SECTION 07 21 53
REFLECTIVE INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Reflective insulation.

1.2 RELATED REQUIREMENTS

A. Section 06 11 00 – Wood Framing.
B. Section 07 26 00 – Vapor Retarders.
C. Section 07 27 00 – Air Barriers.
D. Section 09 22 13 – Metal Furring.

1.3 REFERENCE STANDARDS

Room Temperature Using Portable Emissometers.


H. ICC-ES AC 02 – Acceptance Criteria for Reflective Insulation.

1.4 SUBMITTALS

A. Comply with Section 01 33 00 – Submittal Procedures.

B. Product Data: Submit manufacturer’s product data, including installation instructions.

C. Samples: Submit manufacturer’s sample of reflective insulation, minimum 6 inches square.

D. Manufacturer’s Certification: Submit manufacturer’s certification that materials comply with specified requirements and are suitable for intended application.

E. Sustainable Design Submittals: Submit manufacturer’s sustainable design submittals.
   1. Recycled Content: Certify percentages of pre-consumer and post-consumer recycled content.

F. Warranty Documentation: Submit manufacturer’s standard warranty.

A. 1.5 QUALITY ASSURANCE

A. Manufacturer’s Qualifications: Manufacturer regularly engaged, for a minimum of 10 years, in the manufacturing of reflective insulation of similar type to that specified.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery Requirements: Deliver materials to site in manufacturer’s original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage and Handling Requirements:
   1. Store and handle materials in accordance with manufacturer’s instructions.
   2. Keep materials in manufacturer’s original, unopened containers and packaging until installation.
   3. Store materials in clean, dry area indoors.
   4. Protect materials during storage, handling, and installation to prevent damage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

B. Substitutions: [Not permitted] [In accordance with Division 1].

2.2 REFLECTIVE INSULATION

A. Reflective Insulation: Fi-Foil “AA2 Vapor Shield”.

1. Version: [Solid version, non-perforated reflective insulation] [Perforated version, perforated reflective insulation].

2. Tabs: [Staple tabs for wood furring] [Tape tabs for metal framing].

B. Description:

1. Multi-layer reflective insulation.
   1. Inside Layer: Aluminum foil.
   2. Outside Layer: Natural kraft paper coated with polyethylene, laminated to flange boards or expanders that separate paper from foil creating a reflective air space.
   3. When installed on furring strips spaced 16 inches or 24 inches on center, a second reflective air space is formed. This air space is dependent upon the thickness of furring strip selected.

C. Compliance and Approvals:

2. Evaluated in Accordance with: ICC-ES AC 02.
3. Third Party Verification:
   a. IAMPO-ES Report #291
   b. Recycle Verification Report - R & D Services, Inc.; see website for latest version

D. Recycled Content, by weight:

1. Reflective Insulation, 16-inch width:
   a. Total: Has more than 20 percent recycle content, with at least 25 percent Post-consumer content.
2. Reflective Insulation, 24-inch width:
   1. a. Total

Has more than 20 percent recycle content, with at least 25 percent Post-consumer content.

E. Testing Solid Version, Non-Perforated Reflective Insulation:

1. R-Value, Nominal, Heat Flow Horizontal, ASTM C 1224:
   a. 3/4-Inch Cavity: 4.2.
   b. 7/8-Inch Cavity: 4.7.
   c. 1-1/2-Inch to 1-5/8-Inch Cavity: 5.2.
2. Water Vapor Permeance, ASTM E 96: Less than 1.0 perms.
3. Surface Burning Characteristics, ASTM E 84/E 2599:
   a. Flame Spread Rating: less than 75.
   b. Smoke Developed Rating: less than 450.
   c. NFPA Rating: Class B.
5. Adhesive Performance, ASTM C 1224, Section 9.5:
   a. Bleeding: None.
   b. Delamination: None.
   c. Pliability: No signs of cracking or delamination.
7. Foil Emittance, ASTM C 1371: 0.03.

F. Testing Perforated Version, Perforated Reflective Insulation:
   1. R-Value, Nominal, Heat Flow Horizontal, ASTM C 1224:
      a. 3/4-Inch Cavity: 4.1.
      b. 7/8-Inch Cavity: 4.6.
      c. 1-1/2-Inch to 1-5/8-Inch Cavity: 5.1.
   3. Surface Burning Characteristics, ASTM E 84/E 2599:
      a. Flame Spread Rating: less than 75.
      b. Smoke Developed Rating: less than 450.
      c. NFPA Rating: Class B.
5. Adhesive Performance, ASTM C 1224, Section 9:
   a. Bleeding: None.
   a. b. Delamination: None.
   c. Pliability: No signs of cracking or delamination.
7. Foil Emittance, ASTM C 1371: 0.03.

2.3 ACCESSORIES

A. Aluminum Foil Tape: Fi-Foil aluminum foil tape.
   1. Description: 2-mil aluminum foil coated with cold weather acrylic adhesive.
   2. UL Classified facing.
   3. Width: 3 inches.
   4. Length: 50 yards.
   5. Thickness: 3.5 mils, exclusive of liner.
   7. Elongation: 4.4 percent.
   8. Tensile Strength: 27 lbs./inch width.

B. Double Sided Tape: Fi-Foil double sided tape.
   1. Description: 0.5-mil polyester film coated on both sides with 3-mil acrylic adhesive.
   2. Width: 3/4 inch.
   3. Length: 180 lineal feet.
   4. Temperature Resistance: Minus 40 degrees F to 200 degrees F (minus 40 degrees C to 93 degrees C).

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine areas to receive reflective insulation.

B. Notify Architect of conditions that would adversely affect installation.
C. Do not begin installation until unacceptable conditions are corrected.

3.2 INSTALLATION

A. Install reflective insulation in accordance with manufacturer's instructions and ASTM C 727.

B. Install reflective insulation at locations indicated on the Drawings.

C. Splice reflective insulation in wall cavities in accordance with manufacturer's instructions to avoid gaps.
   1. Tape seams if gaps appear where splice has been butted.

D. Cut reflective insulation to fit snugly around electrical wall outlets and other cutouts.
   1. Tape edges of reflective insulation to outlets and cutouts, if wall can be seen.

E. Tape tears in reflective insulation.

A.

F. Tape seams, outlets, and pipes for reflective insulation to perform as continuous vapor retarder.

G. Replace damaged reflective insulation as directed by Architect.

3.3 PROTECTION

A. Protect installed reflective insulation from damage during construction.

END OF SECTION