

07 22 16.13
Short Form Guide Specification

**Specifying Extruded Polystyrene Roof Insulation-
STYROFOAM™ DECKMATE™ Plus Tapered**

June 2006

SPEC NOTE: This guide specification is intended for use when specifying rigid board insulation as part of a conventional roof membrane assembly.

SPEC NOTE: This master guide specification Section has been produced by a Certified Construction Specifier (CCS), in accordance with the recommended standards and practices described in the CSI Manual of Practice. It specifically uses the standardized formats MasterFormat™, SectionFormat™ and PageFormat™ to organize the information.

SPEC NOTE: This Section is a manufacturer-specific Section that may be edited using either the prescriptive or the proprietary specifying method. Optional text is indicated by square brackets, []. Delete the unused optional text in the final edited version of a project specification. Where selection is indicated with an [OR] statement, select the appropriate paragraph and delete the inappropriate statement. Delete all SPEC NOTES and [OR] statements prior to final printing.

DISCLAIMER: The manufacturer has reviewed the product information contained in this master guide specification and is responsible for its accuracy. The information is organized and presented to assist the specification writer working on a construction project to select the appropriate products and to save time in writing the project specification Section. The specification writer is responsible for product selection as well as the use and application of this information, and should contact the manufacturer to ensure that all options are available and that the associated specification information is valid and correct.

SECTION 07 22 16.13 RIGID POLYSTYRENE ROOF BOARD INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

SPEC NOTE: This article is a SHORT word summary of the content of this section. Try not to use verbs in the sentence. Keep the statements brief and concise.

- A. Extruded polystyrene rigid board insulation for conventional roof membrane assemblies.

1.02 RELATED SECTIONS

SPEC NOTE: List the section number - the section name; then list description as they apply to the work of this section. Limit this listing only to the sections that have a direct effect on this section.

- A. Section 06 10 00 - Rough Carpentry: wood cants, blocking and curbs.
- B. Section 07 26 00 - Vapor Retarders: roof vapor retarder.
- C. Section [07 51 00 - Built-Up Bituminous Roofing] [07 52 00 - Modified Bituminous Membrane Roofing] [07 53 00 - Elastomeric Membrane Roofing] [07 54 00 - Thermoplastic Membrane Roofing] [____ - ____]: roof membrane.
- D. Section 07 62 00 - Sheet Metal Flashing and Trim.

- E. [Section 07 65 00 - Flexible Flashing.]
- F. [Section 07 71 00 - Roof Specialties: Manufactured gravel stops, fascias, expansion joints, reglets and scuppers.]
- G. [Section 07 72 00 - Roof Accessories: Manufactured vents, hatches, and walkways.]
- H. [Section 07 76 00 - Roof Pavers: Roof [ballast] [deck] pavers.]
- I. Section 07 92 00 - Joint Sealants.
- J. Section [_____ - _____]: Roof anchors.
- K. Section 22 14 26 - Facility Storm Drains: Roof drains.

1.03 REFERENCES

SPEC NOTE: List applicable references (usually consensus standards) that are indicated within the text of this section. Identify by acronym, the standards agency, number and title. Verify the date of issue or last revision with the author organization.

- A. [ASTM C36/C36M-01: Standard Specification for Gypsum Wallboard.]
- B. ASTM C208-95 (2001): Standard Specification for Cellulosic Fiber Insulating Board.
- C. ASTM C518-[04]: Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- D. ASTM C578-[06]: Standard Specification for Rigid, Cellular Polystyrene Insulation.
- E. ASTM D1621-[04a]: Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
- F. ASTM D2842-[01]: Standard Test Method for Water Absorption of Rigid Cellular Plastics.
- G. ASTM E96/E96M-[05]: Standard Test Method for Water Vapor Transmission of Materials.

1.04 SYSTEM DESCRIPTION

- A. Provide continuity of thermal insulation at building enclosure assemblies and spaces in conjunction with thermal insulating materials specified in Section [07 21 00][_____].

1.05 SHOP DRAWINGS

SPEC NOTE: Specify shop drawings only for tapered insulation applications.

- A. Submit Shop Drawings as specified in Section [01 33 00][_____].
- B. Shop Drawings: Indicate degree of slope and layout of sloping boards and fill boards on roof surfaces. Ensure positive drainage to roof drains.

1.06 SUBMITTALS

SPEC NOTE: Do not request product data if design drawings sufficiently describe the products of this section or if proprietary specifying techniques are used. The submission of these items add to the cost of the work.

- A. Submit product data [and manufacturer's installation instructions] as specified in Section [01 33 00][_____].
- B. Product Data
 - 1. Provide manufacturer's technical data for [each type of] insulation.
 - 2. Include product characteristics and performance criteria: aged thermal resistance values, fire performance characteristics, moisture vapour permeance, water absorption ratings, compressive strengths, [evaluation reports showing conformance to applicable codes for polystyrene insulations.
- C. Manufacturer's Installation Instructions: Indicate procedures for preparation and installation specific to the work of this section.

SPEC NOTE: Only request a manufacturer's certificate when a regulatory agency requires it or when performance characteristics are critical.

- D. Manufacturer's Certificate: Submit under provisions of Section [01 78 00][_____] stating that Products meet or exceed specified requirements.

1.07 QUALITY ASSURANCE

SPEC NOTE: Use the following paragraph only when different brands of each type of insulation are not permissible or for exposed products. Expand statement to suit project requirements.

- A. Obtain each type of insulation material from a single manufacturer.

1.08 MOCKUPS

SPEC NOTE: Use this article to request full sized erected assemblies required for review of construction, coordination of work of several sections, field testing, or education of specific trades. Coordinate with similar requirements of other sections listed in the RELATED SECTIONS article.

- A. Provide sufficient quantity of materials for construction of mockup specified in Section [_____].
- B. [Coordinate with mock-up requirements specified in Section [01 40 00] [_____].

1.09 PRE-INSTALLATION MEETINGS

SPEC NOTE: Coordinate the following article with similar requirements of other sections listed in the RELATED SECTIONS article.

- A. Participate in a pre-installation meeting prior to commencing work as specified in Section [_____].

1.10 DELIVERY, STORAGE AND HANDLING

- A. Store, handle and protect Products as specified in Section [01 60 00] [_____].
- B. Handle Products carefully, ensuring board corners are not broken and boards are not damaged.
- C. Do not store Product exposed to direct sunlight. If stored outdoors, cover Product with light-coloured opaque tarpaulins to protect from solar radiation.
- D. Store Products away from construction activity and sources of ignition.
- E. Protect Products from damage during handling, installation and at point of installation.

1.11 ENVIRONMENTAL REQUIREMENTS

- A. Apply insulation only when surfaces and ambient temperatures are within manufacturer's prescribed limits.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Flat Roof Board Insulation: Extruded polystyrene board to ASTM C578, Type IV, rigid, closed cell type, with integral high density skin.
 - 1. Thermal Resistance (ASTM C518): typical 5 year aged value of R-5 per 1 inch of thickness.
 - 2. Board Size: [24" x 96"] [48" x 96"].
 - 3. Board Thickness: [2] [2-1/2] [3] [4] inch thick.] [as indicated on Drawings.]
 - 4. Compressive Strength (ASTM D1621): Minimum 25 psi.
 - 5. Water Absorption (ASTM D2842): 0.7% by volume maximum.
 - 6. Edges: Square.
 - 7. Water Vapor Permeance (ASTM E96/96M): maximum 1.1 perms.
 - 8. Flame Spread/Smoke Developed Values (ASTM E84): 5/165.
 - 9. Manufacturer and Product Name: STYROFOAM™ DECKMATE™ Plus Tapered by The Dow Chemical Company.

SPEC NOTE: Additional information and a more detailed description for Dow tapered insulation Products can be found by referring to the Dow Guide Specification 07 22 16.19 - RIGID POLYSTYRENE ROOF BOARD INSULATION - TAPERED.

- B. Tapered Roof Board Insulation: Extruded polystyrene board to ASTM C578, Type IV, rigid, closed cell type, with integral high density skin.
1. Thermal Resistance (ASTM C518): typical 5 year aged value of R-5 per 1 inch of thickness.
 2. Board Size: 24" x 96".
 3. Board Slope: [1/8 inch per foot] [1/4 inch per foot] [1/2 inch per foot].
 4. Compressive Strength: Minimum 25 psi.
 5. Water Absorption (ASTM D2842): 0.7% by volume maximum.
 6. Edges: Square.
 7. Water Vapor Permeance (ASTM E96): maximum 1.5 perms.
 8. Flame Spread/Smoke Developed Values (ASTM E84): 5/165.
 9. Manufacturer and Product Name: STYROFOAM™ DECKMATE™ Plus Tapered by The Dow Chemical Company.

SPEC NOTE: Use a thermal barrier between the metal roof deck and the roof insulation boards when the structural metal deck is less than 22 gauge thick. Select either ½ inch fire rated gypsum board or 1/4 inch Dens-Deck, as described below.

- C. Thermal Barrier: [1/2 inch (13 mm) thick gypsum board, tapered edges, ivory faced fire rated board; to ASTM C36, Type X; UL labeled] [1/4 inch (6.4 mm) thick silicone treated gypsum core, glass mat [with non-asphaltic coating] both faces, fire rated Type X board meeting UL Class A; Dens-Deck by G-P Gypsum].

SPEC NOTE: Use roof insulation overlay boards to segregate asphaltic-based roof membranes from polystyrene insulation boards. Specify square edge for ½ inch material.

- D. Overlay Board: [1/2 inch] [1 inch] thick high density fiberboard; to ASTM C208; [square][shiplapped] edges[, tapered where indicated].

SPEC NOTE: Additional information and a more detailed description for INSTA STIK™ Quik Set can be found by referring to the Dow Guide Specification 07 20 13 - ADHESIVES FOR THERMAL PROTECTION.

- E. Adhesive: [INSTA STIK™ Quik Set by The Dow Chemical Company.] [_____].
- F. Mechanical Fasteners: screw-type, [6 ga. (4.8 mm)][3 ga. (6.4 mm)] diameter, [drilled] [self-drilling] self-tapping, [galvanized][stainless] steel; sufficient length to securely anchor system into place and to withstand all super-imposed loads; complete with 1-1/2 inch (38 mm) diameter [PVC] [14 ga. (1.8 mm) thick galvanized steel] discs.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that the insulation boards and adjacent materials are compatible.
- B. Verify that substrate is sound, clean, and free of oil, grease[, and materials or substances that may impede adhesive bond].
- C. Verify roof has adequate slope to ensure positive drainage.

3.02 PREPARATION

SPEC NOTE: Delete the following Paragraph if a thermal barrier is not required.

- A. [Mechanically fasten thermal barrier to metal deck at [UL][FM] required spacing.]

SPEC NOTE: A vapor retarder membrane should be considered when the mean January temperature is 40 degrees F (4 degrees C) or less, or the interior humidity is greater than 45 percent.

- B. Apply roof vapor retarder membrane over [steel deck] [wood deck] [thermal barrier] as specified in Section 07 26 00.

SPEC NOTE: This guide specification Section only includes items specific to the application of the roof insulation boards. For information pertaining to vapor retardant membranes, roofing membranes, flashing, etc. refer to the National Roofing Contractors' Association.

3.03 INSTALLATION

SPEC NOTE: Use the following paragraph when specifying tapered roof insulation.

- A. Apply flat fill and sloped roof insulation boards in accordance with layout indicated on Shop Drawings.

SPEC NOTE: Include the following paragraph when specifying adhesive applied roof insulation boards. Insert recommended rate of application.

- B. Apply full bed of adhesive at a rate of [_____] gal/sy. Spread only enough adhesive to install four (4) boards at a time. Press boards in place to ensure complete bond with substrate. Apply adhesive fully around protrusions.

SPEC NOTE: Include the following paragraph when specifying mechanically fastened roof insulation boards. Select appropriate spacing standard.

- B. Mechanically fasten insulation boards to substrate at [NRCA recommended spacing] [[UL][FM] required spacing].
- C. Apply insulation boards parallel to roof perimeter long edges. Stagger end joints.
- D. Lay insulation boards with edges in moderate contact without forcing.
- E. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- F. [Lay second layer of insulation with joints staggered from first layer.]
- G. Cut boards to slope for a distance of 24 inches back from roof drains for positive drainage.
- H. Apply no more insulation than can be covered with roofing membrane in same day.

- I. Keep insulation minimum 3 inches from heat emitting devices, and minimum 2 inches from sidewalls of Type A chimneys and Type B and L vents.

SPEC NOTE: Use the following paragraph to protect the insulation boards from asphaltic-type roof membranes, such as cold-tar pitch and Type I asphalt membrane systems. Delete if not applicable.

- J. Install single layer of overlay board, with joints staggered over insulation joints.

END OF SECTION