

SECTION 072100 - THERMAL INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Extruded polystyrene foam-plastic board insulation.
 - 2. Glass-fiber blanket insulation.
 - 3. Mineral-wool blanket insulation.
- B. Related Requirements:
 - 1. Section 075423 "Thermoplastic-Polyolefin (TPO) Roofing" for insulation specified as part of roofing construction.

1.2 ACTION SUBMITTALS

- A. Product Data:
 - 1. Extruded polystyrene foam-plastic board insulation.
 - 2. Glass-fiber blanket insulation.

1.3 INFORMATIONAL SUBMITTALS

- A. Installer's Certification: Listing type, manufacturer, and R-value of insulation installed in each element of the building thermal envelope.
 - 1. Sign, date, and post the certification in a conspicuous location on Project site.
- B. Product Test Reports: For each product, for tests performed by a qualified testing agency.
- C. Research Reports: For foam-plastic insulation, from ICC-ES.

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 PERFORMANCE REQUIREMENTS

- A. Surface-Burning Characteristics: Maximum flame-spread and smoke-developed indexes less than specified when tested in accordance with ASTM E84.
- B. Fire-Resistance Ratings: Comply with ASTM E119 or UL 263; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Indicate design designations from UL's "Fire Resistance Directory" or from listings of another qualified testing agency.
- C. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
- D. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches (304.8 mm) and wider in width.
- E. Thermal-Resistance Value (R-Value): R-value as indicated for each product in accordance with ASTM C518.

2.2 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD INSULATION

- A. Location: To be used only in cavity wall construction with masonry veneer.
- B. Extruded Polystyrene Board Insulation, Type X: ASTM C578, Type X, 15-psi minimum compressive strength; unfaced.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Kingspan Insulation
 - b. Owens Corning.
 - c. DuPont
- C. Surface Burning Characteristics: Not less than 75 and 450.
- D. Thickness: 2" unless noted otherwise.
- E. R-Value: Not less than R7.6 continuous.

2.3 GLASS-FIBER BLANKET INSULATION

- A. Location: Use faced insulation at all stud framed exterior walls. Use unfaced insulation at all interior walls where indicated. Use unfaced insulation above ceilings where sound attenuation is indicated.
- B. Glass-Fiber Blanket Insulation, Unfaced: ASTM C665, Type I; passing ASTM E136 for combustion characteristics.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation.
 - b. Johns Manville.
 - c. Knauf Insulation.
 - d. Owens Corning
- C. Glass-Fiber Blanket Insulation, Reinforced-Foil Faced: ASTM C665, Type III (reflective faced), Class A (faced surface with a flame-spread index of 25 or less); Category 1 (membrane is a vapor barrier), faced with foil scrim, foil-scrim kraft, or foil-scrim polyethylene.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation.
 - b. Johns Manville.
 - c. Knauf Insulation.
 - d. Owens Corning
- D. Surface Burning Characteristics: Not less than 25 and 450.
- E. Thickness: Glass-fiber blanket insulation thickness shall match cavity thickness of studs they are installed in unless noted otherwise.
- F. R-Value: R-Value for exterior walls shall be R-13 minimum as required by the energy code.

2.4 MINERAL-WOOL BLANKET INSULATION

- A. Location: Use in exterior and interior voids and joints between different construction materials and interior rated or sound proofing partitions unless noted otherwise.
- B. Mineral-Wool Blanket Insulation, Unfaced: ASTM C665, Type I (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 Co.
 - b. Owens Corning
 - c. Rockwool

2.5 INSULATION FASTENERS

- A. Anchor Adhesive: Product with demonstrated capability to bond insulation securely to substrates without damaging insulation or substrates.
- B. For Mineral-wool Board Insulation: Provide fasteners recommended by insulation manufacturer for substrates indicated on drawings.
 - 1. Adhesives shall not be used with mineral-wool insulations.

2.6 ACCESSORIES

- A. Adhesive for Bonding Plastic-Board Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

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 CAVITY-WALL INSULATION

- A. Foam-Plastic Board Insulation: Install pads of adhesive spaced approximately 24 inches (609.6 mm) o.c. both ways on inside face and as recommended by manufacturer.
 - 1. Cavity wall insulation shall be installed after air barriers have been installed on cavity wall back-up.
 - 2. Fit courses of insulation between wall ties and other obstructions, with edges butted tightly in both directions, and with faces flush.
 - 3. Press units firmly against inside substrates.

3.4 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

- A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:
 - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
 - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
 - 3. Maintain 3-inch clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
 - 4. For metal-framed wall cavities where cavity heights exceed 96 inches (2438.4 mm), support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
 - 5. Vapor-Retarder-Faced Blankets: Tape joints and ruptures in vapor-retarder facings, and seal each continuous area of insulation to ensure airtight installation.
 - a. Exterior Walls: Set units with facing placed toward interior of construction.

3.5 MISCELLANEOUS VOIDS

- A. Miscellaneous Voids: Install mineral wool insulation in miscellaneous voids and cavity spaces where indicated and as follows:
 - 1. Stuff mineral wool insulation in head joints of interior partitions between roof/floor deck above unless walls are rated or smoke resistant.
 - 2. Stuff mineral wool insulation in joints in exterior wall between differing materials prior to installing air barriers.

3.6 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 072100