



## **WEB BASED APPLICATION SPECIFIC INSTALLATION INSTRUCTIONS**



# **Installing Box Frame Sliding Windows**

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# Installing Replacement Box Frame Sliding Windows

The basics for installing a sliding window are not very different from the double hung. Head expanders and sill supports can be used for many sliders exactly as they are used for double hung windows.

Again, it is imperative to be sure the old frame is still properly integrated with the water management system of the wall, otherwise it would be better to use a frame out installation described elsewhere in this manual. The key to success, either way, is adequate support under the sill to avoid sagging.

There are two very important considerations when installing sliding windows:

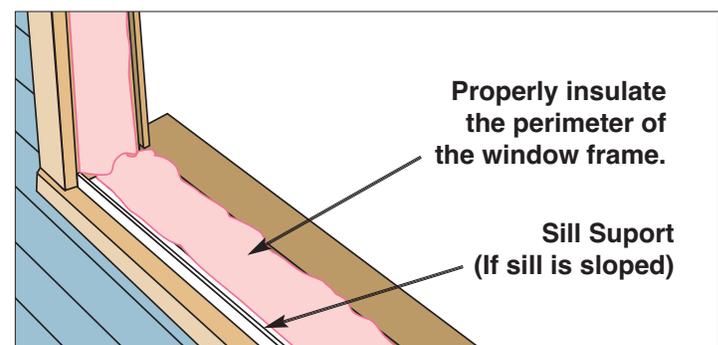
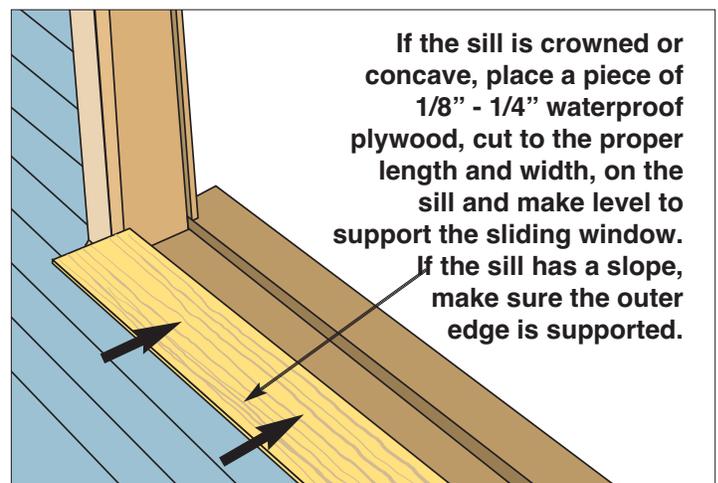
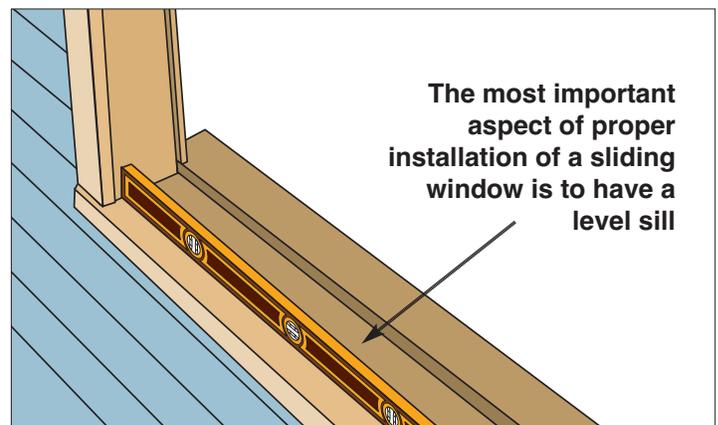
## 1. The Sill Must Be Level - and Supported!.

Just as it is important not to bow-in the sides of the double hung window, the lower and upper frame of the slider cannot be bowed.

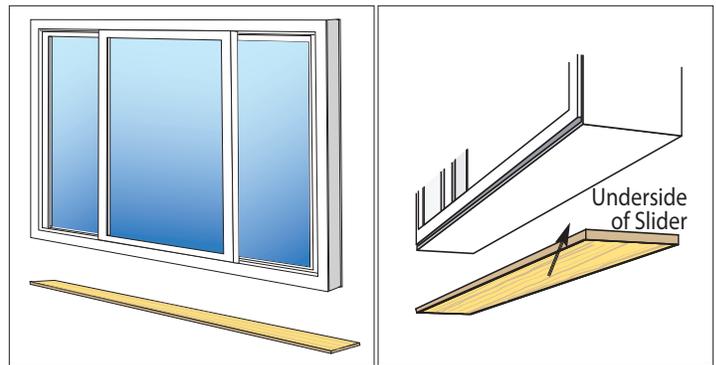
Check the level of the sill. Read the section in this book on Level and Square. The part of the opening where the sliding window will rest must be flat. If it is "crowned" or concave, then the track on which the operating sash will "glide" or roll, will not allow the operating sash to close properly, and the interlock between the two or three sash of a slider will not engage properly and there will be air and possible water leaks.

Big Sliders, with multiple moving sash and heavy glazing are prone to "sag" in the middle if not properly supported in retrofit applications. If the sill can't be assured of being level and strong, it would be wise to install a piece of exterior grade plywood along the bottom of the opening to ensure that it is flat in Frame-In applications, and fastening a waterproof board along the sill to stiffen the tracks for Frame-Out installations. Just shimming the bottom of the window is often not sufficient to level the track because the weight of the operating sash can deform the track if the support of the under sill is not uniform (flat) and supported.

Shimming the window underneath the track may temporarily solve the issue but over time, only a structural addition of something akin to plywood, will assure proper operation and weather tightness necessary for a sliding window.



The plywood or other exterior grade material needs only to be 1/8" - 1/4" thick. The level of the sill should be checked when the opening is measured so the addition of the plywood can be determined to be necessary and its thickness can be accommodated in the sizing of the new window. Installation of the plywood should be adequately caulked underneath with a bedding sealant, and the plywood should be covered when capping the finished installation on the outside.

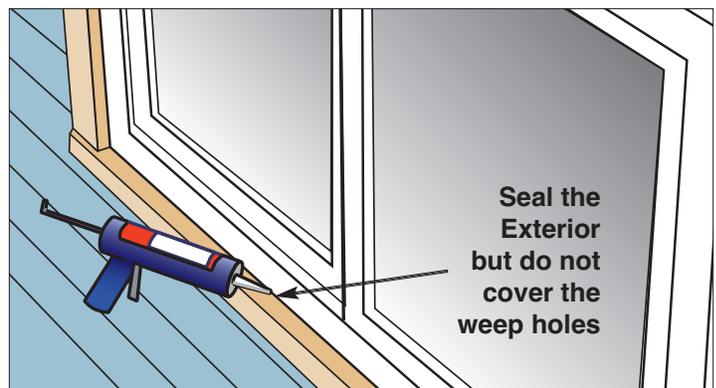
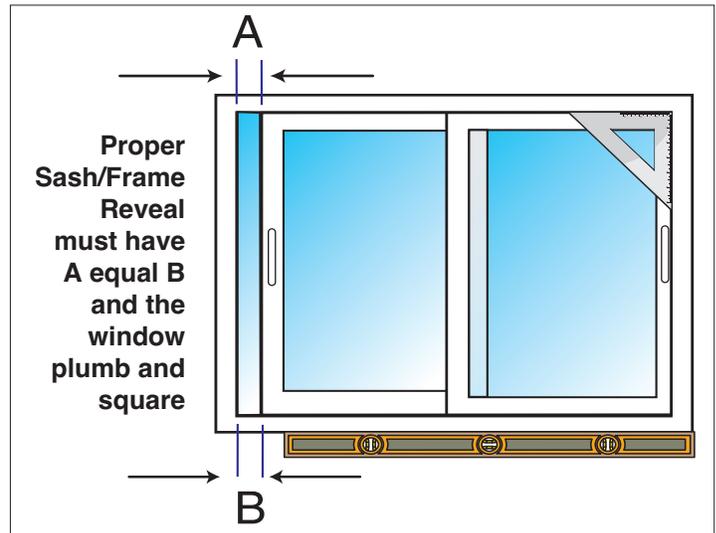


**2. The Opening Must Be Square.** Because there is no gravity to help the sash operate smoothly, the squareness of the opening is more important for a slider so that the operating sash do not bind up. Be careful to install the slider in a "relaxed" state. Don't push the window against the blindstop or anchor to the opening in a manner that might force the window to rack or twist.

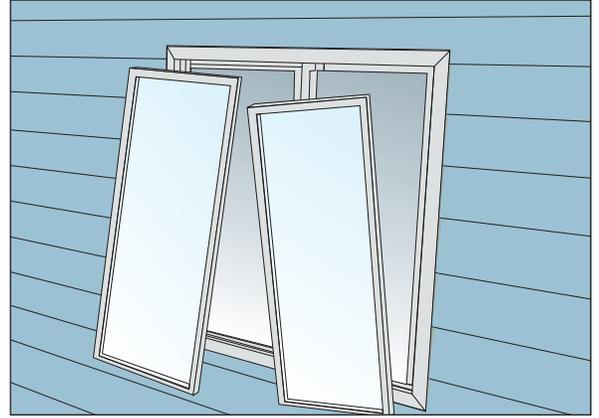
**Other considerations when installing Sliding Windows.**

- A. The sill must have uniform support across the whole sliding window, and the support must be greater than the width of the tracks.
- B. Any exterior finish work must not cover nor impede the operation of any weep holes which allow drainage of any accumulated water from the operating tracks.
- C. No anchor screws should be put through the sill/track of a slider. This may cause water to get under the window and cause water damage to the opening or leak in the house.
- D. Be sure that the full perimeter of the window is adequately insulated under the master frame.

**NOTE:** Further information that will be helpful in installing Sliding Windows is found in this book in the sections on *Frame-Out Method for Replacing Old Aluminum and Wood Windows*, and *Installing Windows in Masonry Openings*.



## Making the Choice: Leaving the Old Frame In



## Leaving the Old Frame in Place

For Aluminum Windows that have been mounted to the underlying sheathing through a nailing fin, it is possible to leave the old frame in and not disturb the siding.

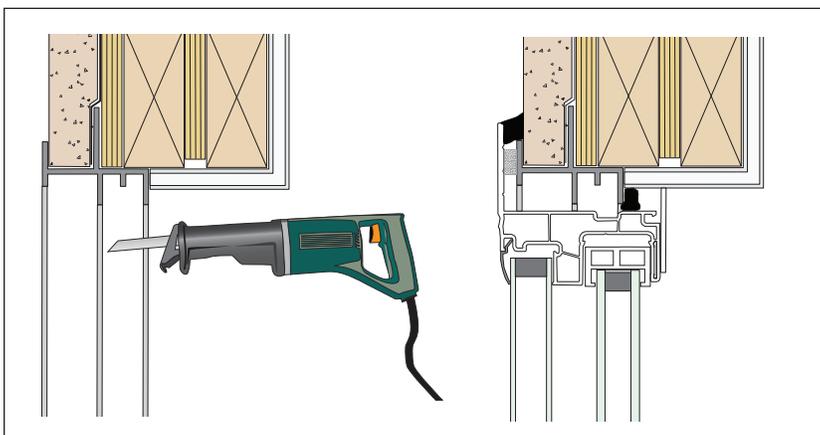
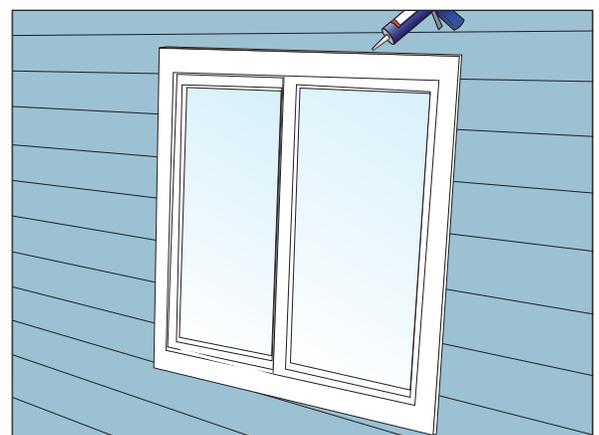
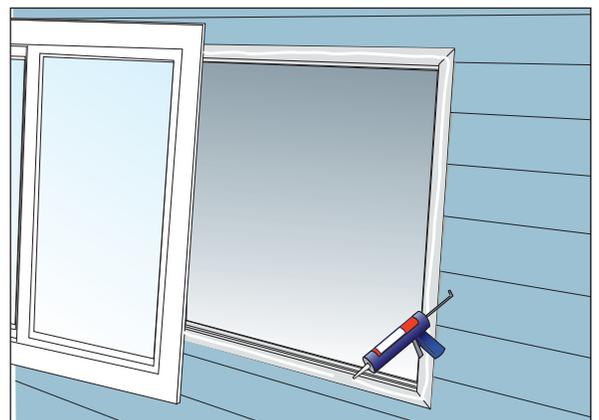
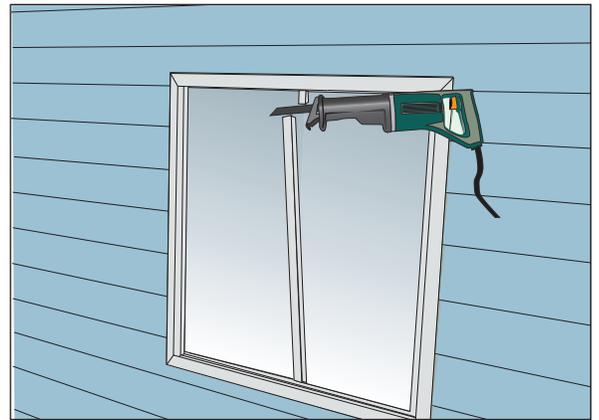
First, you need to remove the operating sash and the fixed sash. Usually this is easy to do unless the fixed glass is glazed directly into the window framing. If so, tape the glass with duct tape to help hold the glass together in case you need to use force to get it out.

Once the glass panels are safely removed, used a reciprocating saw to cut through the vertical meeting stile as close to the header and sill frame members as possible.

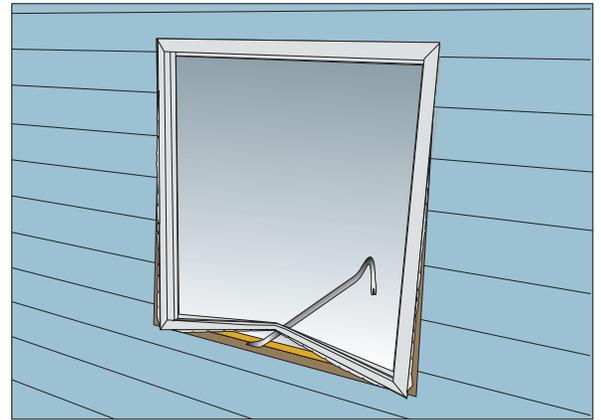
Once the center meeting stile is removed, caulk the exterior of the left-in-place frame with quality sealant and place the wide flange window against the old frame and seat the sealant.

Trim the interior as needed. Be sure to address where the flange of the new window sits against the old header to make sure water is diverted out and over the new window rather than behind it as it cascades down the side of the exterior wall.

It is imperative that the top of the new window is sealed to prevent cascading water from penetrating behind the exterior flange and into the cavity between the window and the opening.



## Making the Choice: Taking the Old Frame Out



## Removing the Old Frame

Depending on how the old window is finished on the outside, you can choose to remove the old frame completely versus leaving in the old frame. You start the same by removing the sash (operating and fixed) and cutting out the meeting stile.

Once the meeting stile is removed, used the reciprocal saw to cut the sill and header part of the frame slightly to facilitate bending and collapsing it using a crow bar to pry it up.

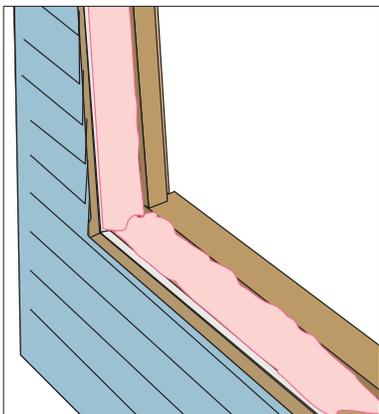
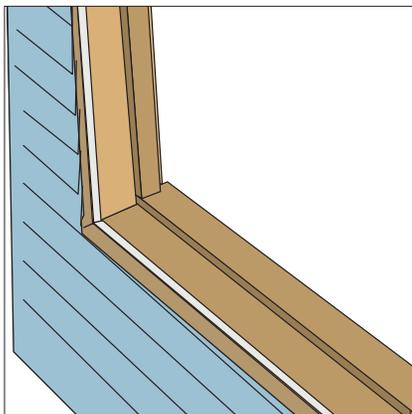
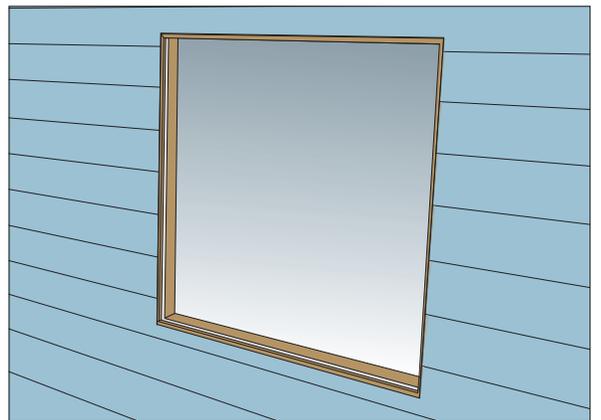
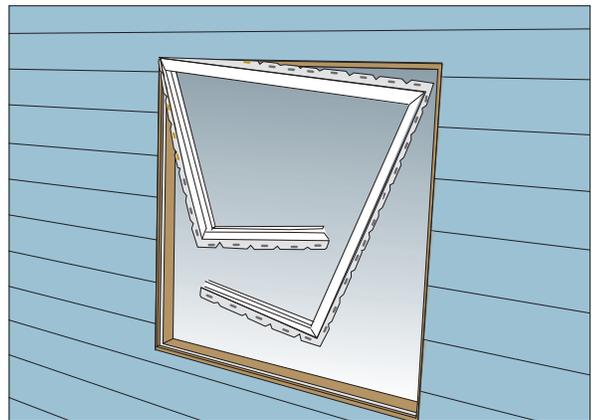
Use a wood block under the crowbar to minimize potential damage to the sill and header. Pry directly up and the frame will come out from between the siding and the sheathing. It won't take much effort to do so and that will "tear" the nailing fin slots away from the nails allowing the frame to collapse.

Do it on the bottom, the sides and the header and you should be able to remove it completely.

Take care to cover the gap and use slow expansion foam sealing tape and/or insulation to cover the gap before setting the new window in against the old framing members along the inside jambs, sill and header.

Seal the new window along the outside, taking care to leave weep gaps in the sealant along the sill before setting new molding against the new window frame to fill out the space out to the siding.

Carefully seal the outside to divert water away from the window rather than letting it get in behind the trim.



# Picking the Proper Sealant

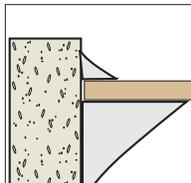
AWDI understands that the application of a sealant is as crucial as the choice of sealant. When a bead of sealant is applied to a joint there are severable factors to consider:

- Adhesion
- Flexibility
- Durability
- Compatibility
- Temp, Weather, Exposure)
- Aesthetics

Within these three performance aspects there are countless combinations of applications, substrates and conditions a sealant is exposed to.

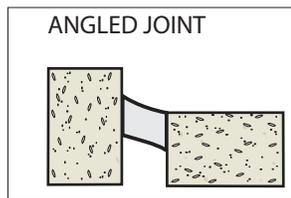
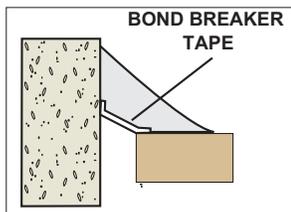
## Bedding Joints:

For bedding joints, it is especially important that the sealant meet AAMA 800-802, and is of the right consistency and made up of 100% solids so it will not shrink after cure, unlike solvent and latex based sealants that shrink and create gaps after curing.



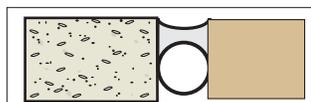
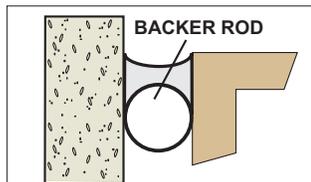
## Fillet Joints:

A fillet joint is formed when two surfaces come together to form a right angle. The sealant used to join these two surfaces is triangular in shape. The sealant must adhere to the variety of substrates you're faced with. Without strong adhesion there is a high chance that the sealant will pull away from the substrate allowing for air and water infiltration.



## Control Joints:

A control joint is formed when two similar or dissimilar materials meet or when substrates do not form a right angle. This joint will require both a backer rod and sealant for proper application. This joint can be as wide as 5/8 inch and be prone to extreme movement, a highly flexible sealant is necessary for a reliable seal with this application. In order to successfully install a window or door and effect a lasting weathertight seal, AWDI recommends an ASTM C920, Class 50 sealant such as premium



DYNAFLEX® from DAP as a good representative to seal the exterior joints of windows and exterior finish materials. The best choice is a sealant that meets AAMA 800-802 to assure proper adhesion to the most common building materials and that is compatible with WRB and flashing tapes; and can be used in a wide temperature range and wet surfaces.



## Desired Properties

- No Shrinkage
- Locks out air and water infiltration to protect integrity of the seal
- Proven Wet Surface Application
- Ability to use the same sealant in warm and cold temperature situations to produce consistent results. 0F – 140F cold and warm weather application
- Strong Adhesion / All Surfaces Will stick to even the most difficult to bond building materials
- 5X stretch, 50% joint movement Long term durability assurance even with expansion and contraction of building materials
- 24 hour fast cure, paintable 1 HR. Fast cure to protect the building structure from outside forces and quick paintability saves time
- Achieves bubbling resistance faster to ensure optimal aesthetics
- 4,600 + Color Matches ensures perfect color match to all primary building materials
- Dirt & Dust Resistance ensures optimal visual appeal long after an installation
- UV Resistance
- Long term durability to compliment the durability of the building structure

# Spray Foam Insulation

While the term “Spray Foam” is often widely used in construction, there are two different types and each has its advantages and disadvantage.

Spray foam has been shunned by window installers and manufacturers over the years because foams, in the past, have either continued to expand after trim has been applied deforming the more pliable vinyl window frames, or because they have been over used to fill the gaps left when old windows are removed and the underlying rough opening has been exposed.

Make sure the foam you use has been tested to industry standards and is labeled conforming to standards as a low expansion, low pressure foam.

Most standards applying to window installation do not delineate between open cell foam and closed cell foam, the more popular “minimal expansion” foams are most frequently used and they are mostly closed cell. More confusing yet, is when foams are recommended, the compressed foam tape alternatives are called out to be open cell.

When it comes to Spray Foams, it helps to understand the differences. Open-cell spray foam (ocSPF) has a cell structure where the cells are filled with air. The open-cell structure renders soft, flexible foam, with a density of about 0.5-0.8 pounds per cubic foot (pcf).

The R-value per inch of open-cell foam typically ranges from R3.6 to R4.5 per inch. Unlike fiberglass and cellulose, the fine cell structure of ocSPF makes it air-impermeable at certain thicknesses. The air-impermeability of ocSPF qualifies it as an air-barrier material, dramatically reducing air leakage through the building envelope, significantly lowering the building’s heating and cooling costs. However, ocSPF, like fiberglass and cellulose insulations, is moisture-permeable, and may require the installation of a vapor retarder in colder climates.

Closed-cell spray foam (ccSPF) has a closed cell structure which yields rigid hard foam, with a density of 1.8-2.3 pound per cubic foot (pcf), and can provide structural enhancement in certain framed buildings. The smaller cells trap insulating



**Note:** Be careful, shims can present a problem as they extend through the cavity and can allow water and air infiltration. Foam Tape used outside like backer rod can seal the opening and conform to the contours while allowing drainage.



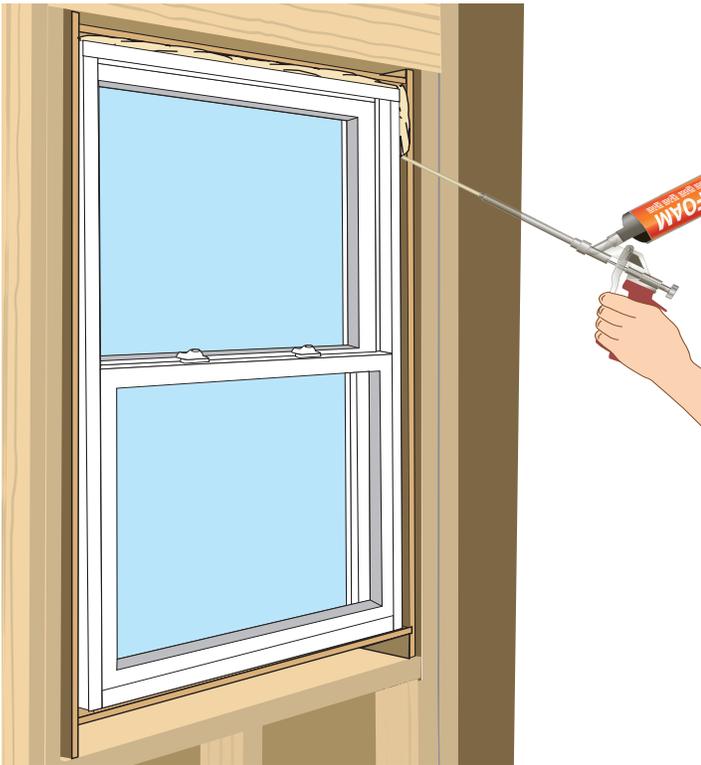
gas from the curing, which has a lower thermal conductivity than still air, and increases the R-value to anywhere from R5.8 to R6.9 per inch.

Like ocSPF, ccSPF is also air impermeable at certain thicknesses and can qualify as an air-barrier material. The bigger benefit is that the closed-cell structure of ccSPF also makes it water-resistant, and is the only spray foam that can be used where contact with water is likely.

At a thickness of 1.5 inches, no additional vapor retarder is required for most applications.

## Desired Properties

- Industry tested and labeled as a Low Pressure/Low Expansion; i.e., will not warp or deform windows & doors
- Quick Setting Formulation: can be cut or trimmed in less than 1 hour
- Cold Temperature Application: can be applied in temperatures as low as 14F
- Insulation Value of R5: makes it an efficient method for stopping air and moisture infiltration
- Remains Flexible Once Cured: will not crack or dry out



### Important tips:

- Similar to the sealant gun, it is critical that you balance the movement of the foam gun or straw barrel and how you dispense the foam so that the foam makes contact with both the rough or existing window frame and replacement window frame.
- If the dispensed foam does not make contact with both the rough frame and the window frame, there won't be an adequate bond to seal out water and air.
- Industry Standards suggest application of 1 inch beads, separated by an equal space. Be careful not to create two vapor barriers - one at the exterior and one at the interior. Make sure there is the ability for the opening to breathe to the cold side for drying and drainage. Use backer rod about one inch in the sill as a stop to make a workable back dam
- When applying foam around the perimeter of the window or door, you must maintain a minimum depth of 1 inch. This depth is required to provide the correct thermal performance, to help improve energy savings, and to protect against condensation problems.
- When applying foam as a back dam to the gap between the window frame and the rough sill, do not allow the foam to extend to the exterior edge of the opening. Maintain a minimum of a 1 inch gap between the foam and the exterior edge of the rough sill. If foam fills this gap at the sill, any water from leakage will not be able to drain to the drainage plane or exterior cladding surface. Place backer rod the length of the sill, 1" from edge and use it as a back dam guide.

### Using Spray Foam

For the best installation, it is necessary for the gap around the window or door to be sealed to block out air, water and vapor penetration. ccSPF can do that well if selected and used properly. Improper use can create water traps, impede drainage and exert excessive pressure to the window frame during expansion.

*Remember:* Vapor barriers need to be applied on the warm side of the opening. Double vapor barriers (one on the warm side and another on the cool side) encourage condensation between and will trap the resulting condensation. Also, window installation cavities (the space between the window frame and the rough opening, or left-in-place old window frame) need to "breathe" to the outside, and allow drainage of collected water to the outside.

AWDI recommends ccSPF® Foam which is a polyurethane closed cell, low pressure/low expansion sealant to fill the gaps as protection against moisture and air. OSI's closed cell foam also achieves a thermal performance of R5 per inch.

### Application

Foam can be applied using a Foam Applicator Gun, or a small can with "straw type" nozzle tip. The flexible tip from gun or can equally allows for more precise application. This gun offers a rear valve used to control the size of bead applied into the openings. The valve also allows the life of the foam to be extended by closing the opening of the barrel for future use.

For even smaller openings, a detachable screw on top is included with the gun to be able to fill gaps as small as 1/8" wide.

