

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Read and be governed by the conditions of the Contract and specifications of Division 01.
- .2 Section 07 92 00 joint sealing.
- .3 Section 07 84 00 Firestopping.
- .4 Section 08 11 13 - Steel Doors and Frames.
- .5 Section 09 21 99 - Partitions for Minor Works.

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM C553-13, Standard Specification for Mineral Fibre Blanket Thermal Insulation for Commercial and Industrial Applications.
 - .2 ASTM C665-12, Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - .3 ASTM C1320-10(2016), Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction.
- .2 CSA Group
 - .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
- .3 Underwriters Laboratories of Canada (ULC)
 - .2 CAN/ULC-S702-14, Standard for Mineral Fibre Insulation for Buildings.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for blanket insulation and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Certificates:
 - .1 Submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .4 Test Reports:
 - .1 Submit certified test reports showing compliance with specified performance characteristics and

physical properties.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect specified materials from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Develop Waste Reduction Workplan related to Work of this Section and in accordance with Section 01 00 10.
- .5 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding and packaging materials as specified in Waste Reduction Workplan.

PART 2 - PRODUCTS

2.1 INSULATION

- .1 Batt and blanket mineral fibre: Non-combustible, lightweight, semi-rigid stone wool batt insulation to CAN/ULC S702, Type 1 that provides fire resistance to ASTM E136 and sound control to ASTM E90 and ASTM C423..
 - .1 Type: 1.
 - .2 Thickness: 125 mm, 50mm as indicated.
- .2 RSI value 0.75/25.4mm at 24°C m² K/W

2.2 ACCESSORIES

- .1 Insulation clips:
 - .1 Impale type, perforated 50 x 50 mm cold rolled carbon steel 0.8 mm thick, adhesive back, spindle of 2.5 mm diameter annealed steel, length to suit insulation, 25 mm diameter washers of self-locking type.
- .2 Tape, fasteners, staples: as recommended by manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for blanket insulation application in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 INSULATION INSTALLATION

- .1 Install insulation to maintain continuity of thermal protection to building elements and spaces and to ASTM C1320.
- .2 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.
- .3 Do not compress insulation to fit into spaces.
- .4 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from sidewalls of CAN/ULC-S604 Type A chimneys and CSA B149.1 and CSA B149.2 Type B and L vents.
- .5 Do not enclose insulation until it has been inspected and approved by Departmental Representative DCC Representative Consultant.
- .6 Co-ordinate installation of firestopping insulation with Section 07-84 00 Firestopping
- .7 Seal joints with acoustical joint sealant in accordance with Section 07 92 00 Joint Sealing

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 00 10, 01 74 20.

.1 Remove recycling containers and bins from site
and dispose of materials at appropriate facility.

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 The requirements of Division 01 form part of this section.
- .2 Section 07 90 00 - Joint Sealants
- .3 Section 09 91 99 - Interior Painting
- .4 Section 09 21 99 - Partitions for minor works

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM).
 - .1 ASTM C1029-15. Standard Specification for Spray-Applied Rigid Cellular Polyurethane Thermal Insulation.
 - .2 ASTM D3574-16. Standard Test Methods for Flexible Cellular Materials, Slab, Bonded, and Molded Urethane Foams.
- .2 Canadian Urethane Foam Contractors Association Inc. (CUFCA)
- .3 South Coast Air Quality Management District (SCAQMD).
 - .1 SCAQMD Rule 1113-16, Architectural Coatings.
- .4 Underwriters Laboratories of Canada (ULC)
 - .1 CAN/ULC-S101-14, Standard Methods of Fire Tests of Building Construction and Materials.
 - .2 CAN/ULC-S102-10, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
 - .3 CAN/ULC-S705.1-15, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification. Includes Amendment.
 - .4 CAN/ULC-S705.2005-R2016, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Application.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for polyurethane foam sprayed insulation and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 33 00, 01 35 29.

- .3 Test Reports:
 - .1 Provide the CCMC Evaluation Report and the manufacturer's documentation confirming material has been evaluated and conforms to the requirements of CAN/ULC-S705.1.5.
 - .2 Submit evaluation report or listing from recognized evaluation service.
 - .3 Submit certified test reports for insulation from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.
 - .4 Submit test reports in accordance with CAN/ULC-S101 for fire endurance and CAN/ULC-S102 for surface burning characteristics.

- .4 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures substrate preparation and application parameters.

1.4 QUALITY ASSURANCE

- .1 Applicators to conform to CUFCA Quality Assurance Program.
- .2 Qualifications:
 - .1 Installer: person specializing in sprayed insulation installations with documented experience..
 - .2 Applicators performing work under this section To be trained under the manufacturer's quality assurance program. Applicators to be trained by the manufacturer and licensed by a recognized certification service.
 - .3 Manufacturer: company with experience in producing of material used for work required for this project, with sufficient production capacity to produce and deliver required units without causing delay in work.
- .3 Health and Safety Requirements: worker protection:
 - .1 Protect workers as recommended by CAN/ULC-S705.2 and manufacturer's recommendations:
 - .2 Workers must wear proper protective equipment gloves, respirators, protective clothing when applying foam insulation, as recommended by the manufacturer.

1.5 DELIVERY, STORAGE AND HANDLING

- .3 Workers must not eat, drink or smoke while applying foam insulation.
- .1 Deliver, store and handle materials in accordance with Section 01 61 00 and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver

materials to site in original factory packaging, labelled with manufacturer's name and address.

- .3 Storage and Handling Requirements:
 - .1 Store materials indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect specified materials from damage.
 - .3 Replace defective or damaged materials with new.

1.6 SITE CONDITIONS

- .1 Ventilate area in accordance with Section 01 00 10, 01 74 11.
- .2 Ventilate area to receive insulation by introducing fresh air and exhausting air continuously during and 24 hour after application to maintain non-toxic, unpolluted, safe working conditions.
- .3 Provide temporary enclosures to prevent spray and noxious vapours from contaminating air beyond application area.
- .4 Protect adjacent surfaces and equipment from damage by overspray, fall-out, and dusting of insulation materials.
- .5 Apply insulation only when surfaces and ambient temperatures are within manufacturers' prescribed limits.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Two component Insulation:

Spray polyurethane to ASTM C1029 CAN/ULC-S705.1. Combination thermal insulation, air barrier, vapor retarder for interior below grade application. Renewable soy oil type, closed cell, spray applied, rigid polyurethane foam system. Zero ozone depletion blowing agent.

 - .1 Core Density: 33.6 kg/m3
 - .2 Compressive strength: minimum 198 kPa(28 psi)
 - .3 Tensile strength: minimum 319 kPa(46 psi)
 - .4 Dimensional stability: at 70°C at 97±3% RH: aged 162 hours, without any substrate (& volume change -1.37/0.42/+0.27 less than 9.0% by volume.
 - .5 Air Leakage @ 75 Pa @ 25mm (1") <0.02 L/sm2.
 - .6 Air Permeance @ 75 Pa @ 25mm (1") <0.02 L/sm2.
 - .7 VOC compliant

- .8 Fungi Resistance: No fungal growth
- .9 Closed cell content -90%
- .10 Flame Spread Rating: Class 1
- .11 Max Thickness per layer 75mm (3")

.3 One component Insulation:

Low pressure build, single component, low expansion, low density polyurethane foam. Zero ozone depletion propellant. Provided in an aerosol can. Designed for sealing gaps at the perimeter of window, doors and spandrel panels and other openings. Properties as follows:

- .1 Density: to ASTM D3574: 0.94 to 1.56 pounds per cubic foot.
- .2 Compression set: to ASTM D3574: 8.7 psi @ 10% deformation.
- .3 Full cure: 24 hours.

.4 Primers: in accordance with manufacturer's recommendations for surface conditions.

2.2 EQUIPMENT

- .1 Provide spray equipment in accordance with CAN/ULC-S705.2 and the equipment manufacturer's recommendations for specific type of application.
- .2 Record equipment settings on the Daily Work Record as required by CAN/ULC -S705.2.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for sprayed insulation application accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative. Prior to commencement of work, report in writing any defects or conditions that may adversely affect the performance of products installed under this section.
 - .2 Inform Departmental Representative. of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.
- .2 Metal stud partition components of associated wall assembly type to be installed in place and in place prior to installation of spray type insulation work.
- .3 Metal framing to be approved by departmental representative and unacceptable framing conditions remedied prior to spray type

3.2 SURFACE PREPARATION

- insulation work.
- .1 Surfaces to receive foam insulation shall be free of oil, grease, dust and debris. Surfaces to be clean, dry and properly fastened to ensure adhesion of the foam to the substrate.
 - .2 Ensure that all work by other trades that may penetrate through the thermal insulation is in place and complete
 - .3 Ensure that surface preparation and any primers required conform to the manufacturers instructions.

3.3 APPLICATION

- .1 Apply insulation to clean surfaces in accordance with CAN/ULC-S705.2 and manufacturer's printed instructions.
- .2 Use primer where recommended by manufacturer.
- .3 Apply sprayed foam insulation in thickness 50mm as indicated on architectural wall assembly.
- .4 Spray application of foam shall be performed in accordance with CAN/ULC S705.2 and the manufacturer's instructions.
- .5 Apply only when surfaces and environmental conditions are within limits prescribed by the material manufacturer and CAN/ULC-S705.2
- .6 Apply in consecutive passes as recommended by manufacturer to thickness as indicated on drawings. Passes shall be not less than 15mm and not greater than 50mm.
- .7 Do not install spray foam within 75 mm of heat emitting devices such as light fixtures and chimneys.
- .8 Finished surface of foam insulation to be free of voids and imbedded foreign objects.
- .9 Remove masking materials and over spray from adjacent areas immediately after foam surface has hardened. Ensure cleaning methods do not damage work performed by other sections.
- .10 Trim, as required, any excess thickness that would interfere with the application of boarding system by other trades.

3.5 TOLERANCES

- .1 Maximum variation from indicated thickness: minus(-) 6mm. plus (+) 10 mm.
- .2 Apply foam so that finished face is vertical, plumb flat and in a straight plane.

3.6 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.
 - .1 Remove insulation material spilled during installation and leave work area ready for application of wall board.
- .3 Waste Management: in accordance with Section 01 00 10 01 74 11.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

PART 1 - GENERAL

- .1 Read and be governed by the conditions of the Contract and specifications of Division 01.
- .2 Section 07 92 00 joint sealing.
- .3 Section 08 11 13 - Steel Doors and Frames.
- .4 Section 09 21 99 - Partitions for Minor Works.
- .5 Division 21 Fire Suppression
- .6 Division 23 Heating, Ventilation and Air Conditioning (HVAC)
- .7 Division 26 Electrical Fixtures

1.1 REFERENCES

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .2 Underwriter's Laboratories of Canada (ULC)
 - .1 CAN/ULC-S101-14, Standard Methods of for Fire Endurance Tests of Building Construction and Materials.
 - .2 CAN/ULC-S102-10, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
 - .3 CAN/ULC-S115-11, Standard Method of Fire Tests of Firestop Systems.

1.2 DEFINITIONS

- .1 Fire Stop Material: device intended to close off opening or penetration during fire or materials that fill openings in wall or floor assembly where penetration is by cables, cable trays, conduits, ducts and pipes and poke-through termination devices, including electrical outlet boxes along with their means of support through wall or floor openings.
- .2 Single Component Fire Stop System: fire stop material that has Listed Systems Design and is used individually without use of high temperature insulation or other materials to create fire stop system.
- .3 Multiple Component Fire Stop System: exact group of fire stop materials that are identified within Listed Systems Design to create on site fire stop system.
- .4 Continuity of Fire Separations: NBC 2015, Division B, Parts 3.1.8 and 3.1.9.1, 9.10.9):
 - .1 Wall, partition or floor assemblies required to be a fire separation shall be: constructed as a continuous element; have a fire resistance rating; have openings protected by a closure; and have penetrations

sealed by a firestop.

1.3 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 Submittals.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit fire resistance rating test listings for fire stopping and smoke seal systems.
 - .3 Manufacturer's engineering judgement identification number and shop drawing details when no ULC or CUL or Warnock Hersey system is available for an application. Engineering judgement must include both project name and Subcontractor's name who will install firestop system as described in shop drawing.
 - .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 35 29.06 Health and Safety.
- .3 Shop Drawings:
 - .1 Submit shop drawings to show location, proposed material, reinforcement, anchorage, fastenings and method of installation.
 - .2 Construction details should accurately reflect actual job conditions.
- .4 Quality assurance submittals: submit following:
 - .1 Test reports: in accordance with CAN/ULC-S101 for fire endurance and CAN/ULC-S102 for surface burning characteristics.
 - .1 Submit certified test reports from approved independent testing laboratories, indicating compliance of applied fire stopping with specifications for specified performance characteristics and physical properties.
 - .2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .3 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures.

1.5 DELIVERY,
STORAGE AND
HANDLING

- .1 Packing, shipping, handling and unloading:
 - .1 Deliver, store and handle materials in accordance with Section 01 61 00 Common Product Requirements.
 - .2 Deliver, store and handle materials in accordance with manufacturer's written instructions.
 - .3 Deliver materials to the site in undamaged condition and in original unopened containers, marked to indicate brand name, manufacturer, ULC markings.
- .2 Storage and Protection:
 - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.
- .3 Waste Management and Disposal:
 - .1 Separate waste materials for reuse and recycling.

PART 2 - PRODUCTS

2.2 MATERIALS

- .1 Fire stopping and smoke seal systems: in accordance with CAN/ULC-S115.
 - .1 Asbestos-free materials and systems capable of maintaining 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 Fire stop system rating: Floor slabs, 1-Hour
 - .3 Fire stop system rating: Walls and Partitions, as indicated on architectural drawings.
 - .4 Fire stop system rating: to match ratings of Existing assemblies where indicated on architectural drawings.
- .2 Service penetration assemblies: systems tested to CAN/ULC-S115.
- .3 Service penetration fire stop components: certified by test laboratory to CAN/ULC-S115.
- .4 Fire-resistance rating of installed fire stopping assembly in accordance with NBC.
- .5 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.
- .6 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.

- .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 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 PREPARATION

- .1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials.
 - .1 Ensure that 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 vapour barrier.
- .4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

3.3 INSTALLATION

- .1 Install fire stopping and smoke seal material and components in accordance with manufacturer's certified tested system listing.
- .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 neat finish.

	.5	Remove excess compound promptly as work progresses and upon completion.
<u>3.5 SEQUENCES OF OPERATION</u>	.1	Proceed with installation only when submittals have been reviewed by Departmental Representative.
	.2	Install floor fire stopping before interior partition erections.
	.3	Mechanical pipe insulation: certified fire stop system component.
	.4	Ensure pipe insulation installation precedes fire stopping.
<u>3.6 FIELD QUALITY CONTROL</u>	.1	Inspections: notify Departmental Representative when ready for inspection and prior to concealing or enclosing fire stopping materials and service penetration assemblies.
<u>3.7 CLEANING</u>	.1	Proceed in accordance with Section 01 74 11 Cleaning.
	.2	On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
	.3	Remove temporary dams after initial set of fire stopping and smoke seal materials.
<u>3.8 SCHEDULE</u>	.1	Fire stop and smoke seal at: <ul style="list-style-type: none">.1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls..2 Edge of floor slabs at curtain wall and precast concrete panels..3 Top of fire-resistance rated masonry and gypsum board partitions..4 Intersection of fire-resistance rated masonry and gypsum board partitions..5 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls..6 Penetrations through fire-resistance rated floor slabs, ceilings and roofs..7 Openings and sleeves installed for future use through fire separations..8 Around mechanical and electrical assemblies penetrating fire separations..9 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.

PART 1 - GENERAL

1.1 SECTION
INCLUDES

- .1 Materials, preparation and application for caulking and sealants.
- .2 Text to complete other various Sections containing sealant or caulking specifications, including Section 07 52 00.

1.2 RELATED SECTIONS

- .1 Read and be governed by the conditions of the contract and sections of Division 01.
- .3 Section 07 84 00 Firestopping
- .4 Section 08 11 00: Steel hollow metal doors, frames and screens.
- .5 Section 09 21 99 - Partitions for minor works.
- .6 Section 09 91 99 - Interior Painting for minor works.

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C919-12(2017), Standard Practice for Use of Sealants in Acoustical Applications.
 - .2 ASTM C920-14a, Standard Specification for Elastomeric Joint Sealants.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
 - .2 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
 - .3 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.
- .3 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .4 General Services Administration (GSA) - Federal Specifications (FS)
 - .1 FS-SS-S-200-E(2)1993, Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold Applied, for Portland Cement Concrete Pavement.

- .5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .6 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).

1.3 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 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, handle, store and protect materials in accordance with manufacturer's written instructions.
- .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.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling..
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material in appropriate on-site bins for recycling

in accordance with Waste Management Plan.

- .4 Place materials defined as hazardous or toxic in designated containers.
- .5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .6 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
- .7 Divert unused joint sealing material from landfill to official hazardous material collections site approved by Departmental Representative.
- .8 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.
- .9 Fold up metal banding, flatten, and place in designated area for recycling.

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°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 Provide sealant products bearing the 'Ecologo' of the Environmental Choice Program, Department of the Environment Canadian Environmental Protection Act, Environmental Choice Product Guidelines ECP/PCE-45-92 for Sealants and Caulking Compounds except maximum VOC 60 g/L during application and curing.
- .4 For primers and sealants, indicate VOC in g/L during application and curing.
- .5 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:
Interior expansion and control joint sealants:
Urethanes One Part.
 - .1 Non-Sag to CAN/CGSB-19.13, Type 2, MCG-2-25, colour to be selected from manufacturer's standard range.
- .2 Type 2:
Interior joint sealant : Acrylic Latex One Part.
 - .1 To CAN/CGSB-19.17.
- .3 Type 3: Acoustical Sealant. Acrylic Latex One part
 - .1 To ASTM C919.
 - .2 For acoustic and fire rated application where

indicated on architectural drawings.

- .5 Preformed Compressible and Non-Compressible back-up materials.
 - .1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
 - .1 Extruded open or closed cell foam backer rod.
 - .2 Size: oversize 30 to 50%.
 - .2 Neoprene or Butyl Rubber.
 - .1 Round solid rod, Shore A hardness 70.
 - .3 High Density Foam.
 - .1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m³ density, or neoprene foam backer, size as recommended by manufacturer.
 - .4 Bond Breaker Tape.
 - .1 Polyethylene bond breaker tape which will not bond to sealant.

2.3 SEALANT SELECTION

- .2 Typical expansion and control joints: Sealant type: 1.
- .2 Typical construction joints at non-acoustic locations.: Sealant type: 2.
- .1 Perimeters of interior door frames and partition perimeters and acoustic walls, as detailed and itemized: Sealant type: 3

2.4 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.