

PART 1 GENERAL

<u>1.1 REFERENCES</u>	.1	American Society for Testing and Materials International (ASTM)
	.1	ASTM C553-02, Specification for Mineral Fibre Blanket Thermal Insulation for Commercial and Industrial Applications.
	.2	ASTM C665-01e1, Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
	.3	ASTM C1320-05, Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction.
	.2	Canadian Standards Association (CSA International)
	.1	CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
	.3	Underwriters Laboratories of Canada (ULC)
	.1	CAN/ULC-S702-1997, Standard for Mineral Fibre Insulation.
<u>1.2 SUBMITTALS</u>	.1	Product Data:
	.1	Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
	.2	Manufacturer's Instructions:
	.1	Submit manufacturer's installation instructions.
<u>1.3 QUALITY ASSURANCE</u>	.1	Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
	.2	Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
<u>1.4 WASTE MANAGEMENT AND DISPOSAL</u>	.1	Separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management And

Disposal.

- .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 for recycling in accordance with Waste Management Plan.

## PART 2 PRODUCTS

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| <u>2.1 INSULATION</u>      | .1 | Batt and blanket mineral fibre: to ASTM C553 ASTM C665 CAN/ULC S702.        |
|                            | .1 | Type: 2.  |
|                            | .2 | Thickness: as indicated.  |
| <br><u>2.2 ACCESSORIES</u> | .1 | Nails: galvanized steel, length to suit insulation plus 25 mm, to CSA B111. |
|                            | .2 | Staples: 12 mm minimum leg.   |
|                            | .3 | Tape: as recommended by manufacturer.                                       |

## PART 3 EXECUTION

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| <u>3.1 MANUFACTURER'S INSTRUCTIONS</u> | .1 | Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets. |
| <br><u>3.2 INSULATION INSTALLATION</u> | .1 | Install insulation to maintain continuity of thermal and acoustical 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                                      |

CAN/CGA-B149.1 and CAN/CGA-B149.2 Type B and L vents.

- .5 Do not enclose insulation until it has been inspected and approved by Departmental Representative Engineer Consultant.

### 3.3 CLEANING

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

PART 1 GENERAL

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| <u>1.1 REFERENCES</u>  | .1 | Health Canada/Workplace Hazardous Materials Information System (WHMIS)   |
|                        | .1 | Material Safety Data Sheets (MSDS).  |
|                        | .2 | Underwriter's Laboratories of Canada (ULC)   |
|                        | .1 | ULC-S115-1995, Fire Tests of Fire stop Systems.  |
| <u>1.2 DEFINITIONS</u> | .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 | Tightly Fitted; (ref: NBC Part 3.1.9.1.1 and 9.10.9.6.1): penetrating items that are cast in place in buildings of noncombustible construction or have "0" annular space in buildings of combustible construction.   |
|                        | .1 | Words "tightly fitted" should ensure that integrity of fire separation is such that it prevents passage of smoke and hot gases to unexposed side of fire separation.   |
| <u>1.3 SUBMITTALS</u>  | .1 | Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.   |
|                        | .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 two copies of WHMIS MSDS - Material Safety Data.
- .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 Samples:
  - .1 Submit duplicate 300 x 300 mm samples showing actual fire stop material proposed for project.
- .5 Quality assurance submittals: submit following in accordance with Section 01 45 00 - Testing and Quality Control.
  - .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.
  - .4 Manufacturer's Field Reports: submit to manufacturer's written reports within 3 days of review, verifying compliance of Work, as described in PART 3 - FIELD QUALITY CONTROL.

1.4 QUALITY  
ASSURANCE

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- .1 Qualifications:
  - .1 Installer: company and person specializing in fire stopping installations with 5 years documented experience approved by manufacturer.

- 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 recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

PART 2 PRODUCTS

- 2.1 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 and conforming to specified special requirements described in PART 3 .
    - .2 Fire stop system rating:
  - .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.
- .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.

#### 3.4 SPECIAL REQUIREMENTS

- .1 Location of special requirements for fire stopping and smoke seal materials at openings and penetrations in fire resistant rated assemblies are as follows:

#### 3.5 SEQUENCES OF OPERATION

- .1 Proceed with installation only when submittals have been reviewed by Departmental Representative.
- .2 Install floor fire stopping before interior partition erections.
- .3 Metal deck bonding: fire stopping to precede spray applied fireproofing to ensure required bonding.
- .4 Mechanical pipe insulation: certified fire stop system component.
  - .1 Ensure pipe insulation installation precedes fire stopping.

#### 3.6 FIELD QUALITY CONTROL

- .1 Inspections: notify Departmental Representative when ready for inspection and prior to concealing or enclosing fire stopping materials and service penetration assemblies.
- .2 Manufacturer's Field Services:
  - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and

submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.

- .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
- .3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

### 3.7 CLEANING

- .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.

### 3.8 SCHEDULE

- .1 Fire stop and smoke seal at:
  - .1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
  - .2 Edge of floor slabs.
  - .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.
  - .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 cm<sup>2</sup>: 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.
1.2    RELATED SECTIONS	.1	Section 01 33 00 - Submittal Procedures.
	.2	Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
	.3	Section 01 45 00 - Testing and Quality Control.
	.4	Section 01 61 00 - Common Product Requirements.
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	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).

1.4 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 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.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

.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 Owner's 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 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.

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| <u>1.8 ENVIRONMENTAL REQUIREMENTS</u> | .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 | Ventilate area of work as directed by Departmental Representative by use of approved portable supply and exhaust fans.   |

PART 2 PRODUCTS

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| <u>2.1 SEALANT MATERIALS</u> | .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 offgas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize offgas time. |
|                              | .3 | Where sealants are qualified with primers use only these primers.  |

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| <u>2.2 SEALANT MATERIAL DESIGNATIONS</u> | .1 | Urethanes One Part.                                   |
|  | .1 | Non-Sag to CAN/CGSB-19.13, Type 2, MCG-2-25 MCG-2-40. |
|  | .2 | Silicones One Part.                                   |
|  | .1 | To CAN/CGSB-19.13.                                    |
|  | .1 | Acceptable material:                                  |
|  | .2 | Mildew resistant.                                     |
|  | .3 | Acrylics One Part.                                    |
|  | .1 | To CGSB 19-GP-5M.                                     |
|  | .4 | Acoustical Sealant.                                   |
|  | .1 | To ASTM C919.   |
|  | .5 | Butyl.  |

- .1 To CGSB 19-GP-14M.
- .6 Preformed Compressible and Non-Compressible back-up materials.
  - .1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
    - .1 Extruded 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/m<sup>3</sup> 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

- .1 Expansion and control joints in exterior surfaces of poured-in-place concrete walls: Sealant type: CAN/CGSB-19.13.
- .2 Cornice and wash (or horizontal surface joints): Sealant type: CAN/CGSB-19.13.
- .3 Control and expansion joints on the interior of exterior surfaces of unit masonry walls: Sealant type: CAN/CGSB-19.13.
- .4 Interior control and expansion joints in floor surfaces: Sealant type: CAN/CGSB-19.13.
- .5 Perimeters of interior frames, as detailed and itemized: Sealant type: CAN/CGSB-19.13.
- .6 Interior masonry vertical control joints (block-to-block, block-to-concrete, and intersecting masonry walls): Sealant type: CAN/CGSB-19.13.
- .7 Joints at tops of non-load bearing masonry walls at the underside of poured concrete: Sealant type: CAN/CGSB-19.13.
- .8 Perimeter of bath fixtures (e.g. sinks, tubs, urinals, stools, waterclosets, basins,

vanities): Sealant type: CAN/CGSB-19.13.

- .9 Exposed interior control joints in drywall:  
Sealant type: CAN/CGSB-19.13.

#### 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.

- .1 Curing.

- .1 Cure sealants in accordance with sealant manufacturer's instructions.
- .2 Do not cover up sealants until proper curing has taken place.

- .2 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.