

## SECTION 07 21 11

### FOAM BOARD AND BATT INSULATION

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes: Thermal, air and water resistive barrier wall system for cold-formed metal exterior wall assemblies:
  - 1. Exterior wall steel stud cavity batt insulation.
  - 2. Exterior wall insulating sheathing.
  
- B. Related Sections:
  - 1. Section 05 41 00, Structural Metal Stud Framing.
  - 2. Section 09 21 16, Gypsum Board Assemblies.
  - 3. Section 07 26 13, Above Grade Vapor Retarders.
  - 4. Section 07 27 23, Board Product Air Barriers.

##### 1.2 REFERENCES

- A. Materials shall meet the property requirements of one or more of the following specifications as applicable to the specific product or end use:
  - 1. American Society for Testing of Materials (ASTM):
    - a. ASTM C 272: Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions.
    - b. ASTM C 518: Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
    - c. ASTM C 578: Standard Specification for Rigid Cellular Polystyrene Thermal Insulation.
    - d. ASTM C 665: Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
    - e. ASTM D 1621: Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
    - f. ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials.
    - g. ASTM E 96: Standard Test Methods for Water Vapor Transmission of Materials.
    - h. ASTM E 119: Standard Test Methods for Fire Tests of Building Constructions and Materials.
    - i. ASTM E 331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference.
    - j. ASTM E 2178: Standard Test Method for Air Permeance of Building Materials.
  - 2. National Fire Protection Association (NFPA):
    - a. NFPA 285: Standard Fire Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.
  - 3. International Code Council Evaluation Service (ICC-ES):
    - a. AC 71: Acceptance Criteria for Foam Plastic Sheathing Panels Used as Water Resistive Barriers.
    - b. AC 148: Acceptance Criteria for Flexible Flashing Materials.
  - 4. American Architectural Manufacturers Association (AAMA):
    - a. AAMA 711: Voluntary Specification for Self Adhering Flashing Used for Installation of Exterior Wall Fenestration Products.

##### 1.3 SYSTEM DESCRIPTION

- A. Provide and install cold formed steel stud exterior wall framing, non-load bearing ,fire resistance rated, and non-rated system, with exterior gypsum sheathing , with spray applied air and water resistive barrier layer over the exterior gypsum, with continuous insulation sheathing, foam board joints sealed with fiberglass

batt insulation in the stud cavity, without a vapor retarding facer on the fiberglass ,that effectively controls thermal, air and water performance and provides continuous insulation and continuity of the building envelope.

All joints, penetrations and gaps of the insulating [and air barrier] wall system shall be made water [and air] tight.

- B. Code Compliance: Exterior wall system and component materials shall comply with the following requirements:
  - 1. The complete exterior wall assembly shall comply with the passing criteria defined in NFPA 285 for exterior wall limited fire spread performance.
  - 2. Wall and floor joints shall be fire stopped as required in International Building Code Section 714.
  - 3. Insulating sheathing and foam joint sealing tape shall comply with ASTM E 2178, AC71 and AC148 for exterior wall products sealed against air and water penetration.

#### 1.4 SUBMITTALS

- A. Product Data: Submit data on product characteristics, performance criteria, and limitations, including installation instructions.
- B. Sustainable Design: Submit manufacturer's sustainable design certifications as indicated.
- C. Warranty: Submit documentation for limited product warranty.

#### 1.5 QUALITY ASSURANCE

- A. Each insulation board must be labeled with manufacturer's name, product brand name, ASTM material specification reference, and identification of the third-party inspection agency used for building code qualification.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original packaging.
- B. Store and protect products in accordance with manufacturer's instructions. Store in a dry area and protect from water, direct sunlight, flame, and ignition sources. Do not install insulation that has been damaged or wet.
  - 1. In the event the board insulation becomes wet, wipe dry prior to installation.
  - 2. In the event the batt or blanket insulation becomes wet, remove it from jobsite.
    - a. An exception may be allowed in cases where the contractor is able to demonstrate that wet insulation when fully dried out (either before installation or afterward following exposure to system operating temperatures) will provide installed performance that is equivalent in respects to new, completely dry insulation. In such cases, consult the insulation manufacturer for technical assistance.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURER

##### SCHEDULE 1 - PRODUCTS

##### PRODUCT DATA SHEET 0 - MANUFACTURERS

#### 2.1 Extruded Polystyrene Foam Board Insulation - Foundation Walls and Under Slab.

- 1. "Styrofoam Square Edge"; 2", [Dow Chemical Company](#) (800-441-436)

**2.2 Batt Insulation: Fiberglass by Owens Corning or equal. See Drawings for thickness.**

- A. Owens Corning Insulating Systems, LLC, Toledo, OH 43659; www.owenscorning.com.

**2.3 Manufacturers: Subject to compliance with product criteria, the manufacturers whose products may be incorporated into the work include but are not limited to:**

1. DiversiFoam Products.
  2. Dow Chemical Company.
  3. Owens Corning.
  4. Pactiv Corporation.
- B. Fasteners: Provide preassembled screw/stress plate fasteners recommended by their manufacturer for securing foam plastic insulating sheathing. Polymer or other corrosion-protected, coated steel screw fasteners for anchoring sheathing to metal wall framing. Fastener length and size based on wall sheathing thickness and fastener manufacturer recommendation.

**2.4 FIBERGLASS BATT INSULATION**

- A. Stud Cavity Batts: Fiberglass batt insulation unfaced], complying with ASTM C665 and meeting the following criteria:
1. ASTM C 665 type [I (batt without facing), , flame spread 25 or less), or III Class A (batt with reflective facing, flame spread 25 or less].
  2. Full width batt for use with steel studs spaced 16", & 24" on center.
  3. Thermal Resistance: Measured in accordance with ASTM C 518, R-value = 13, Unfaced.
  4. Indoor Air Quality: Verified to be formaldehyde free by independent third party such as GreenGuard Environmental Institute, Indoor Air Quality and/or GreenGuard Children and Schools Certified
- B. Manufacturers: Subject to compliance with product criteria, the manufacturers whose products may be incorporated into the work include but are not limited to:
1. CertainTeed Corporation.
  2. Guardian Building Products.
  3. Johns Manville.
  4. Owens Corning.
- C. Acceptable Products: Subject to compliance with product criteria, the products that may be incorporated into the work include but are not limited to:
1. EcoTouch™ Thermal Batt, unfaced;
    - a. ASTM C 665 Type I; thickness , 3-1/2" R-13, full width for steel stud framing 16" or 24" on center; 48" or 96" long ]
- D. [Manufacturers: Subject to compliance with product criteria, the manufacturers whose products may be incorporated into the work include but are not limited to:
1. Owens Corning.]

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Verify that steel wall studs, opening framing, bridging and structural bracing and other framing support members and anchorage have been installed in accordance with good construction practice and are compliant with this specification.

- B. Verify that adjacent materials are dry and ready to receive insulation. Verify mechanical and electrical services within walls have been tested and inspected.
- C. Report unacceptable conditions in writing. Do not proceed with work until unsatisfactory conditions have been corrected.
- D. Installation of products specified in this section constitutes acceptance of existing conditions and assumption of responsibility for satisfactory performance.

### 3.2 INSTALLATION OF FIBERGLASS BATT STEEL STUD CAVITY INSULATION

- A. Install fiberglass batt insulation in accordance with manufacturer's recommendations and not before the exterior sheathing has been installed on one side of the stud cavity and sealed to be water resistant.
- B. Protect insulation from damage due to weather and physical abuse until protected by permanent construction.
- C. Fit batt insulation tightly into exterior wall steel stud cavity spaces and framing voids to create a continuous insulation layer without gaps. Trim to fill spaces and voids neatly. Fluff insulation to full thickness for specified R-value before installation. Do not compress insulation.
- D. Within exterior wall framing, install insulation between pipes, mechanical services, electrical boxes, and backside of sheathing. Cut or split insulation material as required to fit around wiring and plumbing.
- E. Fiberglass batt support in steel stud cavities:
  - 1. Unfaced batt : Tightly friction fit full width 16", or full width 24", batt insulation to fill the interior of the cavities between steel studs, and to completely fill the voids inside the steel stud flanges.
  - 2. Unfaced batt insulation, completely filled cavity depth, both sides of the stud cavity closed: Friction fit is adequate if the insulation completely fills the depth of the stud cavity, and the cavity is enclosed on both sides. No additional support is required
  - 3. Unfaced batt insulation, completely filled cavity depth, one side of the stud cavity open : Friction fit, supplement with straps or wires, described below, installed starting 4' above the floor and every 2' on center above 4'.
  - 4. Unfaced batt insulation, does not completely fill depth of stud cavity : Friction fit, supplement with straps or wires, described below, installed starting 4' above the floor and every 2' on center above 4'.
  - 5. Supplemental wire or strap supporting devices]: Multiple types of support devices may be used. Wires can be inserted through the batts extending from stud to stud. The wires may be installed continuously through the punch outs of the steel stud framing. Or, heavy gauge wire may be cut slightly larger than each stud space and wedged into place between studs. When the insulation is less than the depth of the stud cavity, the wires should be positioned to hold the batt against the sheathing (gypsum or foam plastic) on the opposite side of the cavity. Another option is the use of punched metal straps attached to the face of the framing. The punched pronged tabs are bent 90 degrees pointing into the stud cavity and are pushed into the insulation after installation. The punched prongs impale the insulation batt and hold it in place.

END OF SECTION