

07 2100

Ultra Wall System *with CAVITYMATE™ Ultra*

Insulation + Air + Water Barrier Wall System

Guide Specification

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 SEALING*

*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 2100

ULTRA WALL INSULATION AND AIR BARRIER SYSTEM *WITH CAVITYMATE ULTRA*

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Ultra Wall System; extruded polystyrene (XPS) board insulation.

1. Square edge cavity wall insulation fit between wall ties; STYROFOAM Brand CAVITYMATE Ultra.

1.02 RELATED REQUIREMENTS

A. Section 04 2000 - Unit Masonry: Cavity wall veneers.

B. Section 04 2723 - Cavity Wall Unit Masonry: Cavity wall veneers.

C. Section 09 2116 - Gypsum Board Assemblies: Gypsum wall sheathing substrate in cavity.

D. [Continue as appropriate for project]

1.03 REFERENCE STANDARDS

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

B. [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.

C. [ASTM E331](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E331) - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2016).

D. [ASTM E2178](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E2357) - Standard Test Method for Air Permeance of Building Materials; 2013.

E. [ASTM E2357](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E2357) - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies; 2011.

F. [NFPA 285](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=NFPA%20285) - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components; 2012.

1.04 SUBMITTALS

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

B. Product Data: Provide data on product characteristics for each type of product indicated.

C. NFPA 285 Compliance: Submit third party documentation showing wall assembly compliance with NFPA 285.

D. Warranty: Provide Manufacturer’s Limited Thermal Warranty for extruded polystyrene insulation.

1.05 QUALITY ASSURANCE

A. Thermal Insulation: Not produced with, or contain, any of U.S. EPA regulated chlorofluorocarbon (CFC) compounds listed in Montreal Protocol of United Nations Environmental Program.

B. Surface Burning Characteristics: As determined by testing identical products according to ASTM E84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

C. Air Barrier Performance: Provide insulation and related materials with information from manufacturer indicating insulation has passed testing with ASTM E2178-13 “Standard Test Method for determining Air Leakage for building materials and/or the assembly has passed testing in accordance with ASTM E2357-05, “Standard Test Method for Determining Air Leakage of Air Barrier Assemblies”.

D. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.

1.06 MOCK-UP

A. Provide mock-up of specified system illustrating proper installation of specified wall assembly in compliance with manufacturer's recommendations.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Protect thermal insulation materials from physical damage and from deterioration due to moisture, soiling and other sources; store in dry interior location.

1. Do not expose to direct sunlight. Exposure limit 90 days.

2. Protect against ignition at all times.

3. Quickly complete installation and concealment of foam plastic board installation in each area of construction.

B. Comply with manufacturer’s recommendations for delivery, storage, and handling.

1.08 FIELD CONDITIONS

A. Installation Temperatures: Comply with manufacturer’s recommendations for temperatures during product installation.

B. Environmental Requirements: Install this work in compliance with manufacturer’s environmental requirements, and during conditions in accordance with manufacturer’s recommended minimum surface temperatures.

1.09 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Wall System: Provide 50 Year Thermal Limited Warranty in United States for STYROFOAM insulation products 1-1/2 inch (38 mm) thick and greater.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Air Barrier: Tested in accordance with [ASTM E2357](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E2357) at pressure of 6.24 psf (300 Pa) or greater, with air infiltration less than 0.04 cfm/sq ft (0.2 L/sq m) of fixed wall area.

1. Conduct testing at positive and negative sustained wind loading of 12.5 psf (0.6 kPa) for one-hour duration in each direction.

2. Provide pressure cycling of wall at 2000 cycles in both positive and negative directions, ending with wind gust loading at 25 psf (1.2 kPa).

B. Water Penetration: Tested in accordance with [ASTM E331](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E331), with minimum pressure differential of 6.24 psf (300 Pa) for at least two hour test duration without any uncontrolled water penetration.

1. All joints, penetrations, and gaps of the thermal (and air) layer wall system shall be made water and air tight.

2.02 CAVITYMATE ULTRA - WALL INSULATION SYSTEM

A. Extruded Polystyrene (XPS) Board Insulation: Complies with [ASTM C578](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20C578), Type IV with patented carbon-black technology wall insulation system placed between wall anchors of masonry veneer cavity walls and with seam treatment to form a continuous thermal, air, and water barrier system.

1. Basis of Design:

a. Dow Chemical Company; STYROFOAM CAVITYMATE Ultra: www.dowbuildingsolutions.com

2. 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).

3. 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).

4. Compressive Resistance: At least 25 psi (173 kPa).

5. Density: At least 1.45 lbs/cu ft (23 kg/cu m).

6. Water Vapor Permeance: Maximum of 1.5 perms (86 ng/Pa sec sq m) per 1 inch (25.4 mm) thickness.

7. Board Overall Dimensions: 15-3/4 inch (400 mm) wide by 96 inch (2.44 m) long.

8. Board Thickness: Nominal thickness of 1-3/4 inch (44 mm), **[OR]** 2.125" **[OR]** 2.5" **[OR]** 3" **[OR]** as shown on drawings, with square edge treatment along edges.

9. Thermal Resistance (R-value): R-5.6/in at 75 degrees F (24 degrees C).

2.03 ACCESSORIES

A. Gypsum Sheathing: Provide moisture and mold-resistant glass mat gypsum wall board in accordance with Section 09 2116.

B. Board Insulation Bonding Adhesive: Provide product as recommended by insulation manufacturer that will not damage insulation or substrates.

1. Products: GREAT STUFF PRO™ Gaps and Cracks single component polyurethane low-pressure sealant single component polyurethane low-pressure foam sealant as manufactured by Dow Chemical Company.

C. Foam Sealant Penetration Filler: Provide single component spray polyurethane foam (SPF) for sealing wall penetrations through board insulation.

1. Products: GREAT STUFF PRO™ Gaps and Cracks single component polyurethane low-pressure sealant or GREAT STUFF PRO™ Window and Door single component polyurethane low-pressure foam sealant as manufactured by Dow Chemical Company.

D. Face Repair Flashing: Provide board insulation manufacturer's recommended flashing for repair of damaged board insulation facer.

1. Products:

a. LIQUIDARMOR™ CM Spray Flashing and Sealant as manufactured by the Dow Chemical Company.

b. LIQUIDARMOR™ LT Flexible Single Component Silicone Flashing as manufactured by Dow Chemical Company.

E. Flashing and Sealant: Provide for sealing joints, seams and veneer tie penetrations through board insulation.

1. One component polyurethane foam

a. Product: GREAT STUFF PRO™ Gaps & Cracks as manufactured by The Dow Chemical Company for gaps >= 1/4" wide.

2. Spray applied elastomeric liquid flashing and sealant, grey-blue color.

a. Product: LIQUIDARMOR™ CM (for gaps < ¼”) as manufactured by Dow Chemical Company.

3. Trowel applied single component silicone flashing and sealant, grey color.

a. Product: LIQUIDARMOR™ LT (for gaps <1/4”) as manufactured by Dow Chemical Company.

F. Roof/Wall Juncture Sealing

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

2. Acceptable Products:

a. The Dow Chemical Company; FROTH-PAK Foam Insulation (Class A).

PART 3 - EXECUTION

3.01 INSTALLATION, CAVITYMATE ULTRA WALL INSULATION SYSTEM

A. Comply with extruded polystyrene (XPS) board insulation manufacturer’s installation instructions for applications indicated.

B. Apply 2 inch (51 mm) diameter daubs of adhesive at four corners of interior face of board insulation and one at the center, for total of five.

C. Place board insulation between wall ties and other obstructions with staggered joints and provide 1/4 inch (6.4 mm) to 1/2 inch (12.7 mm) wide gap at end joints.

1. Press board insulation units firmly against wall sheathing of cavity wall construction, and ensure insulation is continuous.

D. Fill open spaces between board insulation with single component foam sealant to ensure continuous air and water vapor barrier.

E. Install board insulation to cover entire insulated area, cut and fit insulation tightly around obstructions, and properly remove projections that interfere with insulation placement.

3.02 INSTALLATION, GENERAL

A. Roof/Wall Juncture:

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

B. Flashing and Sealant:

1. Apply material within application limits of product manufacturer.

2. Do not apply product on surfaces with standing water or frost.

3. Avoid installing on days with a high probability of significant rainfall.

4. Seal gaps greater than 1/4 inch (6.4 mm) in width with penetration filler prior to applying flashing and sealant.

a. If facer on board insulation is damaged, make note of affected area and apply additional spray over damaged area.

b. Replace damaged insulation, or repair facer flaws with appropriate flashing as recommended by insulation panel manufacturer.

5. Apply flashing and sealant to board joints, penetrations and other fenestration openings as required at material required application thickness.

a. Apply flashing 3 inches (76 mm), plus or minus 1 inch (25.4 mm) wide over board insulation joints, with at least 1 inch (25.4 mm) of spray covers each side of joint.

b. Apply flashing over fasteners and washers along board insulation joints.

c. Install façade attachment system after flashing has been applied.

6. Rough Openings: Apply flashing and sealant at least 3 inches (76 mm) onto face of insulation panel sheathing, and completely cover edge of insulation board; also spray at least 3 inch (76 mm) back onto rough opening substrate.

a. It is recommended to cover back onto rough opening at least 1 inch past the interior weatherseal.

7. Board Insulation or Substrate Penetrations: Apply flashing and sealant at least 2 inches (51 mm) onto face of insulation sheathing and at least 2 inches (51 mm) onto penetration or primary flashing substrate.

8. Use wet mil thickness gauge to ensure proper installation thickness.

a. Where consistently below minimum thickness, apply another layer to achieve proper thickness requirements.

9. Visually inspect for any areas missed and trowel on sealant as necessary.

3.03 PROTECTION

A. Protect board insulation from excess moisture, mechanical damage, and exposure to open flame.

B. Repair damage caused to board insulation in a manner that retains integrity and continuity of insulation and facer materials.

C. Keep board insulation dry and above water on jobsite, and cover with tarp until ready for installation.

D. Promptly cover board insulation with cladding.

**END OF SECTION**

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**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 Dow at 1-866-583-BLUE (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.

**GREAT STUFF PRO™** Insulating Foam sealant and adhesive products 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 Dow at 1-866-583-BLUE (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.   
  
**Dow 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 Dow at 1-866-583-BLUE (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 Dow at 1-866-583-BLUE (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.

**LIQUIDARMORTM**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.

**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 Dow at 1-866-583-BLUE (2583), or contact your local building inspector. In an emergency, call 1-989-636-4400.

**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 Dow at 1-866-583-BLUE (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 Dow can give assurance that mold will not develop in any specific system.

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