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Cooperative Extension South Dakota State University

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Insulated shutters and panels

COOPERATIVE EXTENSION SERVICE
SOUTH DAKOTA STATE UNIVERSITY
U.S. DEPARTMENT OF AGRICULTURE
Insulated shutters and panels

Insulated shutters and panels are two types of energy-efficient window treatments which you can make using a few supplies and basic tools. They are attractive as well as practical.

If you want to open and close your window treatment easily, the shutters would be the best choice. If you need to cover windows in rooms on the north side of the house or in rooms that are seldom used, then you might prefer a panel which can be left in place most of the time.

Before you make a choice and begin work, you might refer to FS 776, Energy-efficient window treatments. This fact sheet provides information on energy savings and cost estimates for a variety of window treatments including insulated shutters and panels. Estimated R-value for the shutters or panels described here is from R-4.02 to R-6.72, depending upon the type of insulation used. (R-value measures the material's resistance to heat flow. The higher the R-value, the better the insulation).

Insulated shutters

**Supplies**
- Hinges and screws
- Plywood, ¼-inch
- Insulation, ¾-inch rigid board
- Furring strips, 1 x 2-inch
- Paint, fabric or wallpaper to cover shutters
- Brads or nails, 7/8-inch
- Knobs
- Metal or magnetic catch to hold shutters closed
- Weatherstripping

**Directions for construction:**

1. Measure window length and width to determine shutter size (there should be about ¼ inch between the shutters when closed and they should fit ¼ inch from the inside edge of the window frame).
2. Make a cardboard pattern of the size shutter you think you need and place it on the window to see if it is right.
3. Purchase the plywood, insulation, furring strips, and other items you need.
4. Cut: Plywood, four pieces; insulation, two pieces; furring strips, four for length and four for width.
5. Lay furring strips around the edges of the plywood and glue these on. Repeat on another piece of plywood. Let dry. Nail after glue dries.
6. Insert insulation into thickness of both shutters.
7. Glue plywood to cover insulation and furring strips. Let dry. Nail to furring strips (Fig 1).
8. Sand, to smooth edges.
9. Cover with fabric, wallpaper, paint, or other decorative finish.
10. Attach hinges, evenly spaced.
11. Attach weatherstripping on inside edges of shutter and on sides that meet in the center.
12. Attach knobs or pulls at an easy height to open.
13. Attach catch to hold shutters closed.

![Fig 1. Insulated shutters.](image)

Insulated panel

**Supplies**
- Plywood, ¼-inch
- Insulation, ¾-inch rigid board
- Furring strips, 1 x 2-inch
- Paint, fabric, wallpaper or other decorative material to cover panel
- Brads or nails, 7/8-inch
- Weatherstripping

**Directions for construction:**

1. Follow directions for insulated shutters through step 9 but make one panel to cover the whole window instead of the two pieces for shutters.
2. Put weatherstripping all the way around the sides of the panel.
3. The finished panel should be snug enough to "friction fit" (stick) into the window without a metal catch. If it's a little loose, use more or thicker weatherstripping. You must have a tight seal because if room air can penetrate the cracks, you will have moisture condensation on the window which eventually might lead to breakdown of the varnish on the window frame and/or rotting of the wood.
4. If the panel is as tight as it should be, you will probably need a decorative knob or pull so you can remove the panel easily whenever you want the solar heating of winter sun.

**Variations**

A number of variations on the basic shutters and panels are possible.

1. If you have a narrow window, one shutter rather than a pair may work better.
2. The directions above are for shutters and panels that fit inside the window frame. You might prefer to also cover the frame. Make it tight.
3. Loosefill (fiberfill, cellulose, mineral wood, or fiberglass) will work just as well as rigid insulation although the panel or shutter may be a bit bulkier. Use a plastic bag to hold the insulation in place inside the frame.

4. To reduce weight, you can use corrugated cardboard instead of a plywood covering.

5. When using an insulating material that has no vapor barrier (a plastic or thin foil surface) it is wise to include one in your panel. Use plastic sheeting or a garbage bag between the insulation and the decorative layer on the room side.

6. Remember to plan for storage when the insulated shutters or panels are not covering the windows. There must be room for hinged shutters to swing out and fold back against the walls, and you will need a hiding place for the panels.

Flammability and building codes

Most model building codes require that rigid foam insulation boards should be covered with half-inch thick drywall or its equivalent when used on the interior side of walls or ceilings. But the codes say nothing about the use of foam boards as window insulation.

Using half-inch drywall to cover shutters or panels for fire prevention purposes would change the weight of the average shutter from a few ounces to 50 pounds or more. Foam plastics are generally acknowledged to give off toxic gases when burned. But so do many other household materials of far greater mass.

Use your own natural caution, perhaps install smoke detectors, and have your family plan and practice fire escape routes, whether you use insulated panels or shutters or leave your windows absolutely bare.

For more information, contact Grace Backman, Extension housing specialist, SDSU. This fact sheet prepared by Backman and Mary Ann Sward, former housing specialist, with assistance from Kathleen Parrott and Debra Busch Welsch, University of Nebraska.