

SECTION 07 21 00 - THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Perimeter insulation under slabs-on-grade (as required) to replace existing).
2. Freezer floor insulation.
3. Exterior stud walls
4. Concealed building insulation.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Research/Evaluation Reports: For foam-plastic insulation.

1.3 QUALITY ASSURANCE

- A. Fire and Insurance Ratings: Provide insulation, complying with governing regulations for applications indicated.
- B. Thermal: Provide thickness of insulation as indicated. Where not indicated, provide combination of K-value and thickness as required to yield the R-value indicated.
- C. Fire Hazard Control: Do not deliver plastic insulation to project site prior to time of installation and protect against ignition at all times. Conceal with other work as indicated immediately upon installation; do not allow plastic insulation to remain exposed.

PART 2 - PRODUCTS

2.1 FOAM-PLASTIC BOARD INSULATION

A. General:

1. Do not use expanded polystyrene insulation.
2. Provide identification of mark indicating R-value of each piece of insulation **12 inches (305 mm)** and wider in width.

B. Manufacturers:

1. DuPont de Nemours Inc.
2. Owens Corning.

C. Extruded-Polystyrene Board Insulation:

1. Perimeter Insulation Under Slabs-On-Grade: ASTM C 578, Type IV, **25-psi (173-kPa)** minimum compressive strength; unfaced, or Type X, **15-psi (104-kPa)** minimum compressive strength; unfaced.
 - a. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
 - b. Smoke-Developed Index: Not more than 450 when tested in accordance with ASTM E84.
 - c. R-Value per Inch: 5
2. Freezer Floor Insulation: Extruded-Polystyrene Foam Insulation Board: ASTM C 578, Type VI, **40-psi (276-kPa)** minimum compressive strength.
 - a. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
 - b. Smoke-Developed Index: Not more than 450 when tested in accordance with ASTM E84.
 - c. Board Thickness: **2-inches (51-mm)** nominal.
 - d. R-Value per Inch: 5

2.2 GLASS-FIBER BLANKET INSULATION

- A. General: Provide identification of mark indicating R-value of each piece of insulation **12 inches (305 mm)** and wider in width.
- B. Manufacturers:
 1. CertainTeed Corporation; Saint-Gobain North America.
 2. Johns Manville; a Berkshire Hathaway company.
 3. Knauf Insulation.
 4. Owens Corning.
- C. Glass-Fiber Blanket, Unfaced: ASTM C 665, Type I; passing ASTM E 136 for combustion characteristics.
 1. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
 2. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.
 3. Thickness: [**6-1/2 inches (165 mm)**] thick with a thermal resistance of [**19 deg F x h x sq. ft./Btu at 75 deg F (3.3 K x sq. m/W at 24 deg C)**].
- D. Glass-Fiber Blanket, Reinforced-Foil-Faced: ASTM C 665, Type III (reflective faced), Class A; Category 1 (membrane is a vapor barrier), faced with foil-scrim-kraft, foil-scrim, or foil-scrim-polyethylene vapor-retarder membrane on 1 face.
 1. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
 2. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.

3. Thickness: [6-1/2 inches (165 mm)] thick with a thermal resistance of [19 deg F x h x sq. ft./Btu at 75 deg F (3.3 K x sq. m/W at 24 deg C)].

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.
- C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

3.2 INSTALLATION OF PERIMETER INSULATION

- A. On vertical surfaces, set insulation units in adhesive applied according to manufacturer's written instructions. Use adhesive recommended by insulation manufacturer.

3.3 INSTALLATION OF GENERAL BUILDING INSULATION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions.
- B. Tape joints and ruptures and seal each continuous area of insulation to surrounding construction to ensure airtight installation.
- C. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
- D. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
- E. Maintain 3-inch (76-mm) clearance of insulation around recessed lighting fixtures unless recessed lighting fixtures are rated for contact with insulation
- F. Stuff glass-fiber loose-fill insulation into miscellaneous voids and cavity spaces where shown. Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft. (40 kg/cu. m).

END OF SECTION 07 21 00

BLANK SHEET