How To Build Storm Windows

When winter comes, what do you do to prevent heat escaping through your windows? Many people staple or tape plastic over their window frames. Although this will help reduce heat loss, it should be repeated every year and often looks unattractive. Some people buy commercially built storm windows, but these can be expensive.

In this publication, you will find easy-to-follow instructions for building a removable, durable, exterior storm window. The window has a wood frame and a glazing of 8-mil clear vinyl. It costs between $0.50 and $1.00 per square foot to build—more expensive than stapling plastic to your window frame, but it should last 7 to 10 years and is easy to remove and rehang. The window looks attractive and can be made to match your exterior color scheme. When properly built and installed, this storm window will reduce heat loss as effectively as one that is commercially built.

You will also need these materials:
- 1 by 2 lumber
- 8-mil clear vinyl (or a similar heavy-grade plastic)
- exterior wood glue
- wood-joining cleats
- ¼-inch-thick, self-adhesive foam weatherstripping
- exterior primer and finish paint
- storm window hangers or turn buttons

Tools and Materials

To build the storm window, you will need to have the following tools on hand:
- tape measure
- mitre box or saw
- wood plane, rasp, or sandpaper
- scissors
- staple gun
- drill

Procedures

Measure the window frame

Your storm window must fit tightly to ensure energy savings. Carefully measure the inside dimensions of your outside window frame, but it should last 7 to 10 years and is easy to remove and rehang. The window looks attractive and can be made to match your exterior color scheme. When properly built and installed, this storm window will reduce heat loss as effectively as one that is commercially built.

Figure 1

Measure and cut the lumber

Buy straight, kiln-dried fir or pine to avoid problems with warping or twisting. Measure and cut lengths of 1 by 2 lumber according to the measurements in your drawing. Cut the lumber at a 45-degree angle using a mitre box or table saw. Note that the outside, or long end, of the 45-degree cut is the one that should correspond with the window dimension (Figure 2). Be sure
to make the cut so the pieces fit together (Figure 3). An alternative to mitred corners is to use butt joints (Figure 4).

**Glue and join the frame**

Apply a small amount of exterior wood glue to both surfaces being joined at one corner. Fasten the corner with a metal cleat, such as “Skotch” brand fasteners. Apply the fastener at an angle to reduce the chance of the wood splitting (Figure 5). After fastening the corner, check to see if it is square.

Repeat this process on the other three corners. Carefully turn the frame over and fasten the corners on the reverse side. When applying the cleats, put them toward the inside of the storm window frame on one side and toward the outside when you turn the frame over. This reduces the chance of the wood splitting, and the cleats will not run into one another.

On a large storm window frame (more than 4 feet high), install a support piece across the center. Cut a piece of 1 by 2 lumber to fit the inside dimension of the storm window frame. Glue and fasten the center brace in the same way you constructed the frame. If it is a double-hung window, measure and line up the brace with the center of your window, where the top and bottom sashes meet (Figure 6). The lines of your storm window will then correspond with the lines of your primary window.

**Prime and paint**

Let the glue dry overnight, then test your frame for fit. If it is too large, trim it slightly with a rasp, wood plane, or sandpaper. Apply a coat of exterior primer and allow it to dry according to the manufacturer’s directions. Paint the storm window frame the same color as your exterior window trim.
Cut and staple the vinyl

After the paint has dried, you’re ready to apply the plastic. It is best to use a heavy plastic, such as 8-mil clear vinyl. If you can’t find it that thick, use the thickest size you can find. Plastic can be purchased by the linear foot, or in large rolls, at most hardware stores or home improvement centers. It usually comes in varying widths, so you’ll be able to pick the width to best fit your storm window frame. If possible, purchase the type of clear vinyl plastic that has an ultraviolet inhibitor. This will reduce damage by the sun and prolong the life of your storm window.

Cut a piece of plastic about 3 inches larger than the storm window frame all the way around. Center the plastic under the frame. Fold the plastic over the frame and staple it to the center of one side (point A, Figure 7). Repeat this process at the center of the opposite side (point B) so the plastic is taut between these points. When it is taut, a small ridge will form in the plastic. Do the same with the remaining two sides (points C and D, Figure 8). Then start stapling from the center of one side and work your way toward the corners, pulling tightly as you go (Figure 9). Leave about 2 inches free at the corners. Repeat this process with the other three sides.

Next, fold the plastic over the corners (Figure 9). Trim it if necessary and staple the corners. Trim the excess plastic so it does not hang over the edge of the storm window frame.

Apply weatherstripping

To ensure a tight fit, apply ¼-inch-thick, soft, self-adhesive, foam weatherstripping to the inside of the storm window frame, where it will butt up against your window trim (Figure 10).

Apply hardware to window frame and storm window

The completed frame must be secured to the outside window frame. There are several types of fastening devices available at hardware and home improvement stores. When choosing a method to fasten the window, pick one that will make it easy to remove the storm window during the summer, because leaving it up will shorten the life of the plastic.

On picture windows or on a window that is easily removed from the outside, use turn buttons (Figure 11). Apply these to the outside window frame. Push the storm window tightly against your window trim, and rotate the turn button so the storm window stays in place.
Another method of installation is to use a storm window hanger (Figure 12). This is a good system to use for double-hung windows, particularly when you want to remove and rehang the storm window from the inside. A complete package for hanging one window costs about $1.15. These hangers are not available at all hardware stores, so call ahead before making a special trip.

Apply the hangers at the top of the storm window, about 4 inches inside each side, with a drill and the screws provided. Next, place your storm window in the window as if you were hanging it. Push it tightly in place and carefully mark with a pencil where the mounting hardware should go on the outside window frame. Apply the mounting hardware to the window frame using the screws provided.

To fasten the window at the bottom, install a small gate hook to the bottom, inside storm window frame. Apply the eye of the gate hook to the window sill, so that the storm window can be pulled tightly from inside the house and fastened at the bottom.

After your storm window is in place, the weatherstripping should compress to make a good, tight seal. On a large window, the storm window frame may bow slightly in the center making it hard to achieve a tight seal. If this happens, simply install a turn button to the center of each side to hold the storm window tightly in place.

Before installing your storm window, be sure to caulk and weatherstrip both your primary windows and the window frames. If you need help, call your county Extension office and ask for the publication on caulking and weatherstripping. By caulking and weatherstripping, you will reduce air leaks, save money, and help prevent condensation buildup on the inside of your storm windows.

If condensation does form after you've caulked and weather stripped, you can remove it by punching small weep holes in your storm window. With a nail, gently punch holes in the plastic on the outside of the storm window, near the bottom (Figure 13). Space the holes 3 inches apart.

Your storm window should be removed each summer and stored in a place free from sharp objects and away from direct sunlight. If it accidentally gets punctured, you can repair small holes by patching them with 2-inch clear, waterproof tape.

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