

## SECTION 07211

### SPRAYED FOAM INSULATION FOR BUILDING ENVELOPE

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Sprayed polyurethane foam insulation.
- B. Vapor retarder.
- C. Thermal barrier (fire resistive) coating.

##### 1.2 RELATED SECTIONS

- A. Section 07260 - Vapor Retarders: Separate sheet vapor retarders.
- B. Section 07570 - Coated Foamed Roofing: Spray polyurethane foam on exterior side of roof decks.
- C. Section 09260 - Gypsum Board Assemblies: Gypsum board for thermal barrier covering foam insulation.
- D. Division 15 - Mechanical: Plumbing and HVAC components penetrating insulation.
- E. Division 16 - Electrical: Electrical components penetrating insulation.

##### 1.3 REFERENCES

- A. ASTM D 1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
- B. ASTM D 1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics.
- C. ASTM D 2856 - Standard Test Method for Open-Cell Content of Rigid Cellular Plastics by the Air Pycnometer.
- D. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- E. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
- F. SPI Bulletin AX-119 - MDI-Based Polyurethane Foam Systems: Guidelines for Safe Handling and Disposal;

Society of the Plastics Industry, Inc., Polyurethane Division.

#### 1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data on products to be installed.
  - 1. Application or installation instructions.
  - 2. Listing, classification, and approval certifications.
  - 3. Safety and handling instructions for storage, handling and use of the materials.
- C. Product Certification: SPI/SPDF accreditation test for materials.
- D. Certifications: If manufacturer's published data sheets do not indicate compliance with all specification requirements, provide letter of certification that all products comply with the specification requirements; include primers (if required), foam and coatings.
- E. Shop Drawings: Show materials and details of fabrication of sheet metal, accessories, or other fabricated items.
- F. Qualification Statements:
  - 1. Manufacturer qualifications.
  - 2. Installer qualifications.
  - 3. Independent inspector qualifications.
- G. Applicator's Field Quality Control Procedures: Written description of procedures to be utilized to insure proper preparation and installation of foam and coatings, detail work and follow-up inspection.
- H. Maintenance Data: Manufacturers' recommended protection, cleaning, and repair procedures, including recommended frequency of inspection.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A firm with experience installing insulation systems of the type specified.
  - 1. Show contractor/supplier level accreditation by SPI SPFD Accreditation Program.
  - 2. Approved or certified by the foam manufacturer as qualified to install the specified system.

3. Provide information concerning projects similar in nature to the one proposed including location and person to be contacted.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Provide materials packaged in the manufacturer's original, tightly sealed containers or unopened packages, clearly labelled with the manufacturer's name, product identification, safety information, and batch or lot numbers where appropriate. Where materials are covered by a referenced specification, the labels shall bear the specification number, type and class, as applicable.
- B. Store materials out of the weather and out of direct sunlight in locations where the temperatures are within the limits specified by the manufacturer.

#### 1.7 PROJECT CONDITIONS

- A. Comply with the manufacturer's instructions and recommendations as to handling and safety procedures.

### PART 2 PRODUCTS

#### 2.1 MANUFACTURERS

- A. Provide products of Foam Enterprises, Inc., 13630 Water Tower Circle, Minneapolis, MN 55441. ASD. Tel: (800) 888-3342. Fax: (612) 559-0945.
- B. Substitutions are not acceptable.
- C. Submit requests for substitutions in accordance with provisions of Section 01600.

#### 2.2 MATERIALS

- A. Foam: Sprayed-in-place two-component closed-cell polyurethane made by combining an isocyanate (A) component with a polyol (B) component, with the following physical characteristics:
  1. Density in place, when tested in accordance with ASTM D 1622: 1.7 to 1.8 lb/cu ft (27 to 29 kg/cu m).
  2. Compressive Strength, when tested in accordance with ASTM D 1621: 20 to 30 psi (1.4 to 2.1 Pa), minimum.
  3. Closed Cell Content, when tested in accordance with ASTM D 2856: 87 percent, minimum.
  4. R-value, aged: 6.8.

5. Flame Spread Index, when tested in accordance with ASTM E 84: Less than 75.
  6. Smoke Developed Index, when tested in accordance with ASTM E 84: Less than 450.
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- B. Primers: As recommended by the manufacturer of the spray foam materials specified.
  - C. Vapor Retarder: Fluid-applied coating, Lion Oil Co., Nokorde 706M; permeability of 0.01 perm or less, when tested in accordance with ASTM E 96, Method D.
  - D. Thermal Barrier: Sprayed coating, W.R. Grace Zonolite 3306 or International Cellulose Ure-K; applied for fire resistance rating of 15 minutes.

## PART 3 EXECUTION

### 3.1 GENERAL

- A. Comply with the instructions and recommendations of the foam and coatings manufacturers.
- B. Familiarize all installers with correct and safe application and handling procedures:
  1. See SPI Bulletin AX-119, "MDI-Based Polyurethane Foam Systems: Guidelines for Safe Handling and Disposal."
  2. Refer to appropriate Materials Safety Data Sheets (MSDS) for additional safety information.

### 3.2 PREPARATION

- A. Primed Steel: If the surface is free of loose scale, rust, weathered or chalking paint, it can be cleaned using vacuum equipment and hand or power tools to remove loose dirt.
- B. Previously Painted Steel: Clean using hand or power tools to remove loose scale and dirt.
- C. Galvanized Steel and Unpainted Steel: Clean as recommended by primer manufacturer.
- D. New Concrete: Allow to cure for twenty-eight (28) days prior to the application of primer or foam.
- E. Previously Painted Surfaces: Remove all loose paint.

- F. Remove loose dirt, dust and debris by using compressed air, vacuum equipment or brooming. Remove oil, grease, form release agents, laitance, and other contaminants using proper cleaning solutions. Do not wash wood or porous materials with water.
- G. Grout, tape, or calk all joint openings that exceed 1/4 inch (6 mm) in width.
- H. Prime all metal as recommended by manufacturer.
- I. Prime all concrete surfaces.

### 3.3 FOAM APPLICATION

- A. Do not begin application of foam until all preparation requirements have been completed.
- B. Do not apply foam when the temperature is below or the humidity is above that specified by the manufacturer for ambient air and substrate.
- C. Apply foam in accordance with the manufacturer's specifications and instructions.
- D. Apply foam to a \_\_\_\_ inch (\_\_\_\_ mm) thickness, with pass thickness of 1/2 inch (13 mm) to 1-1/2 inches (38 mm). Complete the full thickness of foam in any area prior to the end of each day.

### 3.4 VAPOR RETARDER INSTALLATION

- A. Apply vapor retarder in accordance with building code requirements and the manufacturer's specifications and instructions.
- B. Apply vapor retarder to the entire surface of the foam in a continuous film across corners and junctions.

### 3.5 THERMAL BARRIER APPLICATION

- A. Allow vapor retarder to cure before the thermal barrier coating is applied. Repair damage and defects to the vapor retarder prior to the application of the thermal barrier.
- B. Apply thermal barrier over entire surface of foam.

C. Allow thermal barrier to cure. Inspect for defects and repair defects prior to subsequent coats.

END OF SECTION