

*This section includes a manufacturer's guide specification for TERRAFOAM™EPS building insulation. Refer also to Beaver Plastics' Product Description for detailed product properties, options, and other technical information. This section includes performance, proprietary, and descriptive type specifications; edit to avoid conflicting requirements.*

## **Part 1            General**

### **1.1                SECTION INCLUDES**

*In this article, select the components that are intended to be part of the content of this section and will not be included in other sections. Keep the statements brief and concise.*

- .1        Board insulation at [cavity wall construction,] [perimeter foundation wall,] [underside of floor slabs,] [exterior wall behind [\_\_\_\_\_] wall finish,] [and] [roof] [\_\_\_\_\_].

### **1.2                RELATED SECTIONS**

- .1        Section [\_\_\_\_\_ - \_\_\_\_\_]: Preparation of adjacent work to receive work of this Section.
- .2        Section [\_\_\_\_\_ - \_\_\_\_\_]: Roofing membrane.
- .3        Section 04815 - Cavity Wall Masonry System: Cavity space for thermal board insulation.
- .4        Section 07260 - Vapour Retarders: Vapour retarder materials to adjacent insulation.
- .5        Section 07270 - Air Barriers: Air seal materials to adjacent insulation.
- .6        Section 07213 - Batt Insulation.
- .7        Section [\_\_\_\_\_ - \_\_\_\_\_]: [\_\_\_\_\_] insulation.

### **1.3                REFERENCES**

*List reference standards that are included within the text of this section. Edit the following as required to parallel any reference standards statements within this section. Acronyms used for well known standards (first example) and defined text for less or named standards (second example).*

- .1        ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
- .2        ASTM C578 – Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
- .3        ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
- .4        ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics.
- .5        ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.

- .6 ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials
- .7 CAN/ULC-S701 – Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.

#### **1.4 SUBMITTALS**

*Do not request submittals if drawings sufficiently describe the products of this section or if proprietary specifying techniques are used. The review of submittals increases the possibility of unintended variations to drawings, thereby increasing the Specifier's liability. The following submittals are intended for review and acceptability.*

- .1 Section [01300] [01 33 00]: Submission procedures.
- .2 Product Data: Provide data on product characteristics, performance criteria, limitations, [and] [\_\_\_\_\_].

*When manufacturer's instructions for specific installation requirements are referenced in PART 3 Execution include the following request for submittal of those instructions. Edit the PART 3 statements to avoid conflict with manufacturer's instructions.*

- .3 Manufacturer's Installation Instructions: Indicate special environmental conditions required for installation, installation techniques, [and] [\_\_\_\_\_].
- .4 Manufacturer's Certificate: Certify that [products] [\_\_\_\_\_] meet or exceed [specified requirements.] [\_\_\_\_\_].

#### **1.5 QUALITY ASSURANCE**

- .1 Manufacturer: ISO 9001:2000 registered company.
- .2 Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed [at the place where the Project is located.] [in the Province of [\_\_\_\_\_].]

#### **1.6 MOCK-UP**

*Use this article for assessing full sized erected assemblies for review of construction, coordination of work of several sections, testing, or observation of operation. A mock-up may also be used for assessing field applied finishes.*

- .1 Section [01400] [01 45 00]: Requirements for mock-up.
- .2 Provide <[\_\_\_x\_\_\_] mm> <<[\_\_\_x\_\_\_] feet>> mock-up including [\_\_\_\_\_].
- .3 Locate [where directed.] [\_\_\_\_\_].
- .4 Mock-up may [not] remain as part of the Work.

#### **1.7 DELIVERY, STORAGE, AND PROTECTION**

- .1 Section [01600] [01 61 00]: Transport, handle, store, and protect products.
- .2 Deliver, store and handle materials in accordance with manufacturer's written instructions.

- .3 Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- .4 Store materials off ground, protected from direct sunlight.
- .5 Protect Products from exposure to harmful weather conditions. Store at temperature and humidity conditions recommended by manufacturer.
- .6 Remove damaged or deteriorated Products from site.

## **1.8 ENVIRONMENTAL REQUIREMENTS**

- .1 Section [01600] [01 61 00]: Environmental conditions affecting products on site.
- .2 Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

## **1.9 SPECIAL WARRANTY**

*This article extends the contract warranty period beyond one year.*

- .1 Section [01700] [01 78 00]: Warranties.
- .2 Provide a [five] [\_\_\_\_] year warranty to include coverage for failure to meet specified requirements.

## **Part 2 Products**

### **2.1 MANUFACTURERS:**

- .1 Beaver Plastics, model "TERRAFOAM™".
- .2 Substitutions: [Refer to Section [01600] [01 25 00].] [Not permitted.] [Refer to Instructions to Bidders.]

### **2.2 MATERIALS**

- .1 Moulded Polystyrene Insulation: [ASTM C578 Type [1] [2] [3],] polystyrene board with the following characteristics:
  - .1 Board Size: <[\_x\_] mm> <<[\_x\_] inches>>.
  - .2 Board Thickness: <[\_\_\_\_] mm> <<[\_\_\_\_] inches>>.
  - .3 Thermal Resistance:
    - .1 [Type 1: <0.65 RSI/25 mm> <<R-3.7/inch>>].
    - .2 [Type 2: <0.70 RSI/25 mm> <<R-4.0/inch>>].
    - .3 [Type 3: <0.74 RSI/25 mm> <<R-4.2/inch>>].

- .4 Water Absorption: In accordance with ASTM D2842 [6] [4] [2] percent by volume maximum.
- .5 Compressive Strength: Minimum <[70] [110] [140] kPa> <<[10] [16] [20.4] psi>>.
- .6 Flame/Smoke Properties: 25/450 in accordance with ASTM E84.
- .7 Board Edges: [Square] [Shiplap] edges.

### 2.3 ADHESIVES

- .1 Adhesive [Type 1]: Type recommended by insulation manufacturer for application.  
[OR]
- .2 Adhesive [Type 1]: Gun grade, mastic type, compatible with insulation and substrate; bond strength of <[\_\_\_\_] N> <<[\_\_\_\_] lbs>>.
- .3 Adhesive [Type 2]: Vapour retarder type, trowel consistency; [fire retardant] compatible with insulation and substrate, conforming to the following:

### 2.4 ACCESSORIES

- .1 Tape: [Bright aluminum] [Polyethylene] [Polyester] self-adhering type, [mesh reinforced], <[50] [\_\_\_\_] mm> <<[2] [\_\_\_\_] inch>> wide.

*Insulation fasteners can be adhered or mechanically fastened to surfaces which are to receive insulation.*

- .2 Insulation Fasteners: Impaling clip of [unfinished] [galvanized steel] [plastic] [nylon] [\_\_\_\_\_] with washer retainer [and clips], to be [adhered] [mechanically fastened] to surface to receive board insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place; [\_\_\_\_\_] manufactured by [\_\_\_\_\_].
- .3 Protective Boards: [Cementitious] [Wood fiberboard] [\_\_\_\_\_] , <[6] [\_\_\_\_] mm> <<[1/4] [\_\_\_\_] inch>> thick; [\_\_\_\_\_] manufactured by [\_\_\_\_\_].

## Part 3 Execution

### 3.1 EXAMINATION

- .1 Section 01700: Verify site conditions.
- .2 Verify that substrate, adjacent materials, and insulation boards are dry and ready to receive insulation [and adhesive].
- .3 Verify substrate surface is flat, free of [honeycomb,] [fins,] [irregularities,] [materials or substances that may impede adhesive bond].

### 3.2 WORKMANSHIP

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

*Verify clearances with local building regulations and safety codes. Check requirements for chimney vents and specify type required. Edit the following paragraph to suit project requirements.*

- .2 Keep insulation minimum <[75] mm><<[3] inches>> from heat emitting devices such as recessed light fixtures, and minimum <[50] mm><<[2] inches>> from [sidewalls of CAN4-S604 type A chimneys] [and] [CAN/CGA-B149.1 and CAN/CGA-B149.2 [type B] [and] [L] vents].
- .3 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.
- .4 Offset both vertical and horizontal joints in multiple layer applications.

### **3.3 INSTALLATION - FOUNDATION PERIMETER**

- .1 Adhere a <[\_\_\_\_] mm> <<[\_\_\_\_] inch>> wide strip of polyethylene sheet over [construction] [\_\_\_\_\_] joints with [double] [\_\_\_\_\_] beads of Type [\_\_\_\_] adhesive each side of joint.
  - .1 Tape seal joints.
  - .2 Extend sheet [full height of joint] [\_\_\_\_\_].
- .2 Apply Type [\_\_\_\_] adhesive [in [three] [\_\_\_\_] continuous beads per board length] [to full bed <[3] [\_\_\_\_] mm> <<[1/8] [\_\_\_\_] inch>> thick].
- .3 Install boards on foundation [wall] [grade beam] [\_\_\_\_\_] perimeter, [vertically] [horizontally].
  - .1 Place boards in a method to maximize contact bedding.
  - .2 Stagger [side] [end] joints.
  - .3 Butt edges and ends tight to adjacent board and to protrusions.
- .4 Extend boards over [control] [expansion] [\_\_\_\_\_] joints, unbonded to foundation <[\_\_\_\_] mm> <<[\_\_\_\_] inches>> on one side of joint.
- .5 Cut and fit insulation tight to protrusions or interruptions to the insulation plane.
- .6 Immediately following application of board insulation, place protective boards over exposed insulation surfaces, [apply Type [\_\_\_\_\_] adhesive in [five] [\_\_\_\_] continuous beads per board length].
  - .1 Install boards [horizontally] [vertically] from [base of foundation] [\_\_\_\_\_] to [top of insulation] [\_\_\_\_\_].
  - .2 Butt board joints tight; stagger from insulation joints.

### **3.4 INSTALLATION – CRAWLSPACE**

- .1 Install insulation to inside face of foundation wall in crawl space area using approved [adhesive] [impaling pins] [furring strips spaced <610 mm> <<24 inches>> oc maximum].

### 3.5 INSTALLATION - EXTERIOR WALLS

*Use the following where insulation occurs behind cement plaster, a synthetic surfacing, metal siding, or other finishing material. Minor editing can identify application to soffit surfaces and interior applications.*

- .1 Apply Type [\_\_\_\_] adhesive [in [three] [\_\_\_\_] continuous beads per board length] [to full bed <[3] [\_\_\_\_] mm> <<[1/8] [\_\_\_\_] inch>> thick]. Daub adhesive tight to protrusions.
- .2 Install boards on [wall surface] [\_\_\_\_], [vertically] [horizontally]. [Place [\_\_\_\_] membrane surface of insulation against adhesive.]
- .3 Place boards in a method to maximize contact bedding. Stagger end joints. Butt edges and ends tight to adjacent board and to protrusions.
- .4 Cut and fit insulation tight to protrusions or interruptions to the insulation plane.

*Coordinate the following paragraphs with Section 07260 - Vapour Retarders and Section 07270 - Air Barriers.*

- .5 Place <[\_\_\_\_] mm> <<[\_\_\_\_] inch>> wide [polyethylene] [\_\_\_\_] sheet at perimeter of wall openings, from adhesive vapour retarder bed to [window] [door] [\_\_\_\_] frame. Tape seal in place to ensure continuity of vapour retarder and air seal.
- .6 [Tape insulation board joints.]

### 3.6 INSTALLATION - CAVITY WALLS

*Utilize this article where rigid insulation occurs in cavity walls, placed on outer surface of inner masonry wythe or other substrate. Ensure insulation board is sized to suit spacing of through wall reinforcement. The use of impale fasteners will improve positioning and bond of insulation. If another mechanical method of fastening insulation is employed, edit the following paragraphs accordingly.*

- .1 Secure impale fasteners to substrate at a frequency of [[6] [\_\_\_\_] per insulation board] [[\_\_\_\_] per <3 sq m> << 10 sq ft>>].
- .2 Adhere a <[\_\_\_\_] mm> <<[\_\_\_\_] inch>> wide strip of polyethylene sheet over [control] [\_\_\_\_] joint with [double] [\_\_\_\_] beads of Type [\_\_\_\_] adhesive each side of joint between sheets. Extend sheet [full height of joint] [\_\_\_\_].
- .3 Apply Type [\_\_\_\_] adhesive [in [three] [\_\_\_\_] continuous beads per board length] [to full bed <[3] [\_\_\_\_] mm> <<[1/8] [\_\_\_\_] inch>> thick on substrate]. [Daub adhesive tight to protrusions to ensure continuity of vapour retarder and air seal.]
- .4 Install boards [horizontally between wall reinforcement] [vertically] [\_\_\_\_].

*On full bed adhesive, place membrane faced boards against adhesive. On bead adhesive, boards may be placed with membrane facing out to permit joint taping.*

- .5 [Place membrane surface against adhesive.] [Place membrane surface facing out, [butter with adhesive] [tape seal] board joints.]
- .6 Place boards in a method to maximize contact bedding. Stagger [side] [end] joints. Butt edges and ends tight to adjacent board and no protrusions. [Place impale fastener locking discs].

- .7 Cut and fit insulation tight to protrusions or interruptions to the insulation plane.

*Coordinate the following paragraphs with Section 07260 - Vapour Retarders and Section 07270 - Air Barriers.*

- .8 Place <[\_\_\_\_\_] mm> <<[\_\_\_\_\_] inch>> wide [polyethylene] [\_\_\_\_\_] sheet at perimeter of wall openings, from adhesive vapour retarder bed to [window] [door] [\_\_\_\_\_] frame. Tape seal in place to ensure continuity of vapour retarder and air seal.

### **3.7 INSTALLATION - UNDER CONCRETE SLABS**

- .1 Place insulation under slabs on grade after base for slab has been compacted [and vapour barrier installed].
- .2 Cut and fit insulation tight to protrusions or interruptions to the insulation plane.
- .3 Prevent insulation from being displaced or damaged while [placing vapour retarder and] placing slab.
- .4 Extend boards <[\_\_\_\_\_] mm> <<[\_\_\_\_\_] inches>> in from perimeter foundation wall [as indicated].

### **3.8 INSTALLATION – ROOF INSULATION**

- .1 Install roof insulation in accordance with Section [\_\_\_\_\_].

### **3.9 PROTECTION OF FINISHED WORK**

- .1 Section [01700] [01 45 00]: Protect finished Work.
- .2 Do not permit work to be damaged prior to covering insulation.

**END OF SECTION**