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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 or Engineer 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 23 07 13

DUCT INSULATION

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

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Reflective duct insulation.

1.2 RELATED REQUIREMENTS

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

- A. Section 23 31 00 – HVAC Ducts and Casings.

- B. Section 23 33 00 – Air Duct Accessories.

1.3 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):
 1. ASTM C 335 / C 335M – Standard Test Method for Steady-State Heat Transfer Properties of Pipe Insulation.
 2. ASTM C 411 – Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation.
 3. ASTM C 1224 – Standard Specification for Reflective Insulation for Building Applications.
 4. ASTM C 1258 – Standard Test Method for Elevated Temperature and Humidity Resistance of Vapor Retarders for Insulation.
 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 E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
 8. ASTM E 96 / E 96M – Standard Test Methods for Water Vapor Transmission of Materials.
 9. ASTM E 903 – Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
 10. 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.
- B. National Fire Protection Association (NFPA) (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):
 1. CAN/ULC-S102 – Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.4 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.

1.5 QUALITY ASSURANCE

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

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. 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: Covertch 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. Email 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 DUCT INSULATION

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

- A. Reflective Duct Insulation: "2260 Series rFOIL Big-6".
 - 1. Description:
 - a. Double layer of polyethylene bubbles, bonded to and sandwiched between 2 reflective, radiant barrier sheets.
 - b. Attached Spacer Strips: 2 inches wide by 1/2 inch thick at 2 feet on center; bubble spacer strips attached to duct side of insulation, creating air space to provide thermal properties.
 - c. Code Certification Strip: Identifies brand name, R-value, and ASTM fire ratings; full length of exposed side of insulation.
 - d. Interior application.

2. Conformance: ASTM C 1224.
3. Approvals:
 - a. City of Los Angeles Rr8436.
 - b. State of California Registry CA-T354.
 - c. Canadian Mortgage Housing Company (CMHC) requirement for vapor barrier wrap on outside of ducts carrying conditioning air.
4. Testing Verified: RIMA International US-006-10.
5. Physical Properties:
 - a. Nominal Thickness: 5/16 inch.
 - b. Weight: 1.25 oz per sq ft.
 - c. Thermal Resistance, ASTM C 335:
 - 1) Without Spacers: R 4.2.
 - 2) With Bubble Spacers: R 6.0.
 - d. Temperature Range, ASTM C 411: Minus 50 to 180 degrees F.
 - e. 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.
 - f. Emissivity, ASTM C 1371: 0.04.
 - g. Reflectivity, ASTM E 903: 0.96.
 - h. Water Vapor Permeability, ASTM E 96: Less than 0.02 perms.
 - i. Resistance to Fungi and Bacteria, ASTM C 1338: Does not promote growth.

B. Reflective Duct Insulation: "2280 Series rFOIL Big-8".

1. Description:
 - a. Two layers of polyethylene bubble pack reflective insulation connected by 2-inch-wide spacers.
 - b. Separate Spacer Strips: 2 inches wide by 1/2 inch thick; separate bubble spacer strips wrapped around perimeter of ducts at 2 feet on center, creating air space to provide thermal properties.
 - c. Code Certification Strip: Identifies brand name, R-value, and ASTM fire ratings; full length of exposed side of insulation.
 - d. Interior application.
2. Conformance: ASTM C 1224.
3. Evaluation Report: ICC-ES ESR-1236.
4. Testing Verified: RIMA International US-006-10.
5. Physical Properties:
 - a. Nominal Thickness: 1 inch.
 - b. Thermal Resistance, ASTM C 335, with Bubble Spacers: R 8.
 - c. Temperature Range, ASTM C 411: Minus 50 to 180 degrees F.
 - d. Fire Rating:
 - 1) ASTM E 84, Mounted to ASTM E 2599: Class 1 / Class A.
 - 2) Full Room Burn, NFPA 286: Passes.
 - e. Emissivity, ASTM C 1371: 0.04.
 - f. Reflectivity, ASTM E 903: 0.96.
 - g. Water Vapor Permeability, ASTM E 96: 0.029 perms.
 - h. Resistance to Fungi and Bacteria, ASTM C 1338: Does not promote growth.
 - i. Bleeding and Delamination, ASTM C 1224: No bleeding or delamination.
 - j. Pliability, ASTM C 1224: No cracking.
 - k. Temperature and Humidity Resistance, ASTM C 1258:

- 1) Evidence of Delamination: None.
- 2) Evidence of Corrosion: None.
- 3) Loss of Metallization: Minimal.

C. Reflective Duct Insulation: "2290 Series rFOIL".

Specifier Notes: The "2290 Series rFOIL" reflective duct insulation is available in two versions. The R 4.2 version does not require spacer strips. The R 6.0 version requires separate spacer strips be wrapped around the perimeter of ducts at 2 feet on center.

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

Specifier Notes: Delete the following sentence when specifying the R 4.2 version of the reflective duct insulation. Include the following sentence when specifying the R 6.0 version of the reflective duct insulation.

- b. Separate Spacer Strips: 2 inches wide by 1/2 inch thick; separate bubble spacer strips wrapped around perimeter of ducts at 2 feet on center, creating air space to provide thermal properties.
 - c. Code Certification Strip: Identifies brand name, R-value, and ASTM fire ratings; full length of exposed side of insulation.
 - d. Interior application.
2. Conformance: ASTM C 1224.
3. Approvals:
 - a. City of Los Angeles Rr8436.
 - b. State of California Registry CA-T354.
 - c. Canadian Mortgage Housing Company (CMHC) requirement for vapor barrier wrap on outside of ducts carrying conditioning air.
4. Testing Verified: RIMA International US-006-10.
5. Physical Properties:
 - a. Nominal Thickness: 5/16 inch.
 - b. Weight: 1.25 oz per sq ft.
 - c. Thermal Resistance, ASTM C 335:
 - 1) Without Spacers: R 4.2.
 - 2) With Bubble Spacers: R 6.0.
 - d. Temperature Range, ASTM C 411: Minus 50 to 180 degrees F.
 - e. Fire Rating:
 - 1) ASTM E 84, Mounted to ASTM E 2599: Class 1 / Class A.
 - 2) CAN/ULC-S102: Flame spread 0; smoke developed 0.
 - 3) Full Room Burn, NFPA 286: Passes.
 - f. Emissivity, ASTM C 1371: 0.04.
 - g. Reflectivity, ASTM E 903: 0.96.
 - h. Water Vapor Permeability, ASTM E 96: Less than 0.02 perms.
 - i. Resistance to Fungi and Bacteria, ASTM C 1338: Does not promote growth.

2.3 ACCESSORIES

- A. Reflective Tape: "rFOIL 15112" or "rFOIL 15113" metalized foil tape.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine ducts to receive reflective duct 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 duct insulation in accordance with manufacturer's instructions at locations indicated on the Drawings.

Specifier Notes: Include the following two sentence when specifying "2260 Series rFOIL Big-6" reflective duct insulation with attached spacer strips.

- B. Wrap reflective duct insulation around ducts with attached spacer strips against ducts.
- C. Install reflective duct insulation to provide consistent air space around ducts.

Specifier Notes: Include the following three sentences when specifying "2280 Series rFOIL Big-8" or "2290 Series rFOIL" R 6.0 version reflective duct insulation with separate spacer strips.

- D. Wrap separate spacer strips around perimeter of ducts at 2 feet on center.
- E. Wrap reflective duct insulation around ducts and spacers strips.
- F. Install reflective duct insulation to provide consistent air space around ducts.

Specifier Notes: Include the following two sentences when specifying "2290 Series rFOIL" R 4.2 version reflective duct insulation without spacer strips.

- G. Loosely wrap reflective duct insulation around ducts.
- H. Install reflective duct insulation to provide air space around ducts.

Specifier Notes: Include the following three sentences for all installations.

- I. Install reflective duct insulation with code certification strips facing out and visible.

- J. Tape seams and joints in reflective duct insulation with reflective tape.
- K. Use reflective tape furnished by reflective duct insulation manufacturer.

3.3 PROTECTION

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

END OF SECTION