# general

## Related Sections

#### Section 01060 – Regulatory Requirements

#### Section 01300 – Submittals

#### Section 07260 Air-Vapour Membrane

#### Section 07900 – Joint Sealers

## References

### Comply with the latest edition of the following statutes, codes, standards, and all amendments thereto:

#### American Society for Testing and Materials International (ASTM)

##### ASTM C208-12, Standard Specification for Cellulosic Fiber Insulating Board.

##### ASTM C591-21, Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation.

##### ASTM C612-14, Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

##### ASTM C726-17, Standard Specification for Mineral Wool Roof Insulation Board.

##### ASTM C728-117a, Standard Specification for Perlite Thermal Insulation Board.

##### ASTM C1126-19, Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation.

##### ASTM C1289-21, Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.

##### ASTM E96/E96M-16, Standard Test Methods for Water Vapour Transmission of Materials.

##### ASTM C553-13, Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.

##### ASTM C665-17, Standard Specification for Mineral‑Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

##### ASTM C1320-20, Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction.

#### Canadian Gas Association (CGA)

##### CAN/CGA‑B149.1-20, Natural Gas and Propane Installation Code.

##### CAN/CGA‑B149.2-20, Propane Storage and Handling Code.

#### Sealant and Waterproofer’s Institute – Sealant and Caulking Guide Specifications.

#### Canadian Standards Association (CSA International):

##### CSA B111-1974 (R2003), Wire Nails, Spikes and Staples.

#### Underwriters Laboratories of Canada (ULC)

##### CAN/ULC‑S604, Standard for Factory-Built Type A Chimneys.

##### CAN/ULC‑S701-11, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.

##### CAN/ULC‑S702-14, Standard for Thermal Insulation, Mineral Fibre, for Buildings.

##### CAN/ULC-S704-11, Standard for Thermal Insulation Polyurethane and Polyisocyanurate Boards, Faced.

##### CAN/ULC-S705.1-15 Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density – Material

##### CAN/ULC-S705.2 Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density - Application

#### Health Canada/Workplace Hazardous Materials Information System (WHMIS)

##### Safety Data Sheets (SDS).

## Measurement and Payment

### All costs associated with the work of this Section shall be included in the price(s) for Item No(s). \_\_\_ in the Bid Form.

## Submittals

### Submittals are to be in accordance with Section 01300 - Submittals.

### Submit product data sheets of all insulation types within the contract and product list indicting where each insulation type will be installed.

### For the spray-applied insulation, submit all applicable manufacturers standard details.

### Applicator qualifications

#### Submit letter on spray applied foam insulation manufacturer’s letterhead verifying applicators license for work similar to work of this Section.

### Submit two samples 300 mm square of insulation materials.

### Submit WHMIS SDS ‑ Safety Data Sheets in accordance with Section 01300 ‑ Submittals.

### Manufacturer's Instructions:

#### Submit manufacturer's installation instructions.

# PRODUCTS

## Insulation Type (1)

### Extruded polystyrene (XPS): to CAN/ULC‑S701-11.

#### Type: 4.

#### Compressive strength: 210kPa for wall insulation, 275kPa for horizontal foundation insulation.

#### Thickness: 50 mm or as otherwise shown on the Contract Drawings.

#### Size: 610mm x 2440mm.

#### Edges: shiplapped for wall insulation.

#### Acceptable material & manufacturer:

##### Styrofoam SM for walls by Dow Chemical Canada Inc.

##### Styrofoam HI-40 for horizontal applications by Dow Chemical Canada Inc.

##### Or Equivalent.

### Adhesive:

#### Adhesive for polystyrene: to CGSB 7-GP-24M, Type as recommended by the manufacturer .

## Insulation Type (2)

### Spray-applied insulation: Heatlok Soya HFO closed cell spray-applied polyurethane insulation by Huntsman Building Solutions or approved equal.

#### Insulation Properties:

##### Core Density (ASTM D 1622): 35.49 kg/m³.

##### Minimum compressive strength (ASTM D 1621): 171 kPa.

##### Water Absorption (ASTM D 2842): 0.64 % by volume.

##### Water Vapor Permeance at 50 mm (ASTM E 96): 13 ng/Pa.s.m².

##### Thermal resistance (ULC S770-09): R-24 LTTR, 100mm thick

#### Total thickness: As per Contract Drawings.

## Sealants

### Sealants in accordance with Section 07900 – Joint Sealers.

# EXECUTION

## Workmanship

### Install insulation after building substrate materials are dry.

### Install insulation to maintain continuity of thermal protection to building elements and spaces.

### Fit insulation tight around electrical boxes, plumbing and heating pipes and ducts, around exterior doors and windows and other protrusions.

### Keep insulation at a 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.

### Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.

### Offset both vertical and horizontal joints in multiple layer applications.

### Do not enclose insulation until it has been inspected and approved by the Consultant.

## Examination

### Examine substrates and immediately inform Consultant in writing of defects.

### Prior to commencement of work ensure:

#### Substrates are firm, straight, smooth, dry, free of snow, ice or frost, and clean of dust and debris.

## Installation Perimeter Foundation and Interior Roof Insulation (Type 1)

### Perimeter Foundation:

#### Exterior application: extend boards 1400 mm minimum below finish grade as indicated in the Contract Documents. Install on exterior face of perimeter foundation wall with adhesive.

#### Under slab application: extend boards from perimeter foundation wall as indicated in the Contract Documents. Lay boards on level compacted fill.

### Interior Roof:

#### Install insulation over the vapour barrier.

#### Insulation boards are to be tightly butted together.

## Through Wall Flashings, Transition Membranes

### Provide through wall flashings and transition membranes where shown on drawings and as required to maintain a continuous vapour barrier with no leakage.

#### Flashings and membranes are to be installed in accordance with the spray-applied insulation manufacturers standard details.

### Where required by the spray applied insulation manufacturer, mechanically fasten flashings/membranes around openings in accordance with manufacturers standard details.

## Installation Cavity Wall Insulation (Type 2)

### Perform work in strict accordance with the manufacturer’s written instructions and project specific recommendations.

#### Prepare all surfaces in accordance with the manufacturer’s recommendations and CAN/ULC-S705.2 Standard.

#### Site mix liquids components in accordance with manufacturer’s written recommendations.

### Where required by the manufacturer, and/or CAN/ULC-S705.2 Standard, apply primer prior to installation of spray applied insulation.

#### For oily metal surface like Z-Bar, steel deck roof or curtain wall pan, aluminum tube, and PVC, apply primer..

### Apply spray foam on dry, solid and clean surfaces when the climatic conditions are in accordance with the CAN/ULC S705.2 standard and with manufacturers recommendations.

#### Apply only when surfaces and environmental conditions are above -20oC.

#### Apply only when the relative humidity is below 80%.

#### Execute the work of this section when the temperature of the air and substrate are within the limits of the data sheet supplied by the manufacturer.

### Spray application of polyurethane foam shall be performed in accordance with CAN/ULC-S705.2.

### Spray insulation evenly. Maximum depth per pass is 50 mm. Minimum depth per pass is 15mm.

#### Let pass cool adequately before spraying another pass.

### Keep minimum distance of 75 mm from any heat emitting devices.

### Tolerances: Apply the product to achieve an average thickness of ± 6mm, from (9 readings on 1m2), of the thickness requirements in the drawings at a minimum of 1m2 readings for each 150m2 surface sprayed.

## Cleaning

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

**END OF SECTION**