Fi-Foil Company, Inc. July 2020

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Product Guide Specification

Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) 3-Part Format, including *MasterFormat, SectionFormat,* and *PageFormat,* as described in *The CSI Construction Specifications Practice Guide.*

This section must be carefully reviewed and edited by the Architect to meet the requirements of the project and local building code. Coordinate this section with other specification sections and the Drawings. Delete all “Specifier Notes” after editing this section.

Section numbers and titles are based on *MasterFormat 2018 Update.*

1. 07 21 54

RADIANT BARRIER INSULATION

Specifier Notes: This section covers Fi-Foil “Silver Shield” radiant barrier insulation intended for use in roof cavities for attic radiant barrier applications and walls facing attic spaces. Consult Fi-Foil Company, Inc. for assistance in editing this section for the specific application.

* 1. GENERAL
     1. SECTION INCLUDES
        1. Radiant barrier insulation.
     2. RELATED REQUIREMENTS

Specifier Notes: Edit the following list of related sections as necessary. Limit the list to sections with specific information that the reader might expect to find in this section, but is specified elsewhere.

* + - 1. Section 06 11 00 – Wood Framing.
      2. Section 07 26 00 – Vapor Retarders.
      3. Section 07 27 00 – Air Barriers.
      4. Section 09 22 13 – Metal Furring.
    1. REFERENCE STANDARDS

Specifier Notes: List reference standards used elsewhere in this section, complete with designations and titles.

* + - 1. ASTM C 1136 – Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.
      2. ASTM C 1158 – Standard Practice for Installation and Use of Radiant Barrier Systems (RBS) in Building Construction.
      3. ASTM C 1224 – Standard Specification for Reflective Insulation for Building Applications.
      4. ASTM C 1313 – Standard Specification for Sheet Radiant Barriers for Building Construction Applications.
      5. ASTM C 1338 – Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings.
      6. ASTM C 1371 – Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
      7. ASTM C 1743 – Standard Practice for Installation and Use of Radiant Barrier Systems (RBS) in Residential Building Construction.
      8. ASTM C 1744 – Standard Practice for Installation and Use of Radiant Barrier Systems (RBS) in Commercial/Industrial Building Construction.
      9. ASTM D 2261 – Standard Test Method for Tearing Strength of Fabrics by the Tongue (Single Rip) Procedure (Constant-Rate-of-Extension Tensile Testing Machine.
      10. ASTM D 3310 – Standard Test Method for Determining Corrosivity of Adhesive Materials.
      11. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
      12. ASTM E 96 – Standard Test Methods for Water Vapor Transmission of Materials.
      13. ASTM STP 1116 – Insulation Materials: Testing and Applications.
      14. ICC-ES AC 220 – Acceptance Criteria for Sheet Radiant Barriers.
    1. SUBMITTALS

Specifier Notes: Edit submittal requirements as necessary. Delete submittals not required.

* + - 1. Comply with Section 01 33 00 – Submittal Procedures.
      2. Product Data: Submit manufacturer’s product data, including installation instructions.
      3. Samples: Submit manufacturer’s sample of radiant barrier insulation, minimum 6 inches square.
      4. Manufacturer’s Certification: Submit manufacturer’s certification that materials comply with specified requirements and are suitable for intended application.
      5. Sustainable Design Submittals: Submit manufacturer’s sustainable design submittals.
         1. Recycled Content: Certify percentages of pre-consumer and post-consumer recycled content.
      6. Warranty Documentation: Submit manufacturer’s standard warranty.
    1. QUALITY ASSURANCE
       1. Manufacturer’s Qualifications: Manufacturer regularly engaged, for a minimum of 10 years, in the manufacturing of radiant barrier insulation of similar type to that specified.
    2. DELIVERY, STORAGE, AND HANDLING
       1. Delivery Requirements: Deliver materials to site in manufacturer’s original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
       2. 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.
  1. PRODUCTS
     1. MANUFACTURERS
        1. Manufacturer: Fi-Foil Company, Inc., PO Box 800, Auburndale, Florida 33823. Toll Free 800-448-3401. Phone 863-965-1846. Fax 863-967-0137. Website [www.fifoil.com](http://www.fifoil.com). E-mail info@fifoil.com.

Specifier Notes: Specify if substitutions will be permitted.

* + - 1. Substitutions: [Not permitted] [In accordance with Division 1].
    1. RADIANT BARRIER INSULATION
       1. Radiant Barrier Insulation: Fi-Foil “Silver Shield”.
       2. Description:
          1. Multi-layer, perforated, radiant barrier insulation of low emittance (low-e) materials to reduce radiant heat transfer.
          2. Inside Layer: Metalized polymer.
          3. Outside Layer: Reinforced aluminum foil and kraft paper bonded with fire-retardant adhesive.
          4. Reflective Air Space: Layers expand when installed to form reflective air space to provide thermal performance and protect low-e surface from performance-reducing effects of dust accumulation.
          5. Tabs: Reinforced staple tabs.
       3. Compliance and Approvals:
          1. Compliance: ASTM C 1313.
          2. Evaluated: ICC-ES AC 220.
          3. Third Party Verification:

Recycle Verification Report – R & D Services, Inc.; see website for latest version.

* + - 1. Recycled Content, by weight:
         1. Radiant Barrier Insulation, 16-inch width:

Total: Has more than 25 percent recycle content, with at least 24 percent Post-consumer content.

* + - * 1. Radiant Barrier Insulation, 24-inch width:

Total: Has more than 19 percent recycle content, with at least 18 percent Post-consumer content.

* + - * 1. Radiant Barrier Insulation, 30-inch width:

Total: Has more than 18 percent recycle content, with at least 15 percent Post-consumer content.

* + - 1. Testing:
         1. Water Vapor Permeance, ASTM E 96: 5.00 perms.
         2. Surface Burning Characteristics, ASTM E 84:

Flame Spread Index: Less than 25.

Smoke Developed Index: Less than 450.

Interior Wall and Ceiling Finish Classification: Class A.

* + - * 1. Thermal Emittance, ASTM C 1371:

First Layer, MET PVC Metal Side: 0.04.

Second Layer, Foil Laminate: 0.03.

* + - * 1. R-Value, Reflective Air Space, ASTM STP 1116:

Heat Flow Up at 45 Degrees (enclosed 3/4-inch air space): 2.0.

Heat Flow Down at 45 Degrees (enclosed 3/4-inch air space): 3.3.

Heat Flow Horizontal (single low-e surface): 1.7.

Heat Flow Horizontal (multiple low-e surfaces with enclosed 3/4-inch air space): 4.6.

* + - * 1. Corrosivity, ASTM D 3310: Pass.
        2. Adhesive Performance, ASTM C 1224, Section 9:

Bleeding: None.

Delamination: None.

Pliability: No signs of cracking or delamination.

* + - * 1. Tongue Tear Test, ASTM D 2261:

Machine Direction (MD): 1.77.

Cross-Machine Direction (CD): 2.32.

* + - * 1. Mold and Mildew Resistance, ASTM C 1338: Pass.
    1. ACCESSORIES
       1. Facing Tape: Fi-Foil “FSK” facing tape.
          1. Description: Reinforced with fiberglass scrim and coated with cold weather acrylic adhesive.
          2. Compliance: ASTM C 1136.
          3. UL Classified facing.
          4. Width: 3 inches.
          5. Thickness: 6.5 mils, exclusive of liner.
          6. Adhesion: 92 oz/inch width.
          7. Elongation: 2 percent.
          8. Tensile Strength: 40 lbs/inch width.
  1. EXECUTION
     1. EXAMINATION
        1. Examine areas to receive radiant barrier insulation.
        2. Notify Architect of conditions that would adversely affect installation.
        3. Do not begin installation until unacceptable conditions are corrected.
     2. INSTALLATION
        1. Install radiant barrier insulation in accordance with manufacturer's instructions and ASTM C 1158.
        2. Install radiant barrier insulation at locations indicated on the Drawings.
        3. Splice radiant barrier insulation in accordance with manufacturer's instructions to avoid gaps.
           1. Tape seams if gaps appear where splice has been butted.
        4. Tape tears in radiant barrier insulation.
        5. Replace damaged radiant barrier insulation as directed by Architect.
     3. PROTECTION
        1. Protect installed radiant barrier insulation from damage during construction.

END OF SECTION