 2 Products

2.1 SEALANT MATERIALS

- .1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.
- .2 When low toxicity caulks are not possible, confine usage to areas which off-gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off-gas time.
- .3 Where sealants are qualified with primers use only these primers.

2.2 SEALANT MATERIAL DESIGNATIONS

- .1 Type 1 : Sealant for all locations except where another type is specified in this section. Multi-component, polyepoxide urethane sealant. To meet specified requirements of CGSB Specification CAN2.19-24-M80.
 - .1 Acceptable material:
 - .1 Tremco Dymeric 511.
 - .2 Sonolastic NP-2.

- .3 Permapol RC-2.
- .4 Morton Thiokol.
- .5 Sikaflex 2CNS/SL.
- .2 Type 2: Sealant for construction joints in lieu of Type 1 where pre-approved by Departmental Representative. One part elastomeric sealants: to meet specified requirements of NSC/CGSB 25-B-N moisture curing hybrid polyurethane.
 - .1 Acceptable material:
 - .1 Tremco Dymonic.
 - .2 Sonolastic 150.
 - .3 Permapol RC-1.
 - .4 Morton Thiokol.
 - .5 Sikaflex 1A.
 - .6 Bostik Chem-Caulk900.
 - .7 Note: Dow Corning 790 low modulus silicon is also acceptable for Type 1 Applications.
- .3 Type 3: Sealant for glass to glass, sloped glazing systems, glass to metal, and metal to metal joints. One part low modulus silicone elastomeric sealant to meet specified requirements of NSC/CGSB Specification CAN2-19.13-M82.
 - .1 Acceptable material:
 - .1 Dow Corning 795.
 - .2 Tremco Spectrum 2.
 - .3 GE Silglaze 2800.
 - .4 GE Silpruf 2000.
- .4 Type 4: Use at all perimeter joints and openings in sound rated drywall systems and sealing polyethylene air/vapour barriers. One part acoustical sealant to meet specified requirements of CGSB Specification 19-GP-21M.
 - .1 Acceptable material:
 - .1 Tremco Acoustical Sealant.
 - .2 Gibson Homans 2210.
- .5 Type 5: Sealant for finishing interior construction joints subject to minimal movement and not otherwise specified in this section. One part paintable latex.
 - .1 Acceptable material:
 - .1 Tremco Latex 100.
 - .2 Bulldog Acrylic Latex.

2.3 JOINT CLEANER

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.
- .2 Primer: as recommended by manufacturer.

Part 3 Execution

3.1 PROTECTION

- .1 Protect installed Work of other trades from staining or contamination.

3.2 SURFACE PREPARATION

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.
- .3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .4 Ensure joint surfaces are dry and frost free.
- .5 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
- .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

- .1 Apply bond breaker tape where required to manufacturer's instructions.
- .2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 MIXING

- .1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.6 APPLICATION

- .1 Sealant.
 - .1 Apply sealant in accordance with manufacturer's written instructions.
 - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
 - .3 Apply sealant in continuous beads.
 - .4 Apply sealant using gun with proper size nozzle.
 - .5 Use sufficient pressure to fill voids and joints solid.

- .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
 - .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
 - .8 Remove excess compound promptly as work progresses and upon completion.
- .2 Curing.
- .1 Cure sealants in accordance with sealant manufacturer's instructions.
 - .2 Do not cover up sealants until proper curing has taken place.
- .3 Cleanup.
- .1 Clean adjacent surfaces immediately and leave Work neat and clean.
 - .2 Remove excess and droppings, using recommended cleaners as work progresses.
 - .3 Remove masking tape after initial set of sealant.

END OF SECTION