



# Questions About Replacement Windows & Energy?


## NFRC Has the Answers

In today's market, consumers are challenged by many choices of window products. What is the best way to choose replacement windows, doors and skylights for your homes and/or offices? If you have questions about Replacement Windows and Energy, the National Fenestration Rating Council (NFRC) has the answers.

## How to Choose Energy Efficient Windows

### 1. Look For The NFRC Label

NFRC is a nonprofit organization whose goal is to provide uniform, accurate information about the energy performance of windows, doors, and skylights. In addition to publishing consensus standards (for consistent ratings), NFRC administers a third party certification and labeling program to provide the window buyer with verified product information. So look for the NFRC label on windows to compare products on a fair and equal basis.

	World's Best Window Co. Millennium 2000® Vinyl Clad Wood Frame Double Glazing Argon Fill Low E Product Type: Vertical Slider	
<b>ENERGY PERFORMANCE RATINGS</b>		
U-Factor (U.S./FPI)	Solar Heat Gain Coefficient	
<b>0.35</b>	<b>0.32</b>	
<b>ADDITIONAL PERFORMANCE RATINGS</b>		
Visible Transmittance	Air Leakage (U.S./FPI)	
<b>0.51</b>	<b>0.2</b>	
Condensation Resistance		
<b>51</b>		
<small>Manufacturer declares that these ratings conform to applicable NFRC procedures to determine window product performance. All ratings are determined by testing of an individual window unit. Specific product data, source &amp; manufacturer information for the product performance information: www.nfrc.org</small>		

### 2. Compare Product Performance

The NFRC label provides information on how a window performs. The two most important energy ratings are *U-factor* and *Solar Heat Gain*. By reviewing the label information, consumers make an informed choice about the product that is better for their individual situation.

#### What is U-factor?

U-factor is also known as thermal transmission. It is a measure of the **rate of heat loss** through a product. Therefore, *the lower the U-factor, the lower the amount of heat loss*. In cold climates

where heating bills are a major concern, choosing windows with lower U-factors will reduce the amount of heat that escapes from inside your house.

#### What is Solar Heat Gain?

The Solar Heat Gain Coefficient, also known as SHGC, measures the **rate of heat gain** through a product. Therefore, *the lower the SHGC, the lower the amount of solar heat gain*. In hot climates where air-conditioning bills are a major concern, choosing windows with lower SHGC will reduce the amount of heat that comes in from the outside.

### 3. Look For The ENERGY STAR® Label

The U.S. Department of Energy and the Environmental Protection Agency have developed an ENERGY STAR Designation for products meeting certain energy performance criteria.



Since the energy efficiency performance of windows, doors, and skylights can vary by climate, product recommendations are given for four climate zones: a *mostly heating zone* (Northern), two *heating and cooling zones* (North/Central and South/Central); and a *mostly cooling zone* (Southern). For more information about ENERGY STAR windows see [www.energystar.gov](http://www.energystar.gov). Please note that windows must be certified and labeled by NFRC in order to be designated as an ENERGY STAR window.

NFRC administers an independent, uniform rating and labeling system for the energy performance of fenestration products, including windows, curtain walls, doors, and skylights. For more information on NFRC, please visit our Web site at [www.nfrc.org](http://www.nfrc.org) or contact NFRC directly at 301-589-1776.

#### 4. Other Important Considerations

In addition to ENERGY STAR and NFRC ratings of Solar Heat Gain and U-factor, there are a number of other considerations when choosing windows: cost, warranty, and other energy characteristics. Cost and warranty issues are best discussed with your distributor or manufacturer. Other important energy characteristics include:

- *Air Infiltration (NFRC 400)*, which measures the amount of air that leaks into your house from outside. The lower the air leakage rate, the less air is exchanged between outside and inside the window.
- *Condensation Resistance (NFRC 500)*, which rates the ability of a window to resist the formation of condensation. The higher the condensation resistance rating, the better the window is at resisting condensation.

#### 5. Energy Code Requirements


The International Energy Conservation Code (IECC) states that when existing windows, doors or skylights are replaced by entirely new products, the replacement fenestration product must meet the applicable U-factor and SHGC requirements for the following climate zones:

Heating Degree Days (HDD)	U-factor Requirements	SHGC Requirements
0 – 1,999	U ≤0.75	SHGC ≤0.40
2,000 – 3,999	U ≤0.50*	SHGC ≤0.40**
4,000 – 5,999	U ≤0.40*	No requirement
6,000 – 8,499	U ≤0.35*	No requirement
8,500 – 12,999	U ≤0.35*	No requirement

\* For HDD above 2000, replacement skylights shall have a U-factor ≤ 0.60

\*\* For HDD up to 3500.

NFRC has additional information for selecting energy efficient windows on its Web site at [www.nfrc.org](http://www.nfrc.org). On the site, you will find the NFRC *Certified Products Directory*, which lists hundreds of window manufacturers and thousands of windows, doors, and skylights that have been authorized for certification by NFRC. If you need additional information, please contact NFRC at 301-589-1776.

		<b>World's Best Window Co.</b> Millennium 2000+ Vinyl-Clad Wood Frame Double Glazing • Argon Fill • Low E Product Type: <b>Vertical Slider</b>	
ENERGY PERFORMANCE RATINGS			
U-Factor (U.S./I-P)		Solar Heat Gain Coefficient	
<b>A</b>	<b>0.35</b>	<b>B</b>	<b>0.32</b>
ADDITIONAL PERFORMANCE RATINGS			
Visible Transmittance		Air Leakage (U.S./I-P)	
<b>C</b>	<b>0.51</b>	<b>D</b>	<b>0.2</b>
Condensation Resistance			
<b>E</b>	<b>51</b>		
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. Consult manufacturer's literature for other product performance information. <a href="http://www.nfrc.org">www.nfrc.org</a></small>			

- A** **U-Factor** measures how well a product prevents heat from escaping a home or building. U-Factor ratings generally fall between 0.20 and 1.20. The lower the U-Factor, the better a product is at keeping heat in. U-Factor is particularly important during the winter heating season. This label displays U-Factor in U.S. units. Labels on products sold in markets outside the United States may display U-Factor in metric units.
- B** **Solar Heat Gain Coefficient (SHGC)** measures how well a product blocks heat from the sun. SHGC is expressed as a number between 0 and 1. The lower the SHGC, the better a product is at blocking unwanted heat gain. Blocking solar heat gain is particularly important during the summer cooling season.
- C** **Visible Transmittance (VT)** measures how much light comes through a product. VT is expressed as a number between 0 and 1. The higher the VT, the higher the potential for daylighting.
- D** **Air Leakage (AL)** measures how much outside air comes into a home or building through a product. AL rates typically fall in a range between 0.1 and 0.3. The lower the AL, the better a product is at keeping air out. AL is an optional rating, and manufacturers can choose not to include it on their labels. This label displays AL in U.S. units. Labels on products sold in markets outside the United States may display AL in metric units.
- E** **Condensation Resistance (CR)** measures how well a product resists the formation of condensation. CR is expressed as a number between 1 and 100. The higher the number, the better a product is able to resist condensation. CR is an optional rating, and manufacturers can choose not to include it on their NFRC labels.