

Do • It • Yourself

INTERIOR STORM WINDOWS

Do you feel cold standing next to your windows? With easy to make interior storm windows, you can feel warmer while saving money on your fuel bills. These storms will increase the R-value of your windows by around 2.3, however they will reduce the solar heat gain by about 15%. For most windows, this is a good trade-off. Not only do this save energy and therefore money, they also increase comfort and reduce outside noise.

MATERIALS

1" x 2" board @ \$ 0.40 per linear foot
heat shrink film @ \$0.09 per square foot
1/2" double sided tape @ \$0.02 per linear foot
2.6 mil 2" clear packing tape @ \$0.02 per linear foot
3" drywall screws @ \$0.05 each (8 needed per window)
1/2" x 1/2" foam weatherstrip @ \$0.06 per linear foot

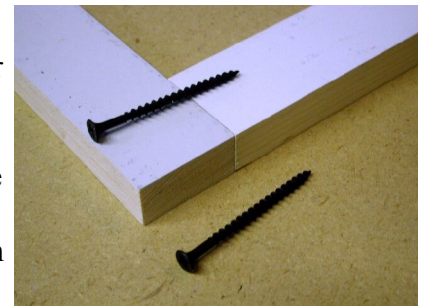
TOOLS

Saw
Sharp knife
Square
Sandpaper
Screwdriver

DIRECTIONS

MEASURE: The storm windows should be put as close as possible to the glass of your windows (1/2" is best). However it should be placed such that it contacts the frame all the way around, if necessary it can be placed on the window trim, and held on with clips. Having determined where you will put the storm measure carefully the width and height of each window. Measure in at least two places, and then subtract the thickness of your weatherstrip 1/2" (which will compress 2 thicknesses by half giving a nice seal). The short side will need to be shorter by the width of two pieces to make the butt joint.

FRAME: 1 x 2s can be made by ripping down a 1 x 4. The wood does not need to be high quality, #3 pine works fine. But pre-primed is easy for frames which will be painted (or white). And clear pine looks great unpainted. There are many ways of making the corners of the frame. The easiest is a butt joint held with two 3" drywall screws at each corner. Screw from the long side into the short side (as shown). Sand the frame smooth and knock the edges off slightly. Now is the time to paint, finish, if desired. Also be sure to label which window the frame goes into, on the top outside surface.



FILMS: This works best if done in a clean environment. Put the double sided tape around the edge of the frame. Leave the paper on for now. Cut the film to cover the frame plus a little for slop. Start at one end, and remove the tape, and carefully stretch the film and place it over the exposed tape. Press it down with the back of your fingernail. Remove a bit of the tape down both sides, and work your way down the frame.

Once it is firmly in place, shrink using a hair dryer (a heat gun can be used if you are *very* careful). Stay 6 to 8 inches away from the film until you see how it goes. Slower is better than melting a hole in the film. It should end up drum tight with no wrinkles. Looking at it obliquely to the light will show any remaining wrinkles. Trim the excess film at the outer edge. Repeat with the other face. Try to make sure that the inside faces of the film are clean, as once assembled, they can't be cleaned.

TAPE: The 2" tape is used to cover the film edge and the outer wood. I find it easiest to center the tape on the outer edge and slowly crease it over onto the faces. One side for each edge (4 pieces all together) works best for me. Use a short piece of tape to create one or two tabs to make it possible to remove the storm.



WEATHERSTRIP: The weatherstrip (1/2" wide, 1/2" thick) is placed on the outer edge toward the front face of the frame. If the window is to be installed against the window trim, it should be placed on the back face, of course.

USE

The storms should be swapped out with your bug screens when you are starting up your heating system. (Removing the screens will save you about 1% to 3% of your fuel bill by itself). Store them for the summer where you store your screens. Be sure to lock the windows before installing the storm, windows do not seal properly unless they are locked. Arrangements should be made to ensure easy removal in any window which is an emergency egress.



SAVINGS

Given the prices above (which are for small quantities) a typical 3 by 4 foot window would cost, \$9.59 and probably require less than an hour to build. The savings depend on what kind of windows you currently have and what kind of fuel you are using. For single pane windows, the savings would \$202 in electricity, \$135 in oil, or \$69 in wood. For double pane (soft coat) lo-e windows, the savings would be \$68 in electricity, \$45 in oil, or \$23 in wood. All of which would give a payback at less than one year (at today's prices, imagine prices in ten years). These savings are tax free, repeat every year, and increase along with fuel prices. Triple pane, or south facing hard coat lo-e double pane windows are the only windows that might not benefit from this approach.

The film is susceptible to tearing if it is poked with anything sharp, but with proper care there is no reason these couldn't last at least ten years.

Over the past year, since these made their debut at last year's expo, over a thousand of them have been made by Mainers and for Mainers. The Midcoast Green Collaborative is proud to have been instrumental in helping Mainers through this past winter.

Download a copy of this from: http://www.midcoastgreencollaborative.org/Documents/storm_pamphlet.pdf
More details and a cost spreadsheet are available at: <http://www.arttec.net/Thermal-Windows/index.html>

photos courtesy of Guy Marsden

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