DISCLAIMER: The manufacturer has reviewed the product information contained in this short form specification. 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.

SPEC NOTE: Insert the required paragraphs into the Section under the noted Articles, and make any required selections. 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.

*01 4100: CONTINUOUS ENVELOPE AIR BARRIER*

*PART 1 GENERAL*

*1.01 SECTION INCLUDES*

*A. Administrative and procedural requirements to create an airtight building enclosure that controls infiltration / exfiltration of air.*

1. *The Prime Contractor shall ensure that the continuous air barrier around the building enclosure is achieved with the following characteristics:*
	1. *It must be continuous, with all joints, penetrations, and air paths sealed.*
	2. *It must be structurally supported.*
	3. *It must be connected and continuous between foundation & walls, walls & windows/doors, different wall systems, wall & roof.*

*1.02 RESPONSIBILITIES*

*A. Prime Contractor Responsibilities: Unless otherwise indicated, the Prime Contractor shall provide coordination of the trades, and the sequence of construction to ensure continuity of the air barrier system joints, junctures and transitions between materials and assemblies of materials and products, from substructure to walls to roof.*

*PART 2 – PRODUCTS – [not used]*

*PART 3 – EXECUTION – [not used]*

*END OF SECTION*

07 5050

VEGETATED ROOF INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Styrofoam**™** Brand Extruded Polystyrene insulation for vegetated, protected membrane, or inverted roof membrane assembly.

1.02 RELATED REQUIREMENTS

A. [Continue as appropriate for project].

1.03 REFERENCE STANDARDS

A. [ASTM C177](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20C177) - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2013.

B. ASTM C272 - Standard Test Method for Water Absorption of Core Materials for Sandwich Constructions; 2018.

C. [ASTM C578](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20C578) - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2016.

1.04 SUBMITTALS

A. Product Data: Provide product data on all components of the vegetated roof.

B. Warranty:

1. [If roofing assembly will be warranted by roofing manufacturer] Submit Manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

a. Submit installer's certification that installation complies with all warranty conditions for the waterproof membrane.

2. Provide Manufacturer’s Limited Thermal Warranty for extruded polystyrene.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to project site in original, unopened containers or wrappings.

B. Store materials under cover and elevated above grade.

C. Remove damaged materials from job site. Replace damaged materials.

PART 2 PRODUCTS

2.01 INSULATION

A. Extruded Polystyrene (XPS) Board Insulation: [ASTM C578](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20C578), Type VII – 60 PSI; extruded polystyrene board with natural skin surfaces with drainage channel on one edge; with the following characteristics:

1. Basis of Design:

a. DuPont de Nemours Inc.; **DuPont™ Styrofoam™ Brand Plazamate™ XPS Insulation\***: building.dupont.com/commercial

2. Board Size: 24 by 96 inch (610 by 2440 mm).

3. Board Thickness: 2 inches (50 mm).

4. Board Edges: Square.

5. Thermal Resistance: R-value of 5.0 (RSI-value of 0.88) per 1 inch (25.4 mm) at 75 degrees F (24 degrees C) mean temperature using [ASTM C177](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20C177) test method.

6. Water Absorption: 0.3% by volume, maximum.

7. [If using tapered board] Tapered Board: Slope as indicated on plans; minimum thickness 1/2 inch (13 mm); fabricate of fewest layers possible.

8. Sustainability: Third party listed Environmental Product Declaration certificate.

9. Water Absorption: ASTM C272, 0.1% max, by volume.

 **[OR]**

B. Extruded Polystyrene (XPS) Board Insulation: [ASTM C578](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20C578), Type VI - 40 PSI; extruded polystyrene board with natural skin surfaces with drainage channel on one edge; with the following characteristics:

1. Basis of Design:

a. DuPont de Nemours Inc.; **DuPont™ Styrofoam™ Brand Roofmate™ XPS Insulation\***: building.dupont.com/commercial

2. Board Size: 24 by 96 inch (610 by 2440 mm).

3. Board Thickness: 2 inches (50 mm).

4. Board Edges: Square.

5. Thermal Resistance: R-value of 5.0 (RSI-value of 0.88) per 1 inch (25.4 mm) at 75 degrees F (24 degrees C) mean temperature using [ASTM C177](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20C177) test method.

6. Water Absorption: 0.3% by volume, maximum.

7. [If using tapered board] Tapered Board: Slope as indicated on plans; minimum thickness 1/2 inch (13 mm); fabricate of fewest layers possible.

8. Sustainability: Third party listed Environmental Product Declaration certificate.

9. Water Absorption: ASTM C272, 0.1% max, by volume.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.

B. Verify deck is supported and secure.

C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.

D. Verify deck surfaces are dry and free of snow or ice.

E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

3.02 INSTALLATION, GENERAL

A. Install in accordance with membrane manufacturer's instructions and warranty restrictions, if any.

B. Dry all surfaces thoroughly before vegetated roofing work begins.

C. Protect the waterproofing or roof membrane as necessary to prevent damage during application of vegetated roof system.

D. Provide temporary ballast in partially completed sections of vegetated roof to protect overburden from wind effects during installation. Provide ballast with no sharp edges, protrusions, chemical contaminants, or other composition that could damage the waterproof membrane.

3.03 INSULATION INSTALLATION

A. Handle insulation carefully. Avoid damaging or rupturing the facer or the finished surface.

B. Install insulation with staggered end joints.

C. Butt edges tightly together. Gap between to be 1/4 inch (6/3 mm) or less. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

D. Apply insulation boards parallel to roof perimeter edges.

E. Keep roof insulation boards minimum 3 inches (75 mm) from heat emitting devices, and minimum 2 inches (50 mm) from sidewalls of Type A chimneys and Type B and L vents.

F. Inspect completed insulation installation. Cut out broken corners or other damaged areas of insulation. Replace with undamaged insulation custom cut to fit the damaged or broken area removed.

G. Mechanical Attachment of Flat Insulation:

1. Mechanically fasten insulation to deck in accordance with roofing manufacturer's instructions and Factory Mutual requirements.

2. Install roof insulation boards in a manner to ensure air space is properly vented by soffit / eave vents and ridge vents.

H. Adhered Attachment of Flat Insulation:

1. Apply beads of adhesive and press roof insulation boards in place to ensure complete bond with substrate. Apply adhesive fully around protrusions. Conform to adhesive manufacturer's installation guidelines.

I. Tapered Insulation Attachment

1. Apply flat fill and sloped roof insulation boards in accordance with layout indicated on shop drawings.

END OF SECTION

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**DuPont™ Styrofoam™ Brand Spray Polyurethane Foam\*** contains isocyanate, hydrofluorocarbon blowing agent and polyol. Read the instructions and (Material) Safety Data Sheet ((M)SDS) carefully before use. Wear protective clothing (including long sleeves), gloves, goggles and proper respiratory protection. Supplied air or an approved air-purifying respirator equipped with an organic vapor sorbent and a P100 particulate filter is required to maintain exposure levels below ACGIH, OSHA, WEEL or other applicable limits. Provide adequate ventilation. Contents under pressure. Styrofoam™ Brand SPF should be installed by a trained SPF applicator.
**CAUTION**: When cured, these products are combustible and will burn if exposed to open flame or sparks from high-energy sources. Do not expose to temperatures above 240ºF (116ºC). For more information, consult (Material) Safety Data Sheet ((M)SDS), call DuPont at 1-866-583-2583 or contact your local building inspector. In an emergency, call 1-989-636-4400 in the U.S. or 1-519-339-3711 in Canada.

**DuPont™ Great Stuff Pro™ Polyurethane Foam Sealants and Adhesives\*** contain isocyanate and a flammable blowing agent. Read all instructions and (Material) Safety Data Sheet ((M)SDS), carefully before use. Eliminate all sources of ignition before use. Cover all skin. Wear long sleeves, gloves, and safety glasses or goggles. Not for use in aviation, or food/beverage contact, or as structural support in marine applications. Provide adequate ventilation or wear proper respiratory protection. Contents under pressure. Not to be used for filling closed cavities or voids such as behind walls and under tub surrounds.
**CAUTION**: When cured, these products are combustible and will burn if exposed to open flame or sparks from high-energy sources. Do not expose to temperatures above 240ºF (116ºC). For more information, consult (Material) Safety Data Sheet ((M)SDS), call DuPont at 1-866-583-2583 or contact your local building inspector. In an emergency, call 1-989-636-4400 in the U.S. or 1-519-339-3711 in Canada.

**DuPont Polyurethane Foam Insulation and Sealant\***
**CAUTION**: When cured, these products are combustible and will burn if exposed to open flame or sparks from high-energy sources. Do not expose to temperatures above 240ºF (116ºC). For more information, consult (Material) Safety Data Sheet ((M)SDS), call DuPont at 1-866-583-2583 or contact your local building inspector. In an emergency, call 1-989-636-4400 in the U.S. or 1-519-339-3711 in Canada.
**CAUTION**: This product is combustible and shall only be used as specified by the local building code with respect to flame spread classification and to the use of a suitable thermal barrier. For more information, consult (Material) Safety Data Sheet ((M)SDS), call DuPont at 1-866-583-2583 or contact your local building inspector. In an emergency, call 1-989-636-4400 in the U.S. or 1-519-339-3711 in Canada.

**DuPont™ LiquidArmor™ Flashing and Sealant\***Read the instructions and (Material) Safety Data Sheets ((M)SDS) carefully before use. It is recommended that spray applicators and those working in the spray area wear eye protection. Contact with exposed skin may cause skin discoloration and dryness. Gloves are recommended for prolonged exposures. Ensure adequate ventilation during spray applications.

**DuPont™ ThermaxTM Brand Polyisocyanurate Insulation\*
CAUTION**: This product is combustible and shall only be used as specified by the local building code with respect to flame spread classification and to the use of a suitable thermal barrier. For more information, consult (Material) Safety Data Sheet ((M)SDS), call DuPont at 1-866-583-2583, or contact your local building inspector. In an emergency, call 1-989-636-4400.

**DuPont™ StyrofoamTM Extruded Polystyrene Foam Insulation\*
CAUTION**: This product is combustible. Protect from high heat sources. A protective barrier or thermal barrier may be required as specified in the appropriate building code. For more information, consult (Material) Safety Data Sheet ((M)SDS), call DuPont at 1-866-583-2583 or contact your local building inspector. In an emergency, call 1-989-636-4400 in the U.S. or 1-519-339-3711 in Canada.

**WARNING**: Rigid foam insulation does not constitute a working walkable surface or qualify as a fall protection product.

Building and/or construction practices unrelated to building materials could greatly affect moisture and the potential for mold formation. No material supplier including DuPont can give assurance that mold will not develop in any specific system.

\*A former product of The Dow Chemical Company

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