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This MANU-SPEC® utilizes the Construction Specifications Institute (CSI) *Manual of Practice*, including *MasterFormat*™, *SectionFormat*™ and *PageFormat*™. A MANU-SPEC is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets ( ); delete optional text in final copy of specification. Specifier Notes typically precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate symbols typically are used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies extruded polystyrene insulation for wall applications marketed under the trade name FOAMULAR and manufactured by Owens Corning. FOAMULAR, FOAMULAR 250 and FOAMULAR 150 are registered trademarks of Owens Corning. Revise MANU-SPEC section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat* for other section numbers and titles.

## **SECTION 07210 BUILDING INSULATION**

### **PART 1 GENERAL**

#### 1.01 SUMMARY

- A. Section Includes: Rigid extruded polystyrene insulation protection board for masonry cavity wall applications.
  - 1. Types: Types of rigid extruded polystyrene insulation include:
    - a. FOAMULAR 250 Rigid Foam Insulation.
    - b. FOAMULAR 150 Rigid Foam Insulation.
    - c. FOAMULAR CW15 Rigid Foam Insulation.
    - d. FOAMULAR CW25 Rigid Foam Insulation.

Specifier Note: Revise paragraph below to suit project requirements. Add section numbers and titles per CSI *MasterFormat* and specifier's practice.

- B. Related Sections: Section(s) related to this section include:
  - 1. Concrete: Division 3 Concrete Sections.
  - 2. Masonry: Division 4 Masonry Sections.

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standards referenced. Conditions of the Contract or Division 1 References Section may establish the edition date of standards. This Article does not require compliance with standards, but is merely a listing of references used. Article below should list only those industry standards referenced in this section.

#### 1.02 REFERENCES

- A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by



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issuing authority abbreviation and standard designation.

- B. American Society for Testing & Materials (ASTM):
  - 1. ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

### 1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide extruded polystyrene insulation which has been manufactured and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor either before, during or after construction. Coordinate this Article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 1 Submittal Procedures Section.

### 1.04 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.
- B. Product Data: Submit product data, including manufacturer's SPEC-DATA® product sheet, for specified products.
- C. Samples: Submit selection and verification samples for finishes, colors and textures.
- D. Quality Assurance Submittals: Submit the following:
  - 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.
  - 3. Manufacturer's Instructions: Manufacturer's installation instructions.

Specifier Note: Coordinate paragraph below with Part 3 Field Quality Requirements Article herein. Retain or delete as applicable.

- 4. Manufacturer's Field Reports: Manufacturer's field reports specified herein.
- E. Closeout Submittals: Submit the following:
  - 1. Warranty: Warranty documents specified herein.

Specifier Note: Article below should include prerequisites, standards, limitations and criteria which establish an overall level of quality for products and workmanship for this section. Coordinate below Article with Division 1 Quality Assurance Section.

### 1.05 QUALITY ASSURANCE

- A. Qualifications:
  - 1. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.

Specifier Note: Retain paragraph below to suit project requirements; otherwise delete paragraph below.

- a. Certificate: When requested, submit certificate indicating qualifications.
  - 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction and approving application method.

Specifier Note: Paragraph below should list obligations for compliance with specific code requirements particular to this section. General statements to comply with a particular code are typically addressed in Conditions of the Contract and Division 1 Regulatory Requirements Section. Repetitive statements should be avoided.

B. Regulatory Requirements: (Specify applicable requirements of regulatory agencies.).

Specifier Note: Building Codes. Edit paragraph below to suit project. Current data on building code requirements and product compliance may be obtained from Owens Corning technical support specialists. Installation must comply with the requirements of all applicable local, state and national code jurisdictions. For code compliance, see the following reports: HUD Use of Materials Bulletin #71a for sheathing; California Energy Commission and Department of Consumer Affairs; State of Minnesota Department of Energy; City of New York B.S.A. #978-79-S; Underwriters Laboratories, Inc., Classification Certificate U-197; ICBO Evaluation Report #3628; BOCA Research Report 96-24; SBCCI PST & ESI 9727.

1. Building Code: (Specify applicable requirements of building code to suit project requirements.).

Specifier Note: Approvals. Edit paragraph below to suit project. Current data on approvals and product compliance may be obtained from Owens Corning technical support specialists. For code compliance, see the following reports: HUD Use of Materials Bulletin #71a for sheathing; California Energy Commission and Department of Consumer Affairs; State of Minnesota Department of Energy; City of New York B.S.A. #978-79-S; Underwriters Laboratories, Inc., Classification Certificate U-197; ICBO Evaluation Report #3628; BOCA Research Report 96-24; SBCCI PST & ESI 9727.

2. Approvals: (Specify applicable requirements for approvals to suit project requirements.).

Specifier Note: Coordinate paragraph below with Division 1 Project Management And Coordination (Project Meetings) Section.

C. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings) Section.

Specifier Note: Article below should include special and unique requirements. Coordinate Article below with Division 1 Product Requirements Section.

#### 1.06 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 1 Product Requirements Sections.
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- D. Storage and Protection: Store materials protected from exposure to harmful weather conditions, at temperature and humidity conditions recommended by manufacturer.
  - 1. Handle and store product according to Owens Corning recommendations. Materials should be delivered in their original unopened units, stored off the ground, protected from direct sunlight with a light colored opaque polyethylene film and ventilated to prevent excessive temperature. Damaged or deteriorated materials should be removed from the premises.

Specifier Note: Coordinate Article below with Conditions of the Contract and with Division 1 Closeout Submittals (Warranty) Section.

#### 1.07 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.

Specifier Note: Warranty: It is the responsibility of the contractor to install FOAMULAR in accordance with Owens Corning's published recommendations. The presence of an Owens Corning representative at the jobsite does not relieve the contractor from the responsibility to follow these instructions. Owens Corning is not responsible for any liability resulting from a failure to follow these instructions. The manufacturer offers a warranty on retention of R-value over time. The manufacturer's liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to the manufacturer within 30 days from the date it was, or reasonably should have been, discovered. Further information on warranty conditions, duration and remedies may be obtained from Owens Corning.



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- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

Specifier Note: Coordinate paragraph below with manufacturer's warranty requirements.

1. Warranty Period: (Specify term.) years commencing on Date of Substantial Completion.

## **PART 2 PRODUCTS**

Specifier Note: Retain Article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

### 2.01 MASONRY CAVITY WALL INSULATION

- A. Manufacturer: Owens Corning.

Specifier Note: Paragraph below is an addition to CSI *SectionFormat* and a supplement to MANU-SPEC. Retain or delete paragraph below per project requirements and specifier's practice.

1. Contact: One Owens Corning Parkway, Toledo, OH 43659; Telephone: (800) 438-7465, (800) GET-PINK, (419) 248-8000; Fax: (419) 248-8052; website: [www.owenscorning.com](http://www.owenscorning.com).

Specifier Note: Owens Corning FOAMULAR, an extremely lightweight closed cell polystyrene panel, is used to insulate residential and commercial structures of all kinds. It is an all purpose foam panel insulation for masonry, cast in place concrete and other applications. FOAMULAR 150, FOAMULAR 250, CW 15 and CW 25 are well suited for use in masonry cavity walls, wall furring and perimeter, foundation and underslab applications in most types of residential and commercial buildings. Owens Corning's patented Hydrovac process technology makes the unique closed cell polystyrene structure of FOAMULAR insulation highly resistant to moisture while retaining it's initial R-value, year after year, even following prolonged exposure to humidity, condensation, ground water and freeze/thaw cycling. FOAMULAR's superior R-value of 5 per inch of product thickness, outstanding moisture resistance for long-term performance and tough compressive strength are significant performance benefits of these products. Limitations: FOAMULAR is practical for buildings having normal temperature conditions but should not be used in contact with chimneys, heater vents, steam pipes or other surfaces where temperatures exceed 150 degrees F (65 degrees C). It is not recommended for applications where sustained temperatures exceed 165 degrees F (74 degrees C). Construction should be evaluated by a qualified design professional for the necessity of providing vapor retarders to avoid condensation and subsequent damage to the structure. (See current ASHRAE Handbook of Fundamentals for more information.) Provisions should be made to protect the insulation from excessive exposure to direct sunlight by covering the insulation as soon as possible. Some plastic or oil based adhesives and many solvent laden mastics are not compatible with polystyrene based rigid foam insulation. FOAMULAR is a nonstructural material and must be installed on framing or other substrate that is independently structurally adequate to meet required construction and service loading conditions; Weep holes through exterior masonry and flashing are required to drain moisture from cavity. FOAMULAR panels are available in thicknesses of 1/2" - 4" (12.7 - 102 mm) and sizes from 16" - 48" (406 - 1219 mm) wide by 96" (2438 mm) long. Custom panel sizes are also available. FOAMULAR panels are offered in square, scored square, tongue-and-groove and rain channeled edges.

- B. Proprietary Product(s)/System(s): FOAMULAR Extruded Polystyrene Insulation.

Specifier Note: Owens Corning FOAMULAR 250 extruded polystyrene insulation is ideal for wall furring, perimeter/foundation, cavity wall, crawlspace, precast concrete, under slab, roofing systems, sheathing and other applications. Performance benefits include: High R-value (R-5 per inch of product thickness); compressive strength of 25 psi (172 kPa); effective resistance against moisture, mildew, corrosion and rot; ease of handling and installation; easy to saw, cut and score; wide selection of sizes and thickness; availability in straight, tongue-and-groove or scored square edges; compliance with building codes and standards. Consult manufacturer's literature; coordinate thickness, size and edge treatment with available products.

1. FOAMULAR 250 Rigid Foam Insulation: Extruded polystyrene closed cell foam panel with continuous skins on face

and back surfaces, 25 psi (172 kPa) minimum compressive strength minimum in accordance with ASTM D1621.

- a. Thickness: (Specify thickness.) Available thicknesses: 3/4", 1", 1 1/2" (19.1, 25.4, 38 mm).
- b. Size: (Specify size.) Available sizes: 48" x 96" (1219 x 2438 mm), 48" x 108" (1219 x 2743 mm), or size as indicated on drawings.
- c. Edges: (Specify edge treatment.) Tongue-and-groove, square edge.

Specifier Note: Owens Corning FOAMULAR 150 extruded polystyrene insulation is ideal for wall furring, perimeter/foundation, cavity wall, crawlspace, precast concrete, under slab, roofing systems, sheathing and other applications. Performance benefits include: High R-value (R-5 per inch of product thickness); compressive strength of 15 psi (104 kPa); effective resistance against moisture, mildew, corrosion and rot; ease of handling and installation; easy to saw, cut and score; wide selection of sizes and thickness; available in straight, tongue-and-groove or scored square edges; compliant with building codes and standards.

2. FOAMULAR 150 Rigid Foam Insulation: Extruded polystyrene closed cell foam panel with continuous skins on face and back surfaces, 15 psi (104 kPa) minimum compressive strength in accordance with ASTM D1621.
  - a. Thickness: (Specify thickness.) Available thicknesses: 1", 1 1/2", 2", 2 1/2", 3", 3 1/2" (25.4, 38, 51, 64, 76, 89 mm) or as indicated on drawings.
  - b. Size: (Specify size.) Available sizes: 24" x 96" (610 x 2438 mm), 48" x 96" (1219 x 2438 mm), 48" x 108" (1219 x 2743 mm) or size as indicated on drawings.
  - c. Edges: (Specify edge treatment.) Available edges: Square, scored square, tongue-and-groove.

Specifier Note: Owens Corning offers FOAMULAR Extruded Polystyrene Insulation CW15 and CW25 designed for masonry cavity wall applications, available in 1", 1.5", 2" (25.4, 38, 51 mm) thickness, and sized 16" (406 mm) wide x 96" (2438 mm) long.

Specifier Note: Owens Corning FOAMULAR CW25 is an extruded polystyrene insulation and is ideal for masonry cavity wall applications. Performance benefits include: High R-Value (R-5 per inch of product thickness); compressive strength of 25 psi (172 kPa); effective resistance against moisture, mildew, corrosion and rot; ease of handling and installation; easy to saw, cut and score; availability in square edges; compliance with building codes and standards. Consult manufacturer's literature; coordinate thickness, size and edge treatment with available products.

3. FOAMULAR CW25 Rigid Foam Insulation: Extruded polystyrene closed-cell foam panel with continuous skins on face and back surfaces, 25 psi (172 kPa) minimum compressive strength minimum in accordance with ASTM D1621.
  - a. Thickness: (Specify thickness; available thicknesses: 1", 1 1/2", 2" (25.4, 38, 51 mm)).
  - b. Size: 16" x 96" (406 x 2438 mm), as indicated on drawings.
  - c. Edges: Square edges.

Specifier Note: Owens Corning FOAMULAR CW15 is an extruded polystyrene insulation and is ideal for masonry cavity wall applications. Performance benefits include: High R-value (R-5 per inch of product thickness); compressive strength of 15 psi (104 kPa); effective resistance against moisture, mildew, corrosion and rot; ease of handling and installation; easy to saw, cut and score; availability in square edges; compliance with building codes and standards.

4. FOAMULAR CW15 Rigid Foam Insulation: Extruded polystyrene closed-cell foam panel with continuous skins on face and back surfaces, 15 psi (104 kPa) minimum compressive strength minimum in accordance with ASTM D1621.
  - a. Thickness: (Specify thickness; available thicknesses: 1", 1 1/2", 2" (25.4, 38, 51 mm), as indicated on drawings.).
  - b. Size: 16" x 96" (406 x 2438 mm), as indicated on drawings.
  - c. Edges: Square edges.
  - d. Types: (FOAMULAR 150 - Type X) (FOAMULAR 250 - Type IV).

- C. Material Standard: Provide FOAMULAR insulation products complying with ASTM C578 standards for Type X and Type IV.



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Specifier Note: Paragraph below list properties for Owens Corning CW 15, CW 25, FOAMULAR 250 and FOAMULAR 150 insulation. Revise paragraph below for to suit project requirements.

- D. Product(s) Testing: Provide extruded polystyrene insulation complying with the following properties:
1. Flexural Strength (ASTM C203): (FOAMULAR 150, 60 psi (413 kPa) minimum) (FOAMULAR 250, 75 psi (517 kPa) minimum).
  2. Water Absorption (ASTM C272): 0.1% by volume maximum.
  3. Thermal Conductivity k-value at 75 degrees F (24 degrees C) (ASTM C518): 0.2.
  4. Thermal Conductivity k-value at 40 degrees F (4 degrees C) (ASTM C518): 0.18.
  5. Compressive Strength (ASTM D1621): (FOAMULAR 150, 15 psi (104 kPa) minimum) (FOAMULAR 250, 25 psi (172 kPa) minimum).
  6. Dimensional Stability (ASTM D2126): 2% linear change maximum.
  7. Oxygen Index (ASTM D2863): 24 minimum.
  8. Flamespread (ASTM E84): 5.
  9. Smoke Developed (ASTM E84): 45 - 175.
  10. Water Vapor Permeance (ASTM E96): 1.1 perm max.

Specifier Note: Edit Article below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to Division 1 Project Requirements (Product Substitutions Procedures) Section.

## 2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

## 2.03 ACCESSORIES

- A. General: Provide accessory materials, including panel adhesive and construction tape or sealant as recommended by manufacturer.

## 2.04 RELATED MATERIALS

- A. Related Materials: Refer to other sections listed in Related Sections paragraph herein for related materials.

## 2.05 SOURCE QUALITY

- A. Source Quality: Obtain below-grade insulation panel materials from a single manufacturer.

## PART 3 EXECUTION

Specifier Note: Article below is an addition to the *CSI SectionFormat* and a supplement to MANU-SPEC. Revise Article below to suit project requirements and specifier's practice.

## 3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

## 3.02 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.

## 3.03 PREPARATION

- A. Surface Preparation: (Specify applicable product preparation requirements).

Specifier Note: Coordinate Article below with manufacturer's recommended installation details and requirements. Although it

does contain a flame-retardant additive to inhibit ignition from small fire sources, Owens Corning FOAMULAR insulation will ignite if exposed to fire of sufficient heat and intensity. Products intended for wall applications should be installed only with a thermal barrier on the interior side of the wall. During shipping, storage, installation and use, this product should not be exposed to open flame or other ignition sources.

### 3.04 INSTALLATION

Specifier Note: Masonry Cavity Walls: Quickly and easily placed between wall ties, CW 15, CW 25, FOAMULAR 150 and FOAMULAR 250 offer low thermal conductivity for energy savings in cavity wall applications. In addition, the products retard the transmission of water vapor and moisture from the backup concrete block wall to the exterior wall thus preventing the structural damage often caused by these elements. Since FOAMULAR is a rigid foam insulation that is practically impervious to the effects of moisture, its insulating effectiveness will not deteriorate over time. It also will not settle like blown or poured types of insulation. Use of FOAMULAR extruded polystyrene insulation can reduce fuel and equipment costs and increase occupant comfort.

- A. Cavity Wall Insulation: Place insulation between wall ties with long edge horizontal with ends and edges butted. Install insulation against back-up wall allowing 1" (25.4 mm) minimum air space between insulation and outer wall. Cut insulation with saw or sharp knife to fit tightly around vents, louvers, pipes, conduit and other wall penetrations.

Specifier Note: Perimeter/Foundation/Underslab: FOAMULAR provides excellent thermal and mechanical properties even when used below-grade in perimeter and foundation applications, or on-grade directly beneath the concrete slab. Applied from the footing to the top of the foundation, FOAMULAR complements the insulating envelope around the building walls. Installed around a concrete block exterior foundation, FOAMULAR is mechanically or adhesively attached, or held in place with backfill. FOAMULAR's built-in rigidity and strength permit it to withstand the pressures of heavy loads. FOAMULAR is resistant to common soil acids and decay, and retains its insulating performance even after prolonged exposure to moisture.

- B. Foundation/Perimeter Insulation: Before backfilling, install FOAMULAR insulation to the exterior of all foundation walls from top of footing, upwards. Adhere insulation to clean surfaces with long edges horizontal, edges tightly butted and vertical joints staggered. Secure insulation with adhesive applied to back of panels with 1/4" - 3/8" (6.4 - 9.5 mm) continuous beads spaced 16" (406 mm) oc or 1 1/2" (38 mm) diameter, 1 1/2" (38 mm) high spots in rows 8" (203 mm) apart and spaced 16" (406 mm) oc. Apply insulation to wall within 15 minutes after adhesive is applied. Backfill carefully to prevent damage to insulation. Where insulation is exposed between ground level and bottom of exterior finish, apply reinforced stucco, painted weatherproof board or other suitable protective coating over insulation.
- C. Crawl Space Insulation: Securely attach FOAMULAR insulation to inside face of foundation wall using approved adhesive, impaling pins, or furring strips spaced 24" (609 mm) oc maximum. FOAMULAR can be exposed in crawl spaces. Install in accordance with building code requirements for exposed application or cover per code requirements.
- D. Below Floor Slab Insulation: Install FOAMULAR insulation after gravel fill has been built up to grade and thoroughly compacted, and vapor retarder placed. Lay insulation in place with edges pressed together and butting foundation wall or adjacent vertical insulation. Pour concrete slab to cover all insulation.
- E. Related Products Installation: Refer to other sections listed in Related Sections paragraph herein for related products installation.

### 3.05 FIELD QUALITY REQUIREMENTS

- A. Site Tests (Installation and Post-Installation Testing): (Specify applicable test requirements to be performed during and/or after product installation.).

Specifier Note: Edit paragraph below. Establish number and duration of periodic site visits with Owner and manufacturer, and specify below. Consult with manufacturer for services required. Coordinate paragraph below with Division 1 Quality Assurance Section and Part 1 Quality Assurance Submittals herein. Delete if manufacturer's field service not required.

- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.



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1. Site Visits: (Specify number and duration of periodic site visits.)

3.06 CLEANING

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove construction debris from project site and legally dispose of debris.

3.07 PROTECTION

- A. Protection: Protect installed product and finish surfaces from damage during construction.

**END OF SECTION**