



Installation Procedures for the Ultra Air Barrier Wall System

System Overview

STYROFOAM™ Brand CAVITYMATE™ Ultra Insulation provides an excellent option for meeting today's energy code requirements for brick and block wall construction. GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant* is a minimal-expanding, single-component polyurethane foam sealant for general purpose building envelope air/vapor sealing.

Together, these two products form the basis of the Ultra Air Barrier Wall System, offering the best of both worlds: a high R-value wall (R-5.6 per inch) with exceptional air/vapor barrier capabilities.

With fewer steps than conventional masonry wall insulation systems, the Ultra Air Barrier Wall System can save contractors time and money. Once the veneer ties used to anchor the final building exterior are in place, it's easy to install by following the steps presented here.

About STYROFOAM™ Brand CAVITYMATE™ Ultra Insulation

STYROFOAM™ Brand CAVITYMATE™ Ultra Insulation uses patented carbon black materials in the foam for greater thermal performance over other extruded polystyrene foam insulations. This enhanced formulation helps the extruded polystyrene foam to absorb infrared radiation, slowing transmission through the foam and lowering heat flow. The special 15-3/4" width, with square edges on all four sides, makes it easy to fit between brick ties in cavity wall applications. It also offers high moisture resistance and durability.

About GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant

GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant is a minimal-expanding, single-component polyurethane foam sealant for general purpose building envelope sealing. GREAT STUFF PRO™ Gaps & Cracks helps prevent drafts and repel water, helping to enhance energy efficiency and improve occupant comfort.

Materials Checklist

To install the Ultra Air Barrier Wall System on a masonry wall, you will need:

- ✓ STYROFOAM™ Brand CAVITYMATE™ Ultra Insulation
- ✓ GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant
- ✓ PRO Series Foam Dispensing Gun
- ✓ GREAT STUFF PRO™ Gun Cleaner
- ✓ GREAT STUFF PRO™ Wipes
- ✓ WEATHERMATE™ Straight Flashing
- ✓ Spray adhesive, such as 3M High Strength 90
- ✓ Safety gloves
- ✓ Safety glasses

To learn more about how to use STYROFOAM™ Brand, GREAT STUFF PRO™ and WEATHERMATE™ Straight Flashing products, visit www.dowbuildingsolutions.com.

Wall Preparation

Making sure the wall surface is properly prepared is a key step to a successful installation of the Ultra Air Barrier Wall System. To allow the system to function at maximum effectiveness, first make sure that:

- The wall surface is clean and free of any dirt or debris
- Wall ties are properly installed and spaced
- The temperature and moisture levels fall within acceptable parameters; refer to Table 1 for recommended conditions
- STYROFOAM™ Brand CAVITYMATE™ Ultra Insulation boards are clean and dry

How to Install

General Recommendations

1. All boards are installed horizontally (15-3/4" x 96" orientation).
2. Begin at the bottom of the wall. This is known as course 1.
3. At a corner, leave an overhang equal to the board thickness to allow for staggering on each successive course. (Photo 1)



(Photo 1)

Installation Overview

1. With the termination bar located at the top of the base flashing and just below the first row of wall ties, apply a 1" bead of GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant across the wall just above the termination bar to create an air seal. If a termination bar is not used, apply the sealant just above the flashing to create the air seal.
2. Apply a 1" bead of GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant between the top of the flashing and the first layer of wall ties. (Photo 2)



(Photo 2)

TABLE 1:

Suggested Conditions for Installing the Ultra Air Barrier Wall System

Ambient Temperature	32°F or higher for best results.
Substrate Temperature	32°F or higher for best results.
Moisture % of Wall	Do not install while raining. Some wall surface moisture is acceptable and will help cure GREAT STUFF PRO™ Gaps & Cracks. However, test for proper adhesion if the wall appears excessively wet.
Can Temperature for GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant	For best results, use between 60-90°F. Protect cans from extreme cold or heat.

*Read the label and Material Safety Data Sheet carefully before use.

ULTRA
AIR BARRIER
wall system



(Photo 3)

3. With the printed side facing the exterior, angle the bottom of the STYROFOAM™ Brand CAVITYMATE™ Ultra Insulation board into the corner of the base flashing, then rotate the top onto the wall between the brick ties. (Photo 3)
4. Press the board firmly against the wall to ensure contact with the GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant.*
5. Install adjacent boards across the rest of the bottom course the same way, but also:
 - a. Apply a 1" bead of GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant down the center of the exposed top vertical edge of the previous board. (Photo 4)



(Photo 4)

- b. Place adjacent boards approximately 1/2" from the edge of the previous board and rotate into position.
- c. Tap board from the opposite vertical edge until it is flush against the previous board.

Note: This installation guide illustrates one example of many ways to seal the first course. Another option is to install a waterproofing membrane prior to assembling the Ultra Air Barrier Wall System. In this case, creating a seal at the termination bar and flashing is important as the termination bar will push the rigid insulation away from the wall. For this reason, additional GREAT STUFF PRO™ Gaps & Cracks will be needed in this area.

Installing Remaining Courses

1. Cut the first board to be installed on the second course to 4' in length to allow for staggering of vertical joints.
2. Apply five balls of GREAT STUFF PRO™ Gaps & Cracks in the pattern shown in Photo 5. Balls should be 2" deep by 3" wide.



(Photo 5)

3. Apply a 1" bead of GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant in the center of the top edge of the board already placed on the course below. (Photo 6)



(Photo 6)

4. With the printed side out, facing the exterior, angle the STYROFOAM™ Brand CAVITYMATE™ Ultra Insulation board into the top edge of the boards below, then rotate onto the wall, bending ties up or down to ensure a proper friction fit.
5. Press the board firmly against the wall to ensure contact with the GREAT STUFF PRO™ Gaps & Cracks.
6. Inspect all joints and fill in noticeable voids with GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant. (Photo 7)

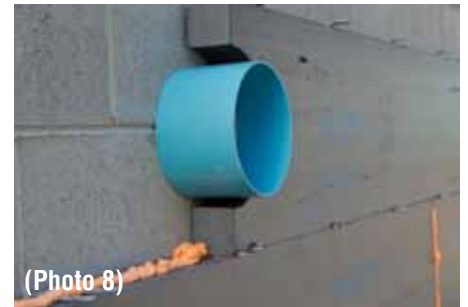


(Photo 7)

Installing Around Penetrations

To install STYROFOAM™ Brand CAVITYMATE™ Ultra Insulation around penetrations such as ducts, electrical boxes and pipes:

1. Cut opening in board approximately 1/2" to 1" larger than the measured penetration.
2. Slide board over the penetration. (Photo 8)



(Photo 8)

3. Fill the void between the penetration and the board with GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant. (Photo 9)



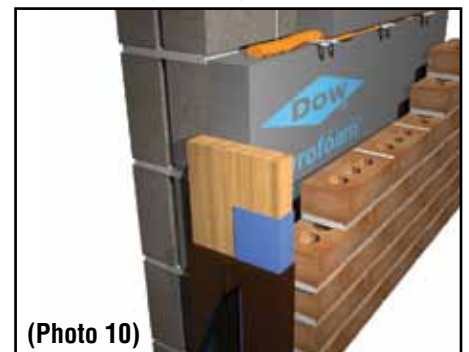
(Photo 9)

Note: All penetrations need to be sealed to the base structure to ensure that the air barrier system is maintained.

Installing Around Windows and Doors

Window Jamb

1. Attach wood nailer to block as shown in illustration. (Photo 10)



(Photo 10)

2. Apply GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant to the interface between the wood nailer, block and STYROFOAM™ Brand CAVITYMATE™ Ultra Insulation board.

*Read the label and Material Safety Data Sheet carefully before use.

3. Install window per window manufacturer installation instructions.
4. Seal window as necessary, depending on window design.
5. Flash with WEATHERMATE™ Straight Flashing as necessary at terminations. It may be necessary to apply a primer, such as 3M High Strength 90, to the block and/or other substrates to ensure proper adhesion.

See *CAD Detail for Ultra Air Barrier Wall System – Window Jamb* on www.ultrawallsystem.com.

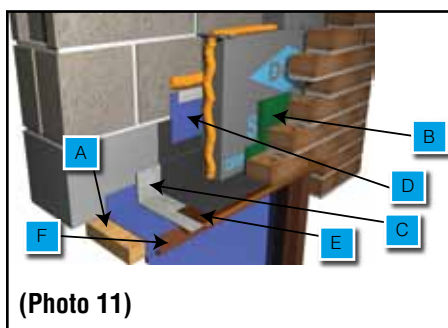
Note: Illustrations and details shown are for window applications, but can be utilized for doors or other through-wall openings.

Window Header

Note: Refer to callouts in Photo 11

1. Install solid fire-rated 2X continuous wood blocking (no joints) and attach to the steel angle on the front side and the block at the back side. (A)
2. Install window per window manufacturer installation instructions.
3. Install loose-laid structural steel angle. (C)
4. Install pre-formed metal drip edge (E) with required separation between drip edge and steel angle.
5. Install flashing (D) with termination bar at top.
6. Install cavity drainage net as needed. (B)
7. Install weeps as required.
8. Install closure angle (F) to match window material and finish (e.g., aluminum clad, vinyl clad).

See *CAD details for the Ultra Air Barrier Wall System – Window Head Detail – Mineral Wool Fire Protection, Fire Treated Wood Blocking, Fire Treated Wood Blocking Masonry Bond Flush and with Bent Metal Plate Lintel* on www.ultrawallsystem.com.

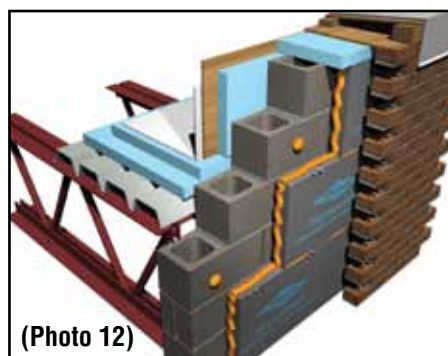


(Photo 11)

Installing Around Parapet (Roof/Wall)

Follow previous instructions for course installation to the top of the wall.

Note: Parapet should be completely wrapped in foam insulation: STYROFOAM™ Brand CAVITYMATE™ Ultra Insulation on the front side and the specified roof insulation on the top and back side to the roof line, as shown in Photo 12.



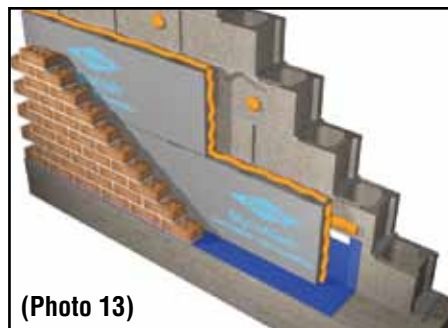
(Photo 12)

Installing at Foundation

Follow previous instructions for first course installation when installing at a foundation.

(Photo 13)

See *CAD details for the Ultra Air Barrier Wall System – Ultra Wall Foundation Detail* on www.ultrawallsystem.com.



(Photo 13)

Safety, Product Storage and Use Recommendations

STYROFOAM™ Brand CAVITYMATE™ Brand Insulation

- Do not leave STYROFOAM™ Brand CAVITYMATE™ Ultra Insulation exposed to direct sunlight for more than 90 days. Consult a Dow representative if exposure is expected to be longer than 90 days. Prolonged exposure to ultraviolet radiation may cause the surface of STYROFOAM™ Brand CAVITYMATE™ Ultra Insulation to become faded and dusty.

- The surface degradation will have no measurable effect on the insulating value of the plastic foam unless the deterioration is allowed to continue until actual foam thickness is lost. Since the dust would impair the performance of adhesives and finishes, dusty surfaces should be brushed off before these products are applied. A light-colored, opaque protective covering should be used if excessive solar exposure is expected. When stored outdoors, keep insulation boards tarped or covered to protect from weather and weighted down to prevent boards from being blown around by the wind.
- Store above standing water.

GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant

GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant* is easy to use following the instructions printed on each can, along with a few other guidelines:

- Make sure application surface is free of dust and dirt (a damp surface will not impair the bond).
- Use PRO Series Foam Dispensing Guns to ensure clean and precise dispensing for professional results.
- Read the label and Material Safety Data Sheet carefully before use.
- GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant contains isocyanate and a flammable blowing agent. Vapors may travel to other rooms. Ensure adequate ventilation and shut off all pilot lights and open flames; eliminate all sources of ignition before use. Do not smoke or use lighters or matches while dispensing foam.
- Do not breathe vapors or mists. Use in well-ventilated areas or wear proper respiratory protection. Isocyanate is irritating to the eyes, skin and respiratory system and may cause sensitization by inhalation or skin contact.
- GREAT STUFF PRO™ Gaps & Cracks is very sticky and will adhere to most surfaces and skin. Do not get foam on skin. Wear gloves and goggles or safety glasses. Cured foam must be mechanically removed or allowed to wear off in time.
- The contents are under pressure. The can may burst if left in areas susceptible to high temperatures such as motor vehicles, or near radiators, stoves or other sources of heat. Do not place can in hot water. Do not puncture, incinerate or store in temperatures above 120°F.

*Read the label and Material Safety Data Sheet carefully before use.

Best Practices for Using PRO Series Foam Dispensing Gun

Using the Gun

1. Shake the can well.
2. Screw the can on the adapter, holding the gun upside down.
3. Open the set-screw by turning it counter clockwise. The trigger is deblocked.
4. The PRO gun is now ready to be used.
5. The foam output can be closed by activating the trigger/by turning the set-screw.
6. As soon as the can is empty, replace it with a new one.
7. If the gun is not used within 30 days, leave a can containing foam on the screw adapter; make sure that the can is stored in a vertical position.
8. If the can is empty, remove it and clean the gun in order to prevent foam from curing inside the gun.

Cleaning the Gun

1. Unscrew the can holding the gun upside down.
2. Remove remaining foam from the nozzle and the basket with cleaning fluid (never use water).
3. Screw a cleaner can on the adapter, holding the gun upside down.
4. Activate the trigger in order to fill the gun with cleaner and spray until all foam has come out of the barrel.
5. Leave the cleaning fluid in the gun for several minutes.
6. Spray again by activating the trigger.
7. Remove the cleaner can.
8. Activate the trigger until the gun is completely empty.
9. The gun is now clean and can be used again or left aside for a longer period.

Troubleshooting

1. In case foam leaks out of the gun even when the trigger is not activated, take a cardboard box and give a short output by pulling the trigger as far as possible and release at once. The needle will return back to its original position. Alternatively, a complete check-up can be performed:
 - a. Unscrew the can and follow instructions under "Cleaning the Gun."
 - b. Remove the needle and clean up tip with solvent.
 - c. Remove the nozzle and check whether it is worn out or polluted. In the event it is no longer in good condition, replace with a new one.



For Technical Information: 1-866-583-BLUE (2583) • For Sales Information: 1-800-232-2436

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STYROFOAM™ Brand Extruded Polystyrene Foam 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 (MSDS), call Dow at 1-866-583-BLUE (2583) or contact your local building inspector. In an emergency, call 1-989-636-4400.

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

Dow Polyurethane Foam Insulation and Sealants

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 240°F. For more information, consult MSDS, call Dow at 1-866-583-BLUE (2583) or contact your local building inspector. In an emergency, call 1-989-636-4400.

GREAT STUFF PRO™ Insulating Foam Sealants contain isocyanate and a flammable blowing agent. Read the label and MSDS carefully before use. Eliminate all sources of ignition before use. Wear long sleeves, gloves, and safety glasses or goggles. Provide adequate ventilation or wear proper respiratory protection. Contents under pressure.

GREAT STUFF PRO™ Gun Cleaner is flammable and contains acetone and propane. Read the label and MSDS carefully before use. Eliminate all sources of ignition before use. Wear gloves, and goggles or safety glasses. Provide adequate ventilation or wear proper respiratory protection. Contents under pressure.

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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