
MANUFACTURER'S GUIDE SPECIFICATIONS

SECTION 04 27 23 REFLECTIVE-FACED, MASONRY CAVITY WALL INSULATION



SECTION 04 27 23 FOIL-FACED CAVITY WALL INSULATION

1 GENERAL

1.01 SECTION INCLUDES

- A. Foil-faced, polyisocyanurate foam plastic insulation board (FPIB) installed in masonry cavity walls.
- B. Materials and installation to provide continuous insulation in walls as indicated in Drawings and as required in [Section 01 41 13 – Codes, Section 01 83 16 – Exterior Enclosure Performance Requirements].

1.02 RELATED SECTIONS

- A. Section 01 41 13 – Codes. [FPIB may trigger code requirement for NFPA 285 wall assembly test.]
- B. Section 01 83 16 – Exterior Enclosure Performance Requirements. [Continuous insulation, hygro-thermal performance, proper integration of FPIB with neighboring components.]
- C. Section 01 91 19 – Facility Shell Commissioning. [Address continuity of thermal barrier throughout the building enclosure, alignment of FPIB with fenestration thermal breaks, assure that FPIB does not interfere with wall weep/ drainage systems and address any other issues involving proper incorporation of the FPIB into the building enclosure.]
- D. Section 04 20 00 – Unit Masonry. Masonry veneer shall be attached to masonry back-up wall through FPIB. Through-wall flashing attachment shall be to masonry back-up wall, not to FPIB.
- E. Section 07 25 00 – Weather Barriers and Section 07 27 00 – Air Barriers. Building wrap, paper or membrane materials covered by FPIB or installed over FPIB:
 - 1. Air/weather barrier on base wall assembly covered by FPIB: Verify that air/weather barrier is secure and correctly installed before covering with FPIB. Adhesive to bond FPIB shall be compatible with FPIB and air/weather barrier.
 - 2. Over FPIB: FPIB is a substrate for the air/weather barrier, subject to requirements in air/weather barrier Section.
- F. Division 08 – Openings. Provide an air and water tight seal of fenestration to FPIB.
- G. Facility Services Subgroup – Divisions 20 through 28. These trades may be penetrating the FPIB with mechanical, electrical, telecommunications or other service. Rough gaps around penetrations or other damage shall be filled as provided in 3.02 paragraph J.

H. Section [_____] Other

1.03 REFERENCES

- A. ASTM C 209 Standard Test Methods for Cellulosic Fiber Insulating Board
- B. ASTM C 518 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- C. ASTM C 1289 Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
- D. ASTM D 2126 Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging
- E. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
- F. ASTM E 96 Standard Test Methods for Water Vapor Transmission of Materials
- G. NFPA 285 Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

1.04 PERFORMANCE REQUIREMENTS

- A. Material Properties - FPIB
 - 1. Shall consist of a closed-cell, polyisocyanurate foam core faced on both sides with reinforced aluminum foil.
 - 2. Shall meet ASTM C 1289 Type I, Class 1 [Grade 2 (20 psi) or Grade 3 (25 psi)]
 - 3. Minimum thickness and R-Value [Select : 1 inch R-6.5, 1.5 inch R-10.0, 2.0 inch R-13.3, 2.5 inch R-17.0, 3.0 inch R-20.3, 3.5 inch R-24.0], units: $F \cdot ft^2 \cdot h / Btu$ per inch. Measured at 75 degrees F mean temperature, as per ASTM C 518 according to requirements of ASTM C 1289.
 - 4. Flame spread index: 75 or less, smoke generation index: 450 or less, ASTM E 84
 - 5. Water vapor permeance of 1 inch thick board: Maximum 0.1 Perm, ASTM E 96 A
 - 6. Dimensional stability: Maximum 2% change after 7 days, ASTM D 2126
 - 7. Water absorption: Maximum 0.05% volume, ASTM C 209
- B. Material Properties – Insulation Adhesive
 - 1. Shall consist of solvent-based synthetic rubber
 - 2. Percent solids: 58% minimum, ASTM
 - 3. Low-temp flexibility: No cracking after 180 degree bend over 1” mandrel at minus 25 degrees F, ASTM D 1970
 - 4. Tensile elongation: 1,000% minimum, ASTM D 412
 - 5. Peel adhesion on aluminum substrate: 25 lb/in minimum, ASTM D 903
 - 6. Volatile Organic Content (VOC): 250 g/L, maximum
- C. Material Properties – Foam Sealant
 - 1. Shall consist of one-component, low expansion polyurethane foam.

2. Flame Spread Index 25 or less, Smoke Developed Index 450 or less, ASTM E 84
 3. Cellular structure: Minimum 60% closed cell
 4. Skin formation time: 10 minutes or less
 5. Waterproof after full cure
- D. Properties, Products and Manufacturers – FPIB Fasteners. Use any of the following:
1. Standard FPIB Fastener: Metal screw with corrosion resistant coating fitted with a low-profile plastic washer designed to grip and hold FPIB to masonry substrate:
 - a) Approved masonry screw with Thermal-Grip CI Washer or Thermal-GRIP CI Prong Washer, by Rodenhouse Fastening Systems
 - b) Approved masonry screw with CI-Lock washer by Wind-Lock
 2. Plastic Screw FPIB Fastener: Plastic tap-in screw with integral washer head designed to grip and hold FPIB to masonry substrate.
 - a) Plasti-Grip PMF by Rodenhouse Fastening Systems
 - b) Con-Grip by Wind-Lock

1.05 SUBMITTALS

- A. FPIB manufacturer's product literature, including physical properties, installation instructions and detail drawings.
- B. Confirmation in writing of compatibility of insulation adhesive with weather barrier and FPIB
- C. [Retain for Projects of Type I-IV construction: Confirmation in writing that FPIB passes NPFA 285 in Project wall assemblies.]
- D. Sample of FPIB, minimum 4 inch X 4 inch size
- E. FPIB manufacturer's 15-year thermal performance warranty

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: Shall be experienced in applying the same or similar materials.
- B. Product and Accessories shall comply with all state and local regulations controlling use of volatile organic compounds (VOCs)
- C. Comply with the provisions of the Owner's building envelope commissioning program in accordance with [Section 01 91 15]
- D. Pre-Installation Meeting: Convene [one] [_____] week prior to commencing Work of this Section, in accordance with [Section 01 31 19 - Project Meetings].
- E. [Note to specifier: Mockup construction is recommended but not required. Retain paragraph F if mockups will be built and evaluated.]
- F. Field-Constructed Mock-Ups: Prior to installation on Project, apply insulation and accessories on mock-up to verify details under shop drawing submittals, to

demonstrate tie-ins with adjoining construction and other termination conditions and to become familiar with properties of materials in application. [NOTE TO SPECIFIER: incorporate sub paragraph 1 or 2 into Paragraph F]

1. Apply in field-constructed mockups of assemblies as specified in [Section 01 43 39 – Mockups]
 2. Construct typical exterior wall panel, 8 feet long by 8 feet wide, incorporating back-up wall, air/weather barrier, FPIB, FPIB fastening/bonding, cladding, window and doorframe and sill and flashing, [building corner condition,] [junction with roof system] [foundation wall] [and] [typical penetrations and gaps]; illustrating interface of materials.
- G. Perform visual inspection of Work before it is covered up. Take photographs and notes to document progress and quality.
- H. Cooperate and coordinate with the Owner's inspection and testing agency. Do not cover any installed FPIB unless it has been inspected, tested and approved

1.07 DELIVERY, STORAGE AND HANDLING

- A. Protect FPIB from physical damage.
- B. Store FPIB in an area protected from precipitation and direct sunlight, or store pallets outdoors elevated above ground 4 inches minimum and covered with breathable UV-resistant tarpaulin.
- C. Store insulation adhesive, insulation tape and foam sealant in an area maintained between 50 and 90 degrees F and protected from precipitation and direct sunlight.
- D. Handle FPIB carefully, so corners are not damaged or broken off.

1.08 PROJECT CONDITIONS

- A. Install insulation adhesive and foam sealant within approved ambient and substrate temperature range and conditions stated in manufacturer's literature.
- B. Do not apply insulation adhesive or foam sealant over incompatible materials
- C. Observe safety and environmental measures indicated in manufacturer's MSDS, and mandated by federal, state and local regulations.

2 PRODUCTS

2.01 PRODUCT: Provide foil-faced polyiso foam plastic insulation boards (FPIB) [] inch thickness [select R-value and thickness from 1.04A] dimensions [select one: 4 ft X 8 ft, 4 ft X 9 ft, 4 ft X 12 ft, 16 inch X 8 ft, 24 inch X 8 ft or [other custom size]]

- A. R2+ SILVER as manufactured by Carlisle Coatings & Waterproofing, Incorporated. 900 Hensley Lane, Wylie, TX 75098. Phone 1-800-527-7092. Website <http://www.carlisle-ccw.com>
- B. [Equivalent product by others as approved by Design Professional]

2.02 ACCESSORIES:

- A. Insulation Adhesive:

1. LM 800 XL by Carlisle Coatings & Waterproofing
 2. Other products as approved by FPIB manufacturer
- B. Foam Sealant:
1. FireBlock Gun Foam by TVM Building Products
 2. Fireblock Foam Sealant by FOMO
 3. Other products as approved by FPIB manufacturer

3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions affecting FPIB installation for compliance with requirements. Verify that surfaces and conditions are suitable prior to commencing Work of this section. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Wall surfaces shall be of sound condition, free of protrusions of surface defects that would prevent snug fit of FPIB.
- C. Weather barrier or air barrier membrane over wall surfaces shall be securely-attached, correctly-installed and in good condition.

3.02 INSTALLATION

- A. Install FPIB in a single layer over masonry wall surfaces to achieve specified R-value.
- B. Cut FPIB to size and shape to go around obstacles and to provide snug fit on wall surface.
- C. Butt neighboring FPIB pieces tightly together. Offset board joints in neighboring rows 12 inches minimum.
- D. Fill gaps exceeding 1/8 inch between neighboring FPIB pieces
- E. Fill gaps exceeding 1/8 inch around penetrations through FPIB and at terminations of FPIB.
- F. Use the following materials to fill gaps between neighboring FPIB pieces, around penetrations through FPIB and at terminations of FPIB:
 1. Gaps up to 1/2 inch across: foam sealant
 2. Gaps exceeding 1/2 inch across: pieces of FPIB secured in place with foam sealant or insulation adhesive.
 3. Note to installer: Do not seal through-wall flashing weep paths.
- G. [Retain for FPIB installation between rows of imbedded ladder brick ties] Install factory-cut FPIB, sized to fit between rows of imbedded brick ties. Bond FPIB snug to wall with insulation adhesive.
- H. [Retain for FPIB installation over knife plate type brick ties] Push FPIB over knife plate ties. Use technique to prevent emerging knife plates from delaminating FPIB facer. Bond FPIB snug to wall with insulation adhesive.

- I. Bonding FPIB in place: Apply 3/8 inch thick X 3 inch diameter dabs of insulation adhesive to the FPIB, spaced maximum 16 inches on center. Press FPIB tightly to wall substrate within open time of the insulation adhesive. Fasten as required with standard FPIB fasteners or plastic screw FPIB fasteners to snug FPIB to non-plumb surfaces.

3.03 REPAIR AND PROTECTION

- A. Protect insulation from mechanical damage and exposure to open flame during installation and exposure.
- B. FPIB is not approved for permanent exposure. Cover exterior with code-approved cladding. Cover interior with code-approved thermal barrier
- C. Cover exterior-applied FPIB with cladding as soon as schedule permits. Do not leave FPIB exposed longer than 60 days, unless FPIB is covered with an approved weather barrier.

END OF SECTION