

West Virginia Division of Air Quality Outreach Display Projects

Roof Color Display

This display was built to illustrate the concepts: that color affects heat and light absorption and that insulation blocks heat transfer.

The smaller houses on the left are similar except for the roof color. They sit below a light bar from Lowe's with 3-50 Watt halogen bulbs. The roof surfaces get a much more dramatic temperature difference. The third house is insulated in the lower half to show the difference insulation in an attic can make in the temperature inside a house.



The display is constructed from 2 - 2' x 4' pieces of 3/4" plywood. The wood was cut so that the display folds into a case for easy transport. It uses piano hinges at the joints and window latches to close the case and hold it open. The houses are painted bright colors to draw attention to themselves. The thermometers are attached to the front of the houses with small woodscrews so that they can be removed when the batteries need replaced. The temperature probes come off of the back of the thermometers and go inside the houses. There are placards in front of each house

that are the same color of the house and show a pictogram of the roof and reflected heat. The roofs are sheet metal that was cut and bent by local vocational school. The houses are made from 1/2" thick wood 5 1/2" wide. The roofs are sealed at the edges on the inside to keep the heat in. The houses have small blocks of wood at the back that connect to the back of the display for stability. When presenting the display we usually encourage people to touch the roofs to feel the amount of heat that is absorbed by the colored metals. We also have used an infrared thermometer to let people measure the roof temperature. Most people when asked later say that they remembered how hot the black roof felt compared to the white roof.

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Materials:

Thermometers:

<http://www.mpja.com/prodinfo.asp?number=16370+ME>

Non Contact Infrared Thermometer:

<http://www.harborfreight.com/non-contact-laser-thermometer-96451.html>

Wood, Hinges, Window Latches, Metal Edging - Lowes

Questions:

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