

Installation Procedures for Ultra SL Wall System on Steel Stud

Using DuPont™ Styrofoam™ Brand Ultra SL



SYSTEM OVERVIEW



General Information

DuPont™ Styrofoam™ Brand Ultra SL Insulation* offers an excellent option Styrofoam™ Brand Ultra SL offers an excellent option for meeting today's energy code requirements for steel stud or concrete/CMU backup construction.

DuPont™ LiquidArmor™ Flashing and Sealant** used on the horizontal or vertical joints offers exceptional air/vapor protection and water sealing to help seal the building's envelope.

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) of continuous insulation with exceptional air, vapor and water barrier capabilities.

With fewer steps than standard construction methods, the Ultra Air Barrier Wall System can save contractors time and money.

*Styrofoam™ Brand Ultra SL and LiquidArmor™ Flashing and Sealant are former products of The Dow Chemical Company.

** Consult label and Safety Data Sheet carefully before use.

About DuPont™ Styrofoam™ Brand Ultra SL Insulation

Styrofoam™ Brand Ultra SL 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 4' x 8' boards with shiplap edges offer continuous insulation and are quick and easy to install. They also offer high moisture resistance and durability.



- Do not leave **Styrofoam™ Brand Ultra SL** exposed to direct sunlight for more than 90 days. Consult a DuPont representative if exposure is expected to be more than 90 days. Prolonged exposure to ultraviolet radiation may cause the surface of **Styrofoam™ Brand Ultra SL** 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.



Efficient: Ultra SL's shiplap edges form a seal that provides continuous insulation

About DuPont™ LiquidArmor™ Flashing and Sealant

LiquidArmor™ Flashing and Sealant is an innovative, patented liquid flashing solution designed to provide advanced moisture and air sealing protection to commercial buildings.

A unique alternative to flashing tape, the elastomeric spray forms a tight, seamless barrier along the rough openings of windows and doors while helping to significantly reduce labor time.



SYSTEM OVERVIEW

Materials Checklist

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

- DuPont™ Styrofoam™ Brand Ultra SL Insulation
- DuPont™ LiquidArmor™ Flashing and Sealant
- DuPont™ Great Stuff Pro™ Gaps & Cracks Polyurethane Foam Sealant*
- Great Stuff Pro™ Series Foam Dispensing Gun
- Great Stuff Pro™ Foam Cleaner
- Great Stuff™ Work Wipes
- Spray Adhesive, such as 3M High-Strength 90
- Pos-I-Tie ThermalClip Fasteners
- Hammer/Drill Bits
- Rodenhouse Fasteners
- Screw Gun with Pos-I-Tie Sleeve
- Table/Skill Saw for Cutting Insulation
- Smoothing Tool
- Chalk Line
- Tape Measure
- Safety Gloves
- Safety Glasses

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 and debris
- The temperature and moisture levels fall within acceptable parameters; refer to Table 1 for recommended conditions.
- Styrofoam™ Brand Ultra SL boards are clean and dry

TABLE 1: Suggested Conditions for Optimal Installation of the Ultra Air Barrier Wall System

Ambient Temperature 25°F or higher for best results	Substrate Temperature 25°F or higher for best results	Moisture % of Wall Do not install while raining
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To learn more about how to use Styrofoam™ Brand Ultra SL Insulation, LiquidArmor™ Flashing and Sealant and Great Stuff Pro™ Gaps & Cracks Polyurethane Foam Sealant,* visit styrofoam.com/ultrasl.

* Consult label and Safety Data Sheet carefully before use.

Ultra Air Barrier Wall System Symbol Key

The Ultra Air Barrier Wall System combines exceptional thermal performance with air and moisture barrier capabilities — in one system. The following symbols are used throughout the installation instructions to highlight a particular benefit.



Air Barrier

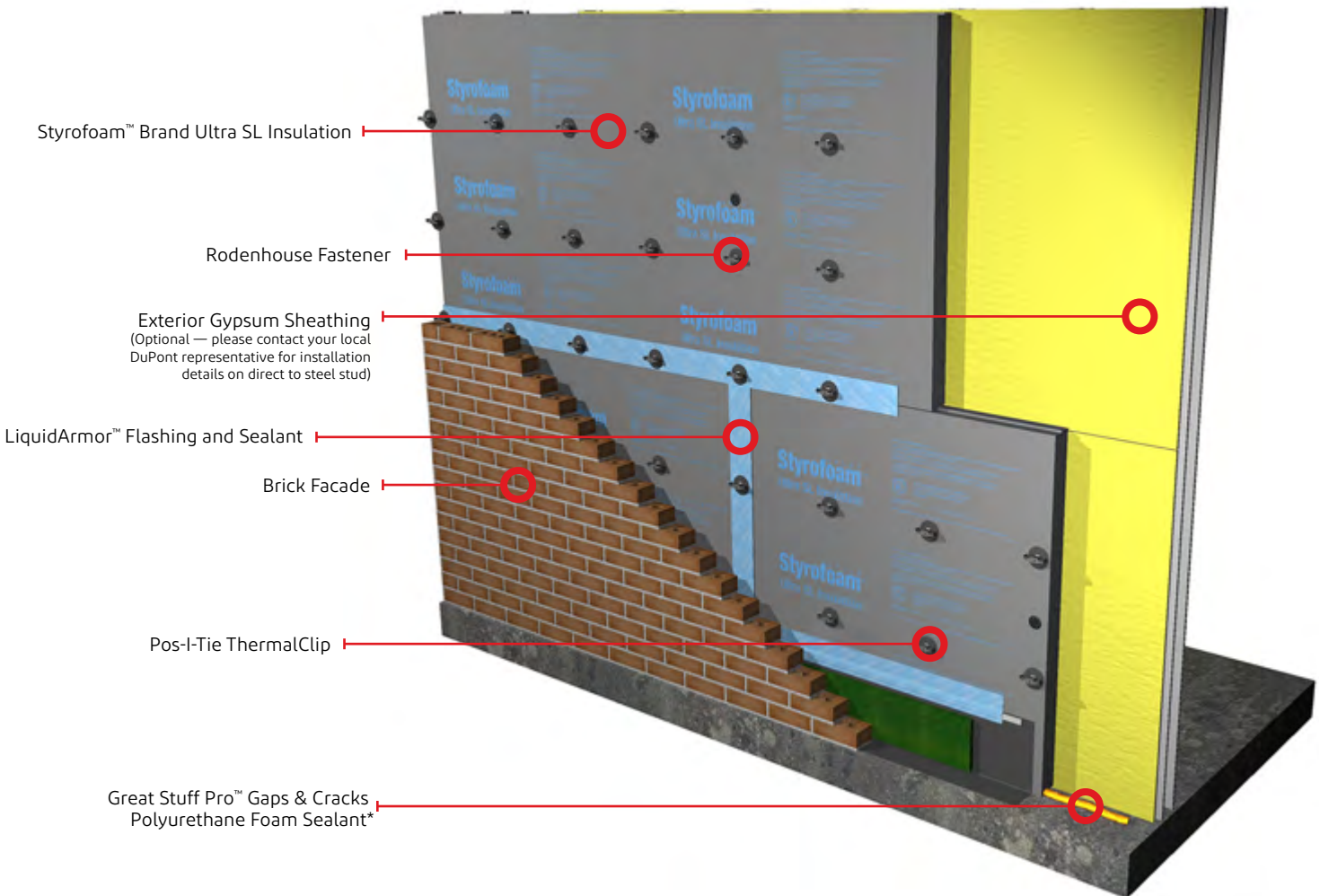


Thermal



Water Barrier

How to Install Over Steel Stud Walls



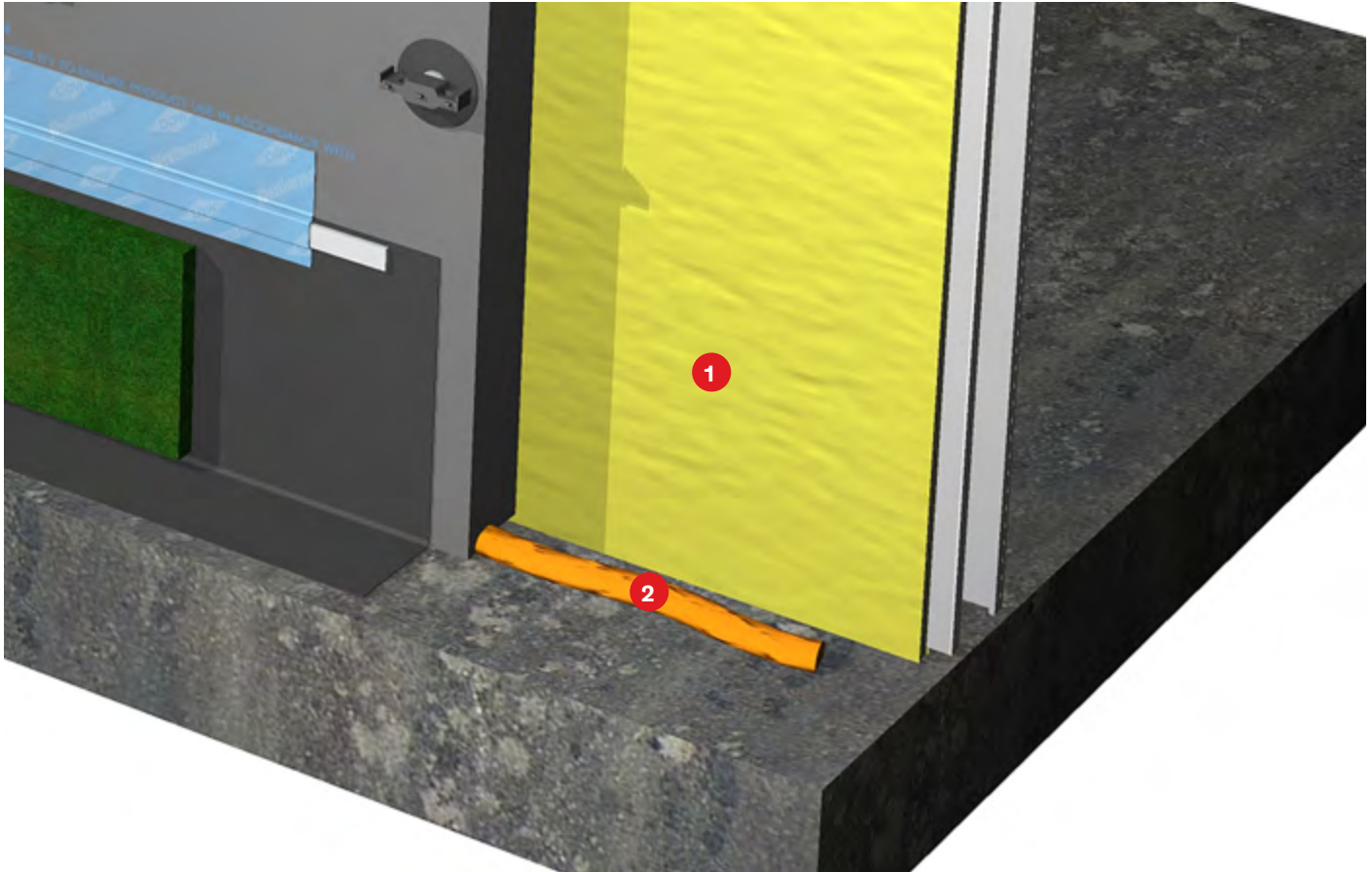
INSTALLATION

General Recommendations



All boards are installed vertically (4' x 8' orientation).

Note: Boards can be installed horizontally, if preferred. However, vertical installation is recommended for speed and ease of install.



- 1** Cut the first board in half to a 2' x 8' dimension (this allows for staggering of joints later)
- 2** Apply a 1" bead of **Great Stuff Pro™ Gaps & Cracks Polyurethane Foam Sealant** at the foundation with a **PRO™ Series Foam Dispensing Gun**. Locate this horizontal bead of foam so that the bottom edge of each insulation board will seat and create a seal between the bottom face of the foam and the foundation. This step is critical to creating an air seal and is to be performed **ONLY** on the bottom first course of installation.

General Recommendations



- 3** Starting at the edge of the wall, install a 4' x 4' board horizontally on top of gypsum sheathing (with straight edge next to the edge of the wall).



- 4** Attach with Rodenhouse fastener to the block wall (this fastener holds the board in place).

Installing Remaining Courses



- 5 Install remaining 4' x 8' boards horizontally. Properly orient the shiplap joint between each adjoining board, and use one Rodenhouse fastener to temporarily hold the board in place. (See manufacturer's installation instructions.)



Note: One Rodenhouse fastener will not support the board on the wall long term. Wall ties must be installed immediately after the board is in place

Installing Remaining Courses

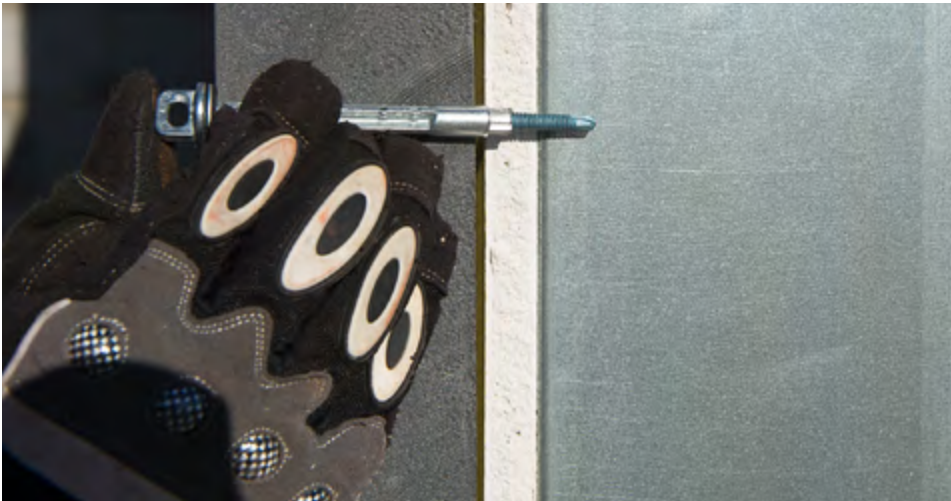


Steel stud fastening pattern for installation of fasteners and brick ties.

- 6 When course 1 has been erected, snap chalk lines for installation of Pos-I-Tie® fasteners (16" OC). If installing base flashings, use Rodenhouse fasteners in place of Pos-I-Tie® fasteners for the first row from the bottom. This will allow for a flush mount of the installed base flashing and termination bar.

Note: Remember to install LiquidArmor™ Flashing and Sealant at joint seal before installing fasteners. The flashing helps to create an air- and water-tight seal at the seam locations.

Installing Remaining Courses



Length of screw into Styrofoam™ Brand Ultra SL insulation board



Note: If fastener is not in horizontal position, use a pair of pliers to rotate.

- 7** Screw in Pos-I-Tie® fasteners with screw gun. **Note:** If installing base flashing, use Rodenhouse fasteners in place of Pos-I-Tie® fasteners for the first row from the bottom. This will allow for a flush mount of the installed base flashing and termination bar.



Benefits of Pos-I-Tie® fasteners:

- Resist moisture penetration with EPDM sealing washer
- Easy to install
- Flexible for use with various wire ties and stone anchors



Heckmann Building Products, Inc.
www.heckmannbuildingprods.com
 Toll Free (800) 621-4140

- 8** Install Pos-I-Tie® ThermalClip™ over each Pos-I-Tie® fastener

- Insert tab up through hole at the bottom, and make sure to press the fastener at both sides until you hear it snap. Installation video can be seen by searching for “Pos-I-Tie Thermal Clip Installation” on YouTube and selecting the video from Heckmann Building Products, Inc.
- Snap-on design locks the Pos-I-Tie® ThermalClip™ to the barrel loop, creating a thermal break between the wire tie and the Pos-I-Tie® Barrel Screw
- Pos-I-Tie® ThermalClip™ also creates a dissimilar metals break, allowing the use of Stainless Steel Ties or Stone Anchors with the Original Pos-I-Tie®

Note: The edge of the insulation board should not be more than 8” from the Pos-I-Tie® anchor. If the edge of the board is greater than 8” away from the anchor, then fasteners need to be installed between the anchor and the board edge.

Installing Base Flashing



Now that the **Styrofoam™ Brand Ultra SL Insulation** has been installed on the walls and the Pos-I-Tie ThermalClip is in place, the next step is to install the base flashing.



- 9 Snap line at desired length for top edge of base flashing where it will be installed.

Note: System design may or may not require a termination bar, depending on architect's specification.



- 10 Install double-sided butyl flashing tape across top back edge of base flashing.



- 11 Press flashing at chalk line and press firmly on tape to adhere (double-sided tape adheres back side of flashing to insulation board).



- 12 Install termination bar at top edge of flashing. Attach with block fasteners.



- 13 Install **LiquidArmor™ Flashing & Sealant** as a counter flashing over termination bar.

Installing Joint Flashing



Now you have created the baseline for excellent air/vapor and water barrier properties by using **Great Stuff Pro™ Gaps & Cracks Polyurethane Foam Sealant*** at the base of the first course of insulation and by properly installing the base flashing. The last critical step is to install **LiquidArmor™ Flashing and Sealant** at all horizontal and vertical joints to complete the system.

- 14** Install **LiquidArmor™ Flashing and Sealant** over all vertical and horizontal seams.

As you first begin, it is helpful to first spray a pass or two of material on scrap piece of foam board or OBS to dial an appropriate sprayer pressure and check for good flow through the spray tip.

Proceed to flash board joints as detailed by the project drawings by spray applying **LiquidArmor™ Flashing and Sealant** at 50 ±5 wet mils in these areas. A popular technique to attain 50 ±5 wet mils is to apply the product in two passes, although this is not required. Note: A wet mil gauge (below) or will help ensure **LiquidArmor™** is applied at 50 +/5 wet mils, optimizing product yields and product performance.

Apply 3 inches (±1 inch) over the joint, making sure that a minimum of 1 inch of **LiquidArmor™ Flashing and Sealant** covers each side of the joint. Fasteners and washers along the board joints should also be completely covered with **LiquidArmor™**. Brick anchors can installed after the application of **LiquidArmor™**. Be sure to follow project drawing details.



ADDITIONAL TIPS

Alternative Joint Sealing Option **Great Stuff Pro™ Gaps & Cracks Polyurethane Foam Sealants*** can be used in place of **LiquidArmor™ Flashing and Sealant** for joint seal. Please contact your local DuPont representative for alternative installation instructions.

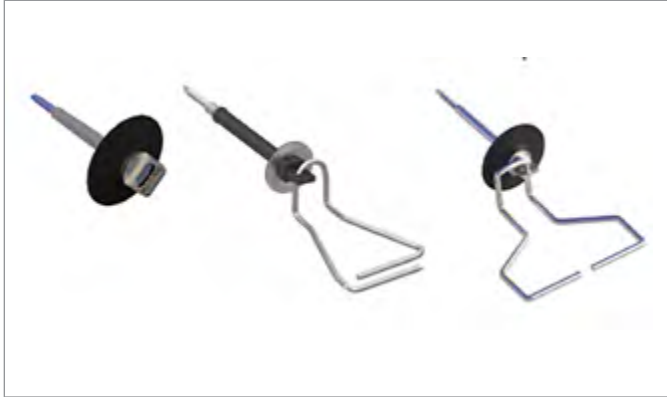


* Consult label and Material Safety Data Sheet carefully before use.

Installing Joint Flashing



- 15 Install wire ties on Pos-I-Tie fasteners.



Installing Around Penetrations



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

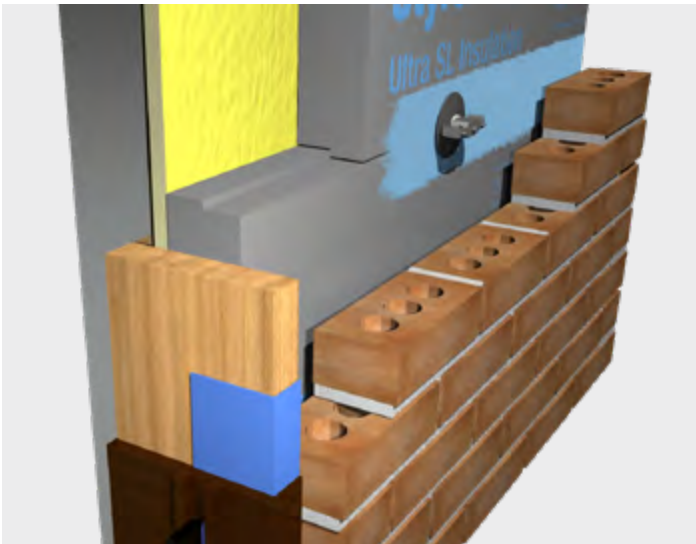


- 16 Cut opening in board approximately ½" to 1" larger than the measured penetration.



- 17 Slide board over the penetration.
Fill the void between the penetration and the board with Great Stuff Pro™ Gaps & Cracks Polyurethane Foam Sealant.*

Installing Around Windows and Doors

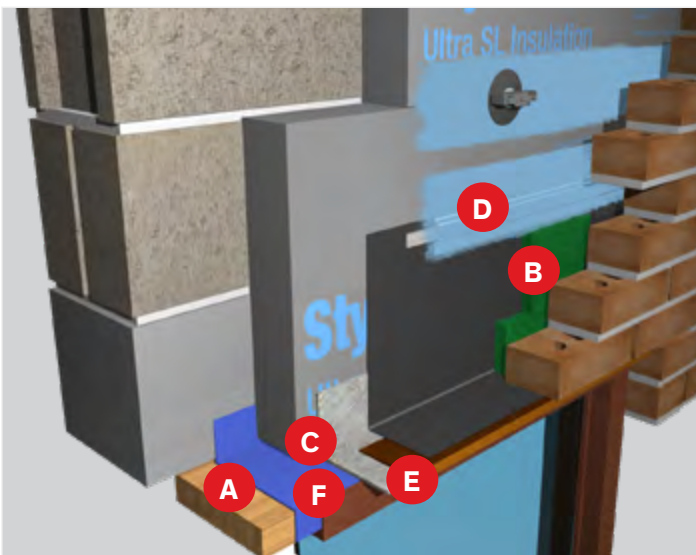


Window Jamb

1. Attach wood nailer to block as shown in illustration.
2. Apply **Great Stuff Pro™ Gaps & Cracks Polyurethane Foam Sealant** to the interface between the wood nailer, block and **Styrofoam™ Brand Ultra SL Insulation**.
3. Install window per window manufacturer installation instructions.
4. Seal window as necessary, depending on window design.
5. Flash with **LiquidArmor™ Flashing and Sealant** as necessary at terminations.

See *CAD Details for the Ultra Air Barrier Wall System – Window Jamb* on styrofoam.com/ultrasl.

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

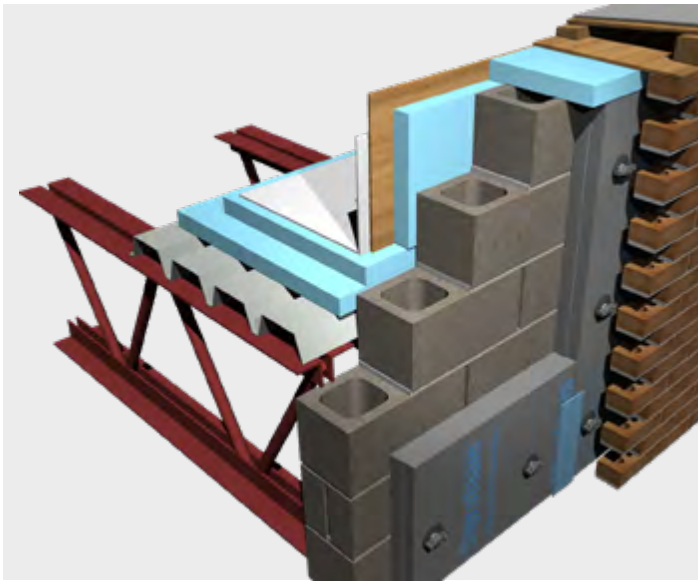


Window Header

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 preformed metal drip edge (E) with required separation between drip edge and steel angle.
5. Install **LiquidArmor™ Flashing and Sealant** (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 styrofoam.com/ultrasl.

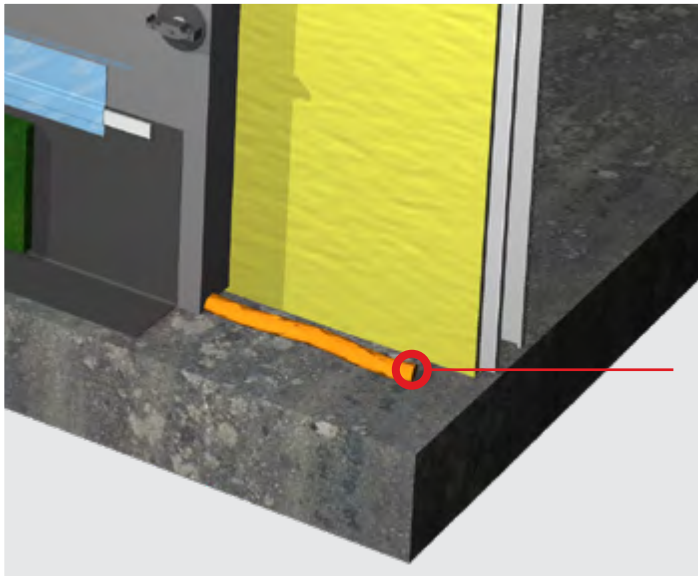
Installing Around Parapet (Roof/Wall)



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

Note: Parapet should be completely wrapped in foam insulation: Styrofoam™ Brand Ultra SL Insulation on the front side, and the specified roof insulation on the top and back side to the roof line, as shown at left.

Installing at Foundation



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

See CAD Details for the Ultra Air Barrier Wall System – Ultra Wall Foundation Detail on styrofoam.com/ultrasl.

Use *Great Stuff Pro™ Gaps & Cracks Polyurethane Foam Sealant** along bottom of insulation to help prevent air and water intrusion.



**For more information visit
Styrofoam.com
or call 1-866-583-2583**

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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 call the DuPont Contact Center at 866-583-2583 or contact your local building inspector. For emergencies contact Chemtrec 800-424-9300, CCN (Contract Number) 7442

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

FROTH-PAK™ Spray Polyurethane Foam contains isocyanate, hydrofluorocarbon blowing agent and polyol. Read the instructions and Material Safety Data Sheets carefully before use. Wear protective clothing (including long sleeves), gloves, goggles or safety glasses, and proper respiratory protection.

Do not breathe the vapor or mist. Use only with adequate ventilation. It is recommended that applicators and those working in the spray area wear respiratory protection. Increased ventilation significantly reduces the potential for isocyanate exposure; however, supplied air or an approved air-purifying respirator equipped with an organic vapor sorbent and a particulate filter may still be required to maintain exposure levels below ACGIH, OSHA,

WEEL or other applicable limits. For situations where the atmospheric levels may exceed the level for which an air-purifying respirator is effective, use a positive-pressure, air-supplying respirator (air line or self-contained breathing apparatus). Spraying large amounts of foam indoors may require the use of a positive-pressure, air-supplying respirator. Contents under pressure.

Great Stuff Pro™, ENERFOAM™ and ENERBOND™ sealant and adhesive products 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.

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.

When air sealing buildings, ensure that combustion appliances, such as furnaces, water heaters, wood burning stoves, gas stoves and gas dryers, are properly vented to the outside. 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.

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