

SECTION 07 21 23
LOOSE-FILL INSULATION

SPEC WRITER NOTE: Delete between //--//if not applicable to project. Also delete any other item or paragraph not applicable in the section and renumber the paragraphs.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section covers loose fill insulation, // vapor barrier // and all necessary blocking to install insulation // over ceilings // and // in attic spaces // where shown.
- B. Insulation shall be installed in sufficient thickness to provide thermal resistance "R" values of // "R"_____ above ceilings // and // "R"_____ in attics // "R"_____ as shown.

1.2 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples:
 - 1. Loose fill insulation in pint size containers
 - 2. Blocking: 150 mm (6-inch) long strips
 - 3. Vapor Retarder: 150 mm x 150 mm (6-inch by 6-inch) pieces
- C. Manufacture's Literature:
 - 1. Submit current copies of the insulation manufacturer's printed fact sheet literature, including descriptive data, insulation characteristics, and instructions for installation and protection of insulation.
 - 2. Submit copy of "Bag Label".

1.3 DELIVERY

- A. Deliver materials to the site in the original sealed containers or packages bearing the manufacturer's name and brand designation.
- B. The containers or packages of insulation shall bear the referenced specification number, type and class as applicable, recommended method of installation (pneumatic or pouring), minimum net weight of insulation, coverage charts, "R" values, and required warning statements.

1.4 STORAGE

- A. Inspect materials delivered to the site for damage and unload and store with a minimum of handling.

B. Storage spaces shall be dry locations, not subject to open flames or sparks, and permitting easy access for inspection and handling.

SPEC WRITER NOTE: Update the applicable publications at the time of the project specification preparation.

1.5 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 the basic designation only.

B. American Society of Testing and Materials (ASTM):

- C612-04 Mineral Fiber Block and Board Thermal Insulation
- C728-05 Perlite Thermal Insulation Board
- C739-08 Cellulosic Fiber (Wood-Base) Loose-Fill Thermal Insulation
- C764-07 Mineral Fiber Loose Fill Thermal Insulation.
- C1015-06 Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation
- D4397-08 Polyethylene Sheeting for Construction, Industrial, and Agriculture Applications
- E84-08 Surface Burning Characteristics of Building Materials

C. Federal Regulations:

Code of Federal Regulations 29 CFR 1910, Occupational Safety and Health Act (OSHA).

D. National Fire Protection Associations (NFPA):

- 211-06 Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances

PART 2 - PRODUCTS

SPEC WRITER NOTE: Update material requirements to agree with the applicable requirements (types, grades, classes) specified in the referenced Applicable Publications.

2.1 LOOSE FILL INSULATION

- A. Cellulosic or Wood Fiber Loose Fill: ASTM C739.
- B. Mineral Fiber Loose Fill: ASTM C764, Type I or II.

2.2 BLOCKING

A. Wood, metal, mineral fiber or perlite boards or other materials approved by the Resident Engineer.

B. Mineral Fiber Board: ASTM C612, Type IB.

C. Perlite Board: ASTM C728.

2.3 VAPOR RETARDER

A. Six mil thick polyethylene sheeting conforming to ASTM D4397.

B. Self adhesive tape having a perm rating equal to the polyethylene.

2.4 RECOVERED MATERIAL

A. Insulation products shall comply with following minimum content standards for recovered materials:

Material Type	Percent by Weight
Cellulose Loose-fill and spray-on	75 percent post-consumer recovered paper
Perlite composite board	23 percent post-consumer
Rock wool material	75 percent recovered material

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

PART 3 - EXECUTION

3.1 INSPECTION

A. Where possible, inspect // attic(s) // and // ceiling(s) // to receive insulation for conditions which will adversely affect the execution of the work or create a safety hazard. Report unsatisfactory conditions to the Resident Engineer.

B. Do not install insulation until unsatisfactory conditions have been corrected.

C. Follow ASTM C1015. The inspection shall include checking for the following:

1. Defects in electrical fixtures, equipment, wiring, junction boxes, receptacles, and switches that will cause hazards.

2. Openings through which the loose fill insulation material may escape.

3. Air ducts which appear to have joints that are not secure or sealed.

3.2 PREPARATION

A. Prior to the installation of insulation, provide blocking as specified herein and in accordance with ASTM C1015.

B. Install blocking around // attic trap door(s), // ceiling access-panel(s), // and // vents // if the level to which the unsettled insulation will be installed exceeds their height. Cover openings into

the attic with temporary blocking to prevent insulation from falling into the opening, including spaces enclosed by blockings.

- C. Install blocking around heat producing devices with minimum clearances as specified herein.
1. Install blocking 50 mm (two inches) above the height of the finished insulation installation and in a manner that ensures that devices which may require maintenance or servicing remain accessible after the insulation is installed.
 2. Minimum clearances for blocking around heat producing devices shall be as follows:
 - a. Masonry chimneys for equipment and incinerator(s) operating at a temperature of not more than 800 degrees C (1500 degrees F): 100 mm (Four inches) from the outside face of the masonry.
 - b. Vents, chimney and vent connectors, and chimneys other than masonry chimneys: Minimum clearances as required by NFPA 211.

3.3 INSTALLATION

- A. Vapor Retarder:
1. // Where space is accessible, // install vapor retarder below insulation. Do not install a vapor retarder over existing insulation or where there is a vapor retarder under existing insulation.
 2. Take care to prevent tears, breaks, or ruptures of any kind which might interfere with the effectiveness of the vapor retarder, and install in a manner which will assure a continuous seal.
 3. Lap joints or breaks in vapor retarder in a manner that will assure a vapor retarder capable of effectively controlling moisture transmission. Tape laps to retain vapor barrier in place.
 4. Use self adhesive tape for laps and for sealing breaks and holes in the vapor retarder.
- B. Insulation:
1. Install insulation in accordance with ASTM C1015 and the requirements specified.
 2. Do not install insulation until the requirements specified in the INSPECTION and PREPARATION paragraphs have been carried out and any defects which were identified have been corrected and their cause eliminated.
 3. Pneumatic installation of thermal insulation shall comply with OSHA. Supply and utilize the personnel protective equipment and

engineering controls necessary for a safe effective installation. Use only pneumatic equipment in accordance with the manufacturer's instructions.

4. Install the insulation allowing it to settle to its natural density. Do not tamp or rod the insulation.

SPEC WRITER NOTE: Insure space over insulation is vented. For preliminary design use a "R" value of 3.1 per 25 mm (inch) for calculation of minimum thickness of insulation. Since density will vary from 9.5 to 32 Kg/m³ (0.6 to 2.0 pounds per cubic foot) and the insulation will settle after blowing, the initial thickness will exceed the maximum thickness; thus bag count is critical.

5. Install insulation in sufficient depth to provide the thermal value specified after settlement of the insulation. To obtain a minimum "R" value of _____ or as shown, install insulation to a minimum thickness of _____ mm (_____ inches) or as shown, using the number of bags per 90 m² (1000 squares feet) as shown on the manufacturer's "Bag Label".
 6. For pneumatic installations, use the least air pressure meeting the manufacturer's instructions.
 7. Do not blow the insulation into electrical devices and vents which open into the attic and other spaces to be insulated.
 8. Fit the attic side of // trap doors // and // access panels // with perlite or mineral fiber insulation boards. // Insulate the attic side of trap doors unless prevented by a retractable ladder. //
- C. Post Installation Procedures:
1. In accordance with ASTM C1015.
 2. Remove temporary blockings over vent openings in attic(s).

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