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*

SECTION 07 2100

THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Styrofoam™ FreezerMate™ Extruded Polystyrene Board insulation.

1.02 REFERENCE STANDARDS

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

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

C. [ASTM E84](https://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E84) - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

C. Warranty: Provide Manufacturer's Limited Thermal Warranty for extruded polystyrene insulation.

1.04 QUALITY ASSURANCE

A. Source Limitations: Obtain exterior building insulation through one source from a single manufacturer.

1.05 FIELD CONDITIONS

A. Application Temperatures: Comply with Manufacturer's recommendations for product applications.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. Insulation for Roof: Extruded polystyrene board.

2.02 FOAM BOARD INSULATION MATERIALS

A. Extruded Polystyrene Board Insulation: Extruded polystyrene board; ASTM C578; with either natural skin or cut cell surfaces, and the following characteristics:

1. Basis of Design:
	1. DuPont de Nemours Inc.; **DuPont™ Styrofoam™ Brand Freezermate™ 30 Extruded Polystyrene Insulation\*;** building.dupont.com/commercial
2. Type: [ASTM C578](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20C578), Type IV - 30 PSI.
3. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with [ASTM E84](https://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E84).
4. Smoke Developed Index (SDI): 450 or less, when tested in accordance with [ASTM E84](https://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E84).
5. R-value (RSI-value); 1 inch (25 mm) of material at 72 degrees F (22 C): 5 (0.88), minimum.
6. Panel Size: [Thickness in inches] thick by 24" **[OR]** 48” wide by 96" long.
7. Board Edges: Square.
8. Recycled Content: Average of 20% pre-consumer certified by UL Environment Inc.
9. Sustainability: Third party listed Environmental Product Declaration certificate.
10. Water Absorption: ASTM C272, 0.1% max, by volume.

 **[OR]**

B. Extruded Polystyrene Board Insulation: Extruded polystyrene board; ASTM C578; with either natural skin or cut cell surfaces, and the following characteristics:

1. Basis of Design:
	1. DuPont de Nemours Inc.; **DuPont™ Styrofoam™ Brand Freezermate™ 40 Extruded Polystyrene Insulation\*;** building.dupont.com/commercial
2. Type: [ASTM C578](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20C578), Type VI - 40 PSI.
3. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with [ASTM E84](https://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E84).
4. Smoke Developed Index (SDI): 450 or less, when tested in accordance with [ASTM E84](https://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E84).
5. R-value (RSI-value); 1 inch (25 mm) of material at 72 degrees F (22 C): 5 (0.88), minimum.
6. Panel Size: [Thickness in inches] thick by 24" **[OR]** 48” wide by 96" long
7. Board Edges: Square.
8. Recycled Content: Average of 20% pre-consumer certified by UL Environment Inc.
9. Sustainability: Third party listed Environmental Product Declaration certificate.
10. Water Absorption: ASTM C272, 0.1% max, by volume.

 **[OR]**

C. Extruded Polystyrene Board Insulation: Extruded polystyrene board; ASTM C578; with either natural skin or cut cell surfaces, and the following characteristics:

1. Basis of Design:
	1. DuPont de Nemours Inc.; **DuPont™ Styrofoam™ Brand Freezermate™ 60 Extruded Polystyrene Insulation\*;** building.dupont.com/commercial
2. Type: [ASTM C578](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20C578), Type VII - 60 PSI.
3. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with [ASTM E84](https://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E84).
4. Smoke Developed Index (SDI): 450 or less, when tested in accordance with [ASTM E84](https://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E84).
5. R-value (RSI-value); 1 inch (25 mm) of material at 72 degrees F (22 C): 5 (0.88), minimum.
6. Panel Size: [Thickness in inches] thick by 24" **[OR]** 48” wide by 96" long
7. Board Edges: Square.
8. Recycled Content: Average of 20% pre-consumer certified by UL Environment Inc.
9. Sustainability: Third party listed Environmental Product Declaration certificate.
10. Water Absorption: ASTM C272, 0.1% max, by volume.

2.03 ACCESSORIES

A. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.

B. Insulation Adhesive:

1. DuPont™ Insta Stik™ Quik Set Commercial Adhesive\* by DuPont de Nemours Inc., a single-component, moisture cured, solvent free polyurethane adhesive, dispensed from a portable disposable pre-pressurized container.

C. Roof/Wall Juncture Sealing

1. Maintain continuity of air barrier by sealing the roof/wall juncture.

2. Acceptable Products:

a. DuPont de Nemours Inc.; DuPont™ Froth-Pak™ Foam Insulation\* (Class A).

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

3.02 GENERAL INSTALLATION

A. Maintain continuity of air barrier by sealing the roof/wall juncture with Roof/Wall Juncture Sealing material.

3.03 BOARD INSTALLATION

A. [If using extruded polystyrene insulation with asphaltic-type roof membranes] Install single layer of overlay board, with joints staggered over insulation joints.

B. 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.

C. 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.

D. Apply insulation boards parallel to roof perimeter edges

E. Lay insulation boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

F. Cut boards to slope for a distance of 24 inches (600 mm) back from roof drains for positive drainage.

G. 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.

H. Lay subsequent layers of insulation with joints staggered minimum 6 inch (150 mm) from joints of preceding layer.

I. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

J. Apply no more insulation than can be sealed with membrane in same day.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

3.05 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

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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