

# Insist on ENERGY STAR® Qualified Windows



Windows must meet minimum performance criteria during testing to qualify for the ENERGY STAR label. Whole-window U-values are one of the criteria used

to label window and door products in the ENERGY STAR program. Windows with clear single-pane glass can't achieve the ratings necessary to qualify for ENERGY STAR labeling. High-performance glass systems, which consist of double- or triple-insulating glass, low-emissivity (Low-E) coatings and usually an inert gas between the glass panes, are necessary for windows to comply with ENERGY STAR requirements.

## HOW TO COMPARE WHOLE-WINDOW U-VALUES

When comparing whole-window U-values, we suggest that you evaluate windows based on the sizes dictated by the National Fenestration Rating Council (NFRC). This ensures an accurate comparison of performance among windows. This data is available on [www.nfrc.org](http://www.nfrc.org), which provides links to NFRC data for all participating window manufacturers.

If the window manufacturer you are considering is not represented on [www.nfrc.org](http://www.nfrc.org), then it is likely that the company does not participate in the ENERGY STAR® program, and that could tell you something about how energy efficient that company's windows really are.



COMPARING WINDOW MEASUREMENT RATINGS			
	Whole-Window U-value	Center-of-Glass U-value	R-value
Recommended by NFRC	✓		
Recommended by ENERGY STAR	✓		
Tested with 15 MPH wind pressure	✓		
Tested with grids/muntins	✓		
Tested on the glass and the framework	✓		

## DON'T BE FOOLED

For an accurate comparison of windows and doors, ask to see the products' WHOLE-WINDOW U-VALUES with the particular type of glass system you are considering. Ensure that the data you are being shown is NOT center-of-glass U-values or R-values. This is important, because the more thermally efficient your windows and doors are, the more comfortable you will be in your home—and the more money you will save with lower energy bills.



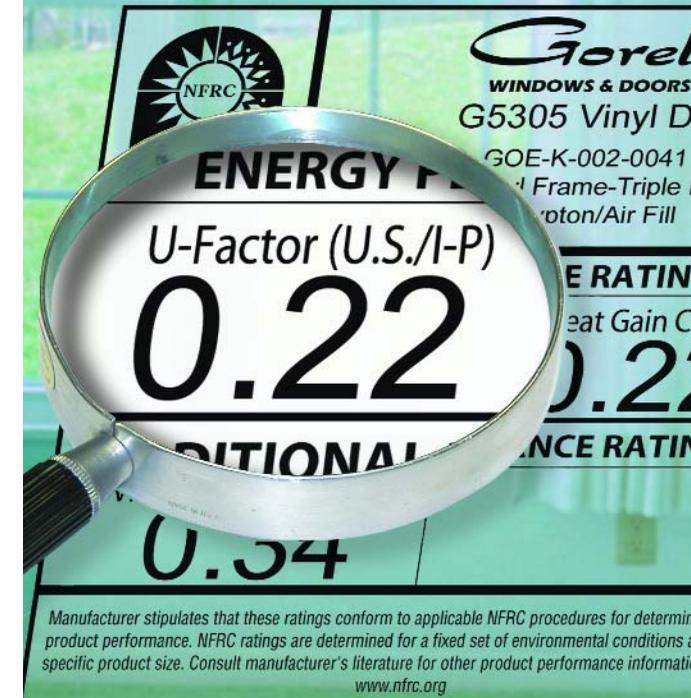
Gorell—2004, 2005, 2006 & 2007 ENERGY STAR® Partner of the Year. 2006 & 2007 Sustained Excellence Award.



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Become an educated consumer before selecting windows for your home.

## Understanding U-Values



# Understanding Measurements of Thermal Performance when Selecting Windows

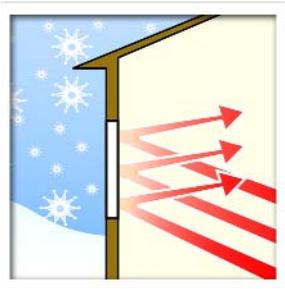


“R-values,” “whole-window U-values,” “center-of-glass U-values” and other window terms can boggle the mind. Confused by all the different window performance terminology

you’re hearing and seeing? You don’t need to be. The information presented in this leaflet will help so that you can make educated purchasing decisions.

If there’s ONE thing you should know, it’s this: When considering windows and determining the type of glass that will be used in them, the performance criterion you need to focus on is the **whole-window U-value**.

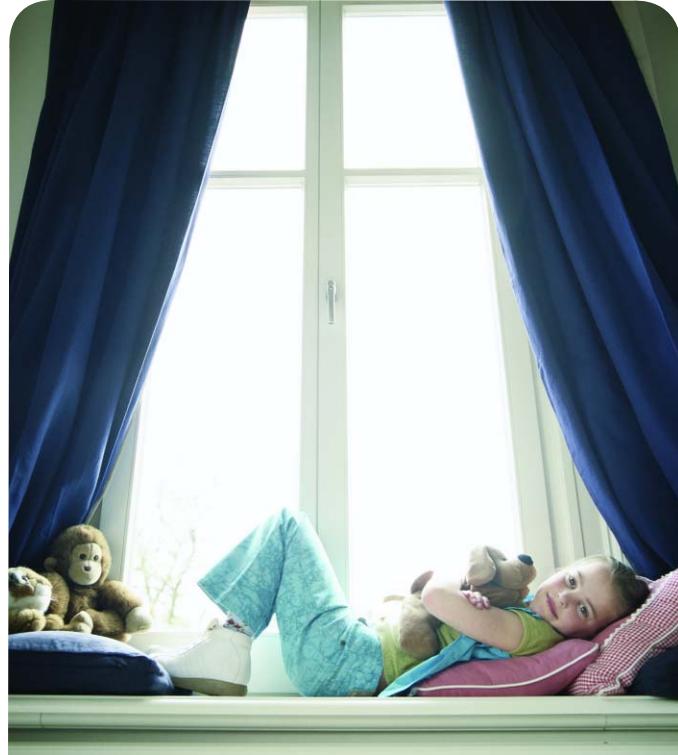
A window’s “U-value” indicates the rate of heat flow through a window. The lower the number, the more energy efficient the window is. Whole-window U-values are an indication of the performance of the window’s glass and its other components and characteristics. The thermal properties of its frame, spacer system, weather stripping and even grids, if the window has them, all have a bearing on the window’s whole-window U-value.



The whole-window U-value is the only form of measurement accepted by the U.S. Department of Energy’s ENERGY STAR® program for determining



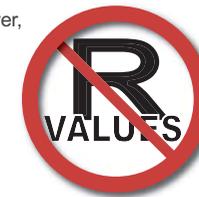
whether windows qualify for the ENERGY STAR label. For more information on ENERGY STAR qualified windows, visit [www.energystar.gov](http://www.energystar.gov).



## R-VALUES

Another, older form of measuring a window’s thermal efficiency is its “R-value” or R-rating. The term “R-value” became well known when insulation manufacturers used it in advertising their products. Basically, an R-value is the measure of the resistance of glass or a window to heat flow. R-values are an appropriate form of measurement for products like roof and wall insulation—but not windows.

The higher an R-value, the better the material is at insulating a home. Some sales people use R-values with windows because they feel consumers are more familiar with them—and because bigger numbers sometimes look better. However, R-values are also usually based on “center-of-glass” measurement instead of the entire window. In fact, an R-value is the reciprocal of the U-value. R-values are NOT a form of measurement accepted by the NFRC or ENERGY STAR®.



## Whole-Window U-Values

To arrive at the whole-window U-value, a window model—in a specified, pre-determined size—is tested by an independent laboratory. Measurements are acquired from as many as 20 different locations on the window. In addition to the center of the glass, other locations include various points on the glass and around the sash and master frame.



Use Whole-Window U-Values when Selecting Windows

## CENTER-OF-GLASS U-VALUES

A related—and often confusing—form of measurement is the “center-of-glass” U-value. This measurement is always better (i.e., a lower number) than the whole-window U-value, because it’s based on only the most thermally efficient section of the insulating glass—and nothing more. The key to understanding a window’s thermal performance is recognizing that all of its physical properties, not just glass, factor into its performance.



The Center-of-glass U-value is a measurement of ONLY one location on the glass. The U-value will be the same for that glass regardless of the window the glass is in. It is NOT a measurement of the rest of the window, and does not reflect the thermal efficiency of the frame and other window components. ENERGY STAR does not consider center-of-glass U-values an acceptable measurement standard because it is NOT an accurate reflection of the performance of the ENTIRE window.

