

SECTION 07211

REFLECTIVE INSULATION/RADIANT BARRIER MATERIAL

PART GENERAL

SECTION INCLUDES

Reflective Insulation/Radiant Barrier Material.

RELATED SECTIONS

Section 06100 - Rough Carpentry.

Section 13120 - Pre-Engineered Buildings.

Section 15100 - Building Services Piping.

Section 15810 - Ducts.

REFERENCES

ASTM C 236 - Standard Test Method for Steady-State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box.

ASTM C 518 - Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

ASTM C 1224 - Specification for Reflective Insulation for Building Applications.

ASTM D 635 - Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.

ASTM D 3310 - Test Method for Determining Corrosivity of Adhesive Materials.

ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

ASTM E 96 - Test Methods for Water Vapor Transmission of Materials.

ASTM E 408 - Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.

Mil-STD-810D - Fungus Resistance.

#### DEFINITIONS

Radiant Barrier System (RBS): Radiant barrier material is sight-exposed to building interior, not concealed in system by subsequent building finishes.

Reflective Insulation System (RIS): Reflective insulation material is concealed in system by subsequent building finishes; additionally, RIS incorporates air spaces between the two reflective surfaces.

#### SUBMITTALS

Submit under provisions of Section 01300.

Product Data: Manufacturer's descriptive literature for reflective insulation material; indicate compliance to specified product characteristics, including documentation of code compliance, if documentation is required.

Verification Samples: Two samples, minimum size 8 inches (203 mm) square, of actual products to be installed.

Quality Assurance Submittals: Manufacturer's printed installation instructions for each indicated project condition; include recommended fastening materials and techniques.

#### QUALITY ASSURANCE

Regulatory Requirements: Reflective Insulation/Radiant Barrier Material approved for indicated use by the following:

- Canadian Building Authority.
- California Code Regulations.
- City of Los Angeles CA Code Regulations.
- Dade County, Florida
- Australian Standards for Insulation.

Mark materials to indicate code compliance in accordance with requirements of regulating authority before delivery of materials to project site.

#### DELIVERY, STORAGE, AND HANDLING

Store products of this section in manufacturer's unopened packaging until installation; maintain storage conditions recommended by manufacturer. Store in clean, dry area. Do not expose to rain, dew, or snow while still in roll form.

PART PRODUCTS

MATERIALS

Reflective Insulation/Radiant Barrier Material:

Acceptable product: Astro-Foil, marketed by Astro-Foil; 10653 West 181st Avenue, Lowell, IND 46356-9451. ASD. Tel: (800) 776-3645 or (219) 696-3639, Fax: (800) 551-3645 or (219) 696-5220.

Requests for substitution will be considered in accordance with provisions of Section 01600.

Substitutions: Not permitted.

Product description: Two layers of polyethylene bubble film, sandwiched between two layers of aluminum foil; fungi-resistant material having the following characteristics:

Thickness: Nominal 5/16 inch (8 mm).

Weight: 1.25 ounces per square foot (382 grams per square meter).

Flame spread/smoke developed rating, in accord with ASTM E 84: 10 Flame/25 Smoke.

Fire rating: NFPA Class A/UBC Class 1.

Linear shrinkage: None.

Puncture resistance: 66 pounds per square inch (455 kPa).

R-value, in accord with ASTM C 236: 13.55 (2.386 square meters per degree Kelvin per watt) down; 9.41 (1.657 square meters per degree Kelvin per watt) horizontal; 7.74 (1.363 square meters per degree Kelvin per watt) up.

U-value: 0.073 (0.414 watts per square meter per degree Kelvin) down; 0.106 (0.601 watts per square meter per degree Kelvin) horizontal; 0.129 (0.732 watts per square meter per degree Kelvin) up.

Emittance, in accord with ASTM E 408: 0.03-0.04.

Reflectivity: 0.96 - 0.97.

Degradation: 0.

Perm rating, in accord with ASTM E 96: 0.002 perm (0.114 ng/Pa s per square meter).

Roll width: Nominal 4 feet (1220 mm).  
Roll width: Nominal 6 feet (1830 mm).

Reflective Insulation/Radiant Barrier Material:

Acceptable product: Astro-E, marketed by Astro-Foil;  
10653 West 181st Avenue, Lowell IND 46356-9451. ASD.  
Tel: (800) 776-3645 or (219) 696-3639. Fax: (800)  
551-3645 or (219) 696-5220.

Requests for substitution will be considered in  
accordance with provisions of Section 01600.

Substitutions: Not permitted.

Product description: One layer of polyethylene  
bubble film sandwiched between two layers of aluminum  
foil; fungi-resistant material having the following  
characteristics:

Thickness: Nominal 3/16 inch (4.76 mm).

Weight: 0.811 ounces per square foot (247 grams  
per square meter).

Flame spread/smoke developed rating, in accord  
with ASTM E 84: 15 Flame/30 Smoke.

Fire rating: NFPA Class A / UBC Class 1.

Linear shrinkage: None.

Puncture resistance: 63 pounds per square inch  
(434 kPa).

R-value, in accord with ASTM C 236: 14.5 (2.553  
square meters per degree Kelvin per watt) down;  
7.0 (1.232 square meters per degree Kelvin per  
watt) horizontal; 4.9 (0.862 square meters per  
degree Kelvin per watt) up.

U-value: 0.077 (0.437 watts per square meter per  
degree Kelvin) down; 0.109 (0.619 watts per  
square meter per degree Kelvin) horizontal; 0.119  
(0.675 watts per square meter per degree Kelvin)  
up.

Emittance, ASTM E 408: 0.03 - 0.04.

Reflectivity: 0.96 - 0.97.

Degradation: 0.

Perm rating, according to ASTM E 96: 0.002 perm  
(0.114 ng/Pa s per square meter).

Roll width: Nominal 4 feet (1220 mm).

Roll width: Nominal 6 feet (1830 mm).

Fasteners: Type and size recommended by manufacturer for  
project conditions.

PART EXECUTION

## EXAMINATION

Ensure that electrical wiring adjacent to reflective insulation/radiant barrier material installations is in good condition.

## PREPARATION

Turn off electricity in each area of reflective insulation/radiant barrier material installation until installation in that area is complete.

## INSTALLATION

Install reflective insulation/radiant barrier material in accordance with drawing details and manufacturer's installation instructions.

Maintain minimum 3 inches (76 mm) distance from heat-producing devices such as furnaces, chimneys, blowers, and lighting fixtures.

Maintain minimum 3/4 inch (19 mm) air space each side of reflective insulation/radiant barrier material.

## SCHEDULE

### Locations:

- Over roof trusses/rafters, encapsulated (RIS).
- Over roof trusses/rafters, exposed (RBS) (RIS).
- Interior side of wall studs/furring, exposed (RBS) (RIS).
- Interior side of wall studs/furring, encapsulated (RIS).
- Underside of floor joists/trusses, exposed (RBS) (RIS).
- Underside of floor joists/trusses, encapsulated (RIS).
- Underside of first floor joist/trusses at crawl spaces, exposed (RBS) (RIS).
- Below interior ceiling joists/trusses/rafters, exposed (RBS) (RIS).
- Below interior ceiling joists/trusses/rafters, encapsulated (RIS).
- Over metal roof purlins, exposed (RBS) (RIS).
- Over metal roof purlins, encapsulated (RIS).
- Exterior side of metal wall purlins, encapsulated (RIS).

Interior side of upward-acting sectional doors,  
exposed (RBS).

Wrap HVAC supply ducts, exposed (RIS) (RBS).

Wrap water heaters, exposed (RIS) (RBS).

Wrap water supply piping, exposed (RIS) (RBS).

END OF SECTION