

SECTION 07 21 00 - THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
  - 1. Extruded polystyrene foam-plastic board insulation.
  - 2. Mineral-wool blanket insulation.
  - 3. Loose-fill insulation.
  - 4. Spray polyurethane foam sealant.
- B. Related Requirements:
  - 1. Division 07 Section "Thermoplastic-Polyolefin (TPO) Roofing" for insulation specified as part of roofing construction.

1.3 ACTION SUBMITTALS

- A. Product Data: For the following:
  - 1. Extruded polystyrene foam-plastic board insulation.
  - 2. Mineral-wool blanket insulation.
  - 3. Spray polyurethane foam sealant.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- B. Protect foam-plastic board insulation as follows:
  - 1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
  - 2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site until just before installation time.
  - 3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

## PART 2 - PRODUCTS

### 2.1 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD INSULATION

- A. Extruded Polystyrene Board Insulation, Type IV: ASTM C578, Type IV, 25-psi minimum compressive strength; unfaced.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. DiversiFoam Products.
    - b. Dow Chemical Company (The).
    - c. Kingspan Insulation Limited.
    - d. Owens Corning.
  - 2. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
  - 3. Smoke-Developed Index: Not more than 450 when tested in accordance with ASTM E84.
  - 4. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

### 2.2 MINERAL-WOOL BLANKET INSULATION

- A. Mineral-Wool Blanket Insulation, Unfaced: ASTM C665, Type IA (blankets without membrane facing); consisting of fibers; passing ASTM E136 for combustion characteristics.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Johns Manville; a Berkshire Hathaway company.
    - b. Rockwool International.
    - c. Thermafiber, Inc.; an Owens Corning company.
  - 2. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
  - 3. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.
  - 4. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

### 2.3 SPRAY POLYURETHANE FOAM SEALANT

- A. Spray Polyurethane Foam Sealant: ASTM C 518 and as follows:
  - 1. Products: Subject to compliance with requirements, provide the following:
    - a. Type A – Dow Corporation; "Great Stuff Pro Gaps and Cracks Insulating Foam Sealant."
    - b. Type B – Dow Corporation; "Froth Pak Foam Sealant."
    - c. Type C – Dow Corporation; "Great Stuff Pro Window and Door Insulating Foam Sealant."

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Install insulation with manufacturer's R-value label exposed after insulation is installed.
- D. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- E. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

3.3 INSTALLATION OF FOUNDATION WALL INSULATION

- A. Butt panels together for tight fit.
- B. Adhesive Installation: Install with adhesive or press into tacky waterproofing or dampproofing according to manufacturer's written instructions.

3.4 INSTALLATION OF CAVITY-WALL INSULATION

- A. Foam-Plastic Board Insulation: Install pads of adhesive spaced approximately 24 inches o.c. both ways on inside face and as recommended by manufacturer.
  - 1. Fit courses of insulation between wall ties and other obstructions, with edges butted tightly in both directions, and with faces flush.
  - 2. Press units firmly against inside substrates.
- B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
  - 1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft.
  - 2. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.
    - a. Spray Polyurethane Insulation Schedule:
      - 1) Type A – Use in all joints and cracks in exterior building envelope from 1/4-inch wide up to 2-inches wide.
      - 2) Type B – Use in all joints in exterior building envelope 2-inches wide and greater.

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- 3) Type C – Use at all framed door and window openings.

b. Joints Included:

- 1) Roof penetrations.
- 2) Wall penetrations.
- 3) Wall/floor junctions.
- 4) Wall/roof junctions.
- 5) Expansion joints.
- 6) Window and door frames.
- 7) Locations where insulation is discontinued due to construction technique.
- 8) Other cracks and gaps over 1/4-inch wide.

C. Thermal Surface Barriers:

1. Apply thermal surface barrier in accordance with manufacturer's written instructions and to comply with requirements.
2. Use equipment and techniques best suited for substrate and type of material applied as recommended by coating manufacturer.
3. Apply to prepared surfaces as soon as practical after preparation and before subsequent surface soiling or deterioration.
4. Apply to provide a complete barrier where indicated on the Drawing.

3.5 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.
- B. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 07 21 00