

SECTION 07 21 13 THERMAL INSULATION

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This section specifies thermal insulation for buildings.

1.2 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Insulation, each type used
 - 2. Adhesive, each type used.
 - 3. Tape
- C. Certificates: Stating the type, thickness and "R" value (thermal resistance) of the insulation to be installed.

1.3 STORAGE AND HANDLING:

- A. Store insulation materials in weathertight enclosure.
- B. Protect insulation from damage from handling, weather and construction operations before, during, and after installation.

1.4 APPLICABLE PUBLICATIONS:

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - C553-02Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
 - C578-07Rigid, Cellular Polystyrene Thermal Insulation
 - C591-05Unfaced Preformed Rigid Cellular Polyisocynurate Thermal Insulation
 - C665-06Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
 - C954-04Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Base to Steel Studs From 0.033 (0.84 mm) inch to 0.112 inch (2.84 mm) in thickness

- C1002-04Steel Self-Piercing Tapping Screws for the Application of
Gypsum Panel Products or Metal Plaster Bases to Wood Studs
or Steel Studs
- D312-00(R2006).....Asphalt Used in Roofing
- E84-07.....Surface Burning Characteristics of Building Materials
- F1667-05.....Driven Fasteners: Nails, Spikes and Staples.

PART 2 - PRODUCTS

2.1 INSULATION – GENERAL:

- A. Where thermal resistance ("R" value) is specified or shown for insulation, the thickness shown on the drawings is nominal. Use only insulation with actual thickness that is not less than that required to provide the thermal resistance specified.
- B. Where "R" value is not specified for insulation, use the thickness shown on the drawings.
- C. Where more than one type of insulation is specified, the type of insulation for each use is optional, except use only one type of insulation in any particular area.
- D. Insulation Products shall comply with following minimum content standards for recovered materials:

Material Type	Percent by Weight
Fiber-Glass Batt	Negligible
Polyisocyanurate/polyurethane	Negligible
Rigid foam	9 percent recovered material

The minimum-content standards are based on the weight (not the volume) of the material in the insulating core only.

2.2 RIGID MASONRY CAVITY WALL INSULATION:

- A. Provide either:
 1. Polyurethane or Polyisocyanurate Board: ASTM C591, Type I, faced with a vapor retarder having a perm rating of not more than 0.5.
 2. Polystyrene Board: ASTM C578, Type X.
- B. Thermal Performance: Not less than R=6 (aged) for 25 mm (1 inch) of thickness.

2.3 EXTERIOR FRAMING OR FURRING INSULATION:

- A. Batt or Blanket: Optional.
- B. Mineral Fiber: ASTM C665, Type I, Unfaced.
- C. Thermal Performance: Not less than R=19 for 152 mm (6 inch) of thickness.

2.4 FASTENERS:

- A. Staples or Nails: ASTM F1667, zinc-coated, size and type best suited for purpose.
- B. Screws: ASTM C954 or C1002, size and length best suited for purpose with washer not less than 50 mm (two inches) in diameter.
- C. Impaling Pins: Steel pins with head not less than 50 mm (two inches) in diameter with adhesive for anchorage to substrate. Provide impaling pins of length to extend beyond insulation and retain cap washer when washer is placed on the pin.

2.5 ADHESIVE:

- A. As recommended by the manufacturer of the insulation.
- B. Asphalt: ASTM D312, Type III or IV.
- C. Mortar: ASTM C270, Type 0.

2.6 TAPE:

- A. Pressure sensitive adhesive on one face.
- B. Perm rating of not more than 0.50.

PART 3 - EXECUTION**3.1 INSTALLATION - GENERAL**

- A. Coordinate installation of insulation with vapor barrier when provided under other Sections of this Specification.
- B. Install rigid insulating units with joints close and flush, in regular courses and with cross joints broken.
- C. Install batt or blanket insulation with tight joints and filling framing void completely. Seal cuts, tears, and unlapped joints with tape.
- D. Fit insulation tight against adjoining construction and penetrations, unless specified otherwise.

3.2 MASONRY CAVITY WALLS:

- A. Provide batt insulation in framing cavities as described in this section.
- B. Mount rigid insulation on exterior faces of sheathing.
- C. Bond mineral fiberboard, polyurethane or polyisocyanurate board, and perlite board to surfaces with adhesive as recommended by insulation manufacturer.
- D. Fill or tape joints between rigid insulation board as recommended by manufacturer.

3.3 EXTERIOR FRAMING OR FURRING BLANKET INSULATION:

- A. Coordinate installation of insulation with vapor barrier when provided under other Sections of this Specification.

- B. Pack insulation around door frames and windows and in building expansion joints, door soffits and other voids. Pack behind outlets around pipes, ducts, and services encased in walls. Open voids are not permitted. Hold insulation in place with pressure sensitive tape.
- C. Fasten blanket insulation between metal studs or framing using impaling pins.

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