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## Guide Specification

Specifier Notes: This guide specification is written in Construction Specifications Institute (CSI) 3-Part Format in accordance with *The CSI Construction Specifications Practice Guide, MasterFormat, SectionFormat, and PageFormat.*

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 Division 01, other specification sections, and the Drawings. Delete all Specifier Notes after editing this Section.

Section numbers and titles are based on *MasterFormat 2014 Update.*

## SECTION 07 21 53

### REFLECTIVE INSULATION

Specifier Notes: This Section covers Covertech Fabricating, Inc. "rFOIL" reflective insulation. Consult Covertech Fabricating, Inc. for assistance in editing this Section as required for the Project.

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Reflective insulation.

##### 1.2 REFERENCE STANDARDS

Specifier Notes: List reference standards used elsewhere in this Section, complete with designations and titles. Delete reference standards from the following list not used in the edited Section.

- A. ASTM International (ASTM) ([www.astm.org](http://www.astm.org)):
  1. ASTM C 1224 – Standard Specification for Reflective Insulation for Building Applications.

2. ASTM C 1338 – Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings.
  3. ASTM C 1371 – Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
  4. ASTM D 3310 – Standard Test Method for Determining Corrosivity of Adhesive Materials.
  5. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
  6. ASTM E 96 / E 96M – Standard Test Methods for Water Vapor Transmission of Materials.
  7. ASTM E 903 – Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
  8. ASTM E 2599 – Standard Practice for Specimen Preparation and Mounting of Reflective Insulation, Radiant Barrier and Vinyl Stretch Ceiling Materials for Building Applications to Assess Surface Burning Characteristics.
  9. ASTM G 155 – Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials.
- B. National Fire Protection Association (NFPA) ([www.nfpa.org](http://www.nfpa.org)):
1. NFPA 286 – Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.
- C. Standards Council of Canada (SCC) ([www.scc.ca](http://www.scc.ca)):
1. CAN/ULC-S102 – Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

### 1.3 SUBMITTALS

Specifier Notes: Edit the Submittals article as required for the Project. Delete submittals not required.

- A. Comply with Division 01.
- B. Product Data: Submit manufacturer's product data, including installation instructions.
- C. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
- D. Warranty Documentation: Submit manufacturer's standard warranty.

### 1.4 QUALITY ASSURANCE

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

### 1.5 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. Do not store materials directly on floor.
5. Protect materials during storage, handling, and installation to prevent damage.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Manufacturer: Covertech Fabricating, Inc., 279 Humberline Drive, Etobicoke, Ontario M9W 5T6, Canada. Toll Free 800-837-8961. Phone 416-798-1340. Fax 416-798-1342. Website [www.rfoil.com](http://www.rfoil.com). Email [info@rfoil.com](mailto:info@rfoil.com).

Specifier Notes: Specify if substitutions will be permitted.

- B. Substitutions: [Not permitted] [Comply with Division 01].
- C. Single Source: Provide materials from single manufacturer.

### **2.2 REFLECTIVE INSULATION**

Specifier Notes: Specify reflective insulation as required for the Project. Delete reflective insulation not required.

- A. Reflective Insulation: "2210 Series rFOIL".
1. Description: Single layer of polyethylene bubbles, bonded to and sandwiched between 2 reflective, radiant barrier metalized sheets.

Specifier Notes: Specify one of the following edge types. Delete edge types not required.

2. Edge Type: [Square edge] [1-inch staple tab running length of 1 side] [1-inch staple tabs running length of 2 sides] [Quick seam; tabs include tape running length of 1 side].
3. Interior application.
4. Conformance: ASTM C 1224.
5. Evaluation Report: ICC-ES ESR-1236.
6. Testing Verified: RIMA International US-006-10.
7. Physical Properties:
  - a. Nominal Thickness: 3/16 inch.
  - b. Fire Rating:
    - 1) ASTM E 84, Mounted to ASTM E 2599: Class 1 / Class A.
    - 2) Full Room Burn, NFPA 286: Passes.
  - c. Emissivity, ASTM C 1371: 0.04.
  - d. Reflectivity, ASTM E 903: 0.96.
  - e. Water Vapor Permeability, ASTM E 96: 0.37 perms.
  - f. Resistance to Fungi and Bacteria, ASTM C 1338: Does not promote growth.

- g. Pliability, ASTM C 1224: No cracking.
- h. Bleeding and Delamination, ASTM C 1224: No bleeding or delamination.
- i. Corrosiveness, ASTM D 3310: Passes.

B. Reflective Insulation: "2220 Series rFOIL".

- 1. Description: Double layer of polyethylene bubbles, bonded to and sandwiched between 2 reflective, radiant barrier metalized sheets.

Specifier Notes: Specify one of the following edge types. Delete edge types not required.

- 2. Edge Type: [Square edge] [1-inch staple tab running length of 1 side] [1-inch staple tabs running length of 2 sides] [Quick seam; tabs include tape running length of 1 side].
- 3. Interior application.
- 4. Conformance: ASTM C 1224.
- 5. Evaluation Report: ICC-ES ESR-1236.
- 6. Testing Verified: RIMA International US-006-10.
- 7. Physical Properties:
  - a. Nominal Thickness: 5/16 inch.
  - b. Fire Rating:
    - 1) ASTM E 84, Mounted to ASTM E 2599: Class 1 / Class A.
    - 2) CAN/ULC-S102: Flame spread 0; smoke developed 10.
    - 3) Full Room Burn, NFPA 286: Passes.
  - c. Emissivity, ASTM C 1371: 0.04.
  - d. Reflectivity, ASTM E 903: 0.96.
  - e. Water Vapor Permeability, ASTM E 96: 0.02 perms.
  - f. Resistance to Fungi and Bacteria, ASTM C 1338: Does not promote growth.
  - g. Pliability, ASTM C 1224: No cracking.
  - h. Bleeding and Delamination, ASTM C 1224: No bleeding or delamination.
  - i. Corrosiveness, ASTM D 3310: Passes.

C. Poly - Reflective Insulation: "2510 Series rFOIL".

- 1. Description: Single layer of polyethylene bubbles, bonded to and sandwiched between 1 reflective, radiant barrier metalized sheet and 1 white polyethylene sheet with washable, UV-resistant facing.

Specifier Notes: Specify one of the following edge types. Delete edge types not required.

- 2. Edge Type: [Square edge] [1-inch staple tab running length of 1 side] [1-inch staple tabs running length of 2 sides] [Quick seam; tabs include tape running length of 1 side].
- 3. Interior application.
- 4. Conformance: ASTM C 1224.
- 5. Evaluation Report: ICC-ES ESR-1236.
- 6. Testing Verified: RIMA International US-006-10.
- 7. Physical Properties:
  - a. Nominal Thickness: 3/16 inch.
  - b. Fire Rating:
    - 1) ASTM E 84, Mounted to ASTM E 2599: Class 1 / Class A.
    - 2) Full Room Burn, NFPA 286: Passes.

- c. Emissivity, ASTM C 1371: 0.04.
- d. Reflectivity, ASTM E 903: 0.96.
- e. Water Vapor Permeability, ASTM E 96: 0.01 perms.
- f. Resistance to Fungi and Bacteria, ASTM C 1338: Does not promote growth.
- g. Pliability, ASTM C 1224: No cracking.
- h. Bleeding and Delamination, ASTM C 1224: No bleeding or delamination.
- i. Corrosiveness, ASTM D 3310: Passes.
- j. UV Exposure, ASTM G 155, after 4,000 hours: 90+ percent retained retention.

D. Poly - Reflective Insulation: "2520 Series rFOIL".

- 1. Description: Double layer of polyethylene bubbles, bonded to and sandwiched between 1 reflective, radiant barrier metalized sheet and 1 white polyethylene sheet with washable, UV-resistant facing.

Specifier Notes: Specify one of the following edge types. Delete edge types not required.

- 2. Edge Type: [Square edge] [1-inch staple tab running length of 1 side] [1-inch staple tabs running length of 2 sides] [Quick seam; tabs include tape running length of 1 side].
- 3. Interior application.
- 4. Conformance: ASTM C 1224.
- 5. Evaluation Report: ICC-ES ESR-1236.
- 6. Testing Verified: RIMA International US-006-10.
- 7. Physical Properties:
  - a. Nominal Thickness: 5/16 inch.
  - b. Fire Rating:
    - 1) ASTM E 84, Mounted to ASTM E 2599: Class 1 / Class A.
    - 2) Full Room Burn, NFPA 286: Passes.
  - c. Emissivity, ASTM C 1371: 0.04.
  - d. Reflectivity, ASTM E 903: 0.96.
  - e. Water Vapor Permeability, ASTM E 96: 0.42 perms.
  - f. Resistance to Fungi and Bacteria, ASTM C 1338: Does not promote growth.
  - g. Pliability, ASTM C 1224: No cracking.
  - h. Bleeding and Delamination, ASTM C 1224: No bleeding or delamination.
  - i. Corrosiveness, ASTM D 3310: Passes.
  - j. UV Exposure, ASTM G 155, after 4,000 hours: 90+ percent retained retention.

## 2.3 ACCESSORIES

- A. Reflective Tape: "rFOIL 15072" or "rFOIL 15073" metalized foil tape.
- B. White Poly Tape: "rFOIL 15852" or "rFOIL 15853" white polypropylene tape.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Examine areas to receive reflective insulation.

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

### **3.2 INSTALLATION**

- A. Install reflective insulation in accordance with manufacturer's instructions at locations indicated on the Drawings.

Specifier Notes: Include the following three sentences when specifying "2210 Series rFOIL" or "2220 Series rFOIL" reflective insulation.

- B. Install reflective insulation with reflective airspace on side of insulation as indicated on the Drawings.
- C. Seal seams and butt joints with reflective tape to ensure continuous insulation and vapor barrier.
- D. Use reflective tape furnished by reflective insulation manufacturer.

Specifier Notes: Include the following three sentences when specifying "2510 Series rFOIL" or "2520 Series rFOIL" poly - reflective insulation.

- E. Install poly - reflective insulation with reflective side facing open airspace as indicated on the Drawings.
- F. Seal seams and butt joints on white polyethylene side of poly - reflective insulation with white poly tape to ensure continuous insulation and vapor barrier.
- G. Use white poly tape furnished by reflective insulation manufacturer.

### **3.3 PROTECTION**

- A. Protect installed reflective insulation from damage during construction.

**END OF SECTION**