

# R-Value Procedure



## PURPOSE

The purpose of this test is to measure and estimate the R-value of walls, ceilings and doors, etc. in a structure. This will increase the contractor's ability to evaluate steps needed to improve comfort.

## TEST CONDITIONS

- The *R-Value Estimation Chart* must be used with this procedure.
- An infrared thermometer is the tool of choice for this test because of its ability to read a surface temperature immediately without touching it.
- A temperature difference of more than 10° should exist between the inside and outside surfaces. And 2° between inside surface and inside air temperature.
- Allow the temperatures inside the room to stabilize before taking the readings. Usually 15 minutes with the unit off is sufficient.

## TEST PROCEDURE

- Measure the temperature of the **outside wall** at a point 4 foot above the inside floor. This point should be in the shade.
- Measure the temperature of the **inside wall** just opposite of the point where the outside reading was taken. Stay away from heat or cold sources, at a point that is open to the room.
- Subtract the inside temperature from the outside temperature to find the difference. Find this curved line on the *R-Value Chart*.
- Measure the average **air** temperature in the room.
- Subtract the inside air temperature from the inside wall temperature to find the difference. Plot this point on the *R-Value Chart*.
- Locate the point on the chart where the two values meet. Follow the horizontal line to the left to determine the estimated R-value.
- Enter the estimated R-value in the load calculation.
- These R-value estimates can also be made for ceilings, floors, and doors, etc. using similar methods and the same chart.

## EXAMPLE

Outside Wall Temperature	30°
Minus Inside Wall Temperature	<u>70°</u>
Equals Wall Temperature difference	50°
Inside Wall Temperature	70°
Minus Inside Air Temperature	<u>75°</u>
Equals Room Temperature Difference	5°
<b>Estimated R-Value from the chart is</b>	<b>R-7</b>