

# CALCULATING R-VALUES



## Measuring R-Values Correctly

THE INDUSTRY HAS USED MULTIPLE TOOLS AND ANALYSIS IN an effort to determine the energy efficiency of a given project with accuracy.

The R-values represent thermal resistance (transfer of heat) through materials and/or assemblies. The higher the value of R, the better thermal performance in terms of resistance (convection and radiative) of heat moving through the material/assembly. R-values do not account for the radiative or convective properties of the materials surface.

R-values are the inverse of thermal transmittance (U-value) of a material/assembly. R-values are easier to calculate for assemblies and are scalable for varying thicknesses of a material. R-values expressed in United States customary units are about 5.67 times larger than those expressed in metric (SI) units.

We have updated our R-values based on a three dimensional Finite Element Analysis performed by Havtek. These values are the result of modeling that uses outside temperatures of 100 degrees and inside of 70 degrees. This temperature gradient replicates “hot box” tests using these values. The effect is an increase to most of the original values.

These values can be used for acceptance in the different climatic regions primarily in the performance comparison of the overall building to that of a model building performance in the region. It may also be possible to get acceptance in the prescriptive section but has more complexity in explanation. The acceptance has been generated in comparison with ASHRAE 90.1, utilizing the Appendix A and specifically A9.2.

PRODUCT	R-VALUES	
	PARALLEL PATH (OLD)	FINITE ELEMENT ANALYSIS (NEW)
8" VersaCore+Green	9.6	13.6
8.5" VersaCore+Green	9.9	14.6
10" VersaCore+Green	11.9	16.9
10.5" VersaCore+Green	12.2	17.9
12" VersaCore+Green	13.9	20.2
12" VC+Green Sandwich	24/26	28.2