

## **Product Details: Energy Efficiency**

Poor-performing windows can lose up to 40 percent\* of heating energy in winter. With the high cost of energy, that's a lot of money going right out the window! Even worse (and often overlooked), poor-performing windows can lose up to 50 percent\* of a home's cooling energy in summer. It's expensive to have worn-out or inefficient windows.

Replacing your windows is one of the most important decisions you can make for your home's comfort and energy efficiency. At Renewal by Andersen, we believe every window must be made of the best glass and framing materials, manufactured to your home's exact specifications, and installed by professional installers who take pride in their workmanship. And we back that belief with one of the best limited warranties in the industry.

\*Windows & Doors - MN Dept. of Commerce Energy Information

### **WHOLE WINDOW PERFORMANCE**

Energy efficiency does not come from individual components, but from whole window performance. Many companies tout specific features of their window components when discussing energy efficiency. Renewal by Andersen focuses on the big picture—the whole window performance. We pay particular attention to the window frame and glass—critical components for energy efficiency. When comparing window energy efficiency, the overall unit performance as tested, certified and labeled per the National Fenestration Rating Council (NFRC), is most important. We also place enormous significance on complete, professional installation, and warrant it in writing—because a good window can only perform well if it's installed correctly. Renewal by Andersen® products are designed for long-term energy efficient performance\*\*, not for just the first couple years.

### **FRAMING MATERIAL** makes a difference

Renewal by Andersen window frames and sash are made from Andersen's Revolutionary Fibrex® material. Other replacement windows frames are often made from wood, vinyl, or aluminum. The window frame material affects energy efficiency. Three Important Questions to ask about framing material are:

#### **1. Is the framing material a good insulator?**

Fibrex material has excellent insulating properties on par with wood, or vinyl. Aluminum is a conductor and transfers heat out of your home and allows outdoor cold temperatures to chill the window areas inside. Fibrex material insulates about 700 times better than aluminum.

## **2. How resistant is the framing material to expanding and contracting with changes in temperature?**

Fibrex material, like wood and aluminum, expands and contracts very little. Vinyl, however, expands and contracts a lot, which can cause cracks, bowing and leakage of air and water. Windows made of Fibrex material will perform better in winter and summer than windows made of vinyl.

## **3. Is the framing material stable and predictable enough to support the heavy glass it's holding up over time?**

Fibrex material is twice as stable and rigid as vinyl. Wood's average stiffness is higher, but it is less predictable than Fibrex material because of wood's natural variations like grain, knots and moisture content. Strong, stable frames help keep glass from moving and reduce the risk of glass seal failure over time. Renewal by Andersen's windows made with Fibrex material are warranted not to flake, rust, blister, peel, crack, pit or corrode.\*

\* Ask your sales representative for a copy of the Renewal by Andersen 20/2/10 year limited warranty.

**GLASS** is more than meets the eye

All window glass may look the same. But not all glass performs the same. Every Renewal by Andersen window comes standard with High-Performance™ glass. When it comes to energy efficiency, this type of glass, or glazing, stands head and shoulders above single pane or ordinary double pane glass. There are Five Key Components to energy efficient glass. Details make all the difference in long term performance.

**1. Argon gas blend** - Manufacturers first started using double glazing back in the 1950s. At first, manufacturers used only air between the panes, and many still do. Manufacturers of better double-pane glass products fill the space with an inert argon gas which improves its energy efficiency by 30%. Renewal by Andersen uses a special blend of argon and other gases which helps preserve the integrity of the air space over time to optimize performance.

**2. Low-E coating** - With Andersen® High-Performance glass, a Low-E coating is bonded to the inside surface of the exterior pane of glass. Low-E coating bounces the heat back where it comes from. In winter, that means your heat stays inside. In summer, heat from the sun gets bounced back outside. Low-E coating also helps filter the sun's damaging ultraviolet rays that can fade carpet, drapes and furniture.

The Low-E coating on Andersen High-Performance glass is applied in nine microscopic metallic layers in a vacuum chamber. This coating restricts the flow of radiant heat across the sealed space between the panes of glass. The Andersen coating process is sometimes referred to as a soft coat or sputter coat. The sputter coat gives the best coverage with little effect to the color of the glass or its transmission of visible light. Some manufacturers use pyrolytic coatings, or hard coats, which are applied to hot glass. The hard coat is durable, but the quality of the glass suffers—the color and consistency of the glass declines, and it can appear hazy. Other manufacturers use an e-coating applied to a sheet of plastic film that is then suspended between the two panes of glass. When the plastic film heats up from the sun, the plastic changes—the heat can cause the plastic to emit a gas which can discolor or haze the glass.

3. **Spacer** - Renewal by Andersen uses a low-conductivity spacer made of stainless steel that resists heat transfer 4-5 times better than aluminum spacers used by many other manufacturers. Also, because stainless steel is so much stronger than aluminum, our stainless steel spacer can use less material and still keep the glass stable. An inferior spacer may allow the glass to move, thus breaking its seal. Some window manufacturers even use plastic for their spacers. Plastic can deteriorate over time, causing a seal failure. Plastic spacers can emit a gas when heated by the sun, which can cause a chemical fog between the two panes of glass and affect visibility.

4. **Double glazing** - Two panes are better than one pane. But the space between the glass needs to be calculated for optimal thermal performance. When there is not enough space between the two panes of glass, the two panes act more like one pane—not as energy efficient. If the two panes of glass are too far apart, heat changes the convection currents within the space, which boosts the heat transfer instead of preventing heat transfer. Renewal by Andersen spaces the two glass panes for the best thermal performance.

Why not triple glazing? Triple-pane windows have lost popularity due to higher seal failure rates. The extra layer of glass adds significantly to weight while only marginally improving the efficiency. The sash and frame need to be thicker and heavier to support the extra weight. This makes the area of the glass—and the amount of light the window lets in—smaller. The added weight also places additional stress on the window hardware.

Today's double panes, especially those with low-E coatings, improve a window's energy efficiency without the added weight and structure. Renewal by Andersen® windows provide excellent energy efficiency while still providing exceptional window beauty. The sash and frame profiles look good in your home and deliver better glass-to-frame ratios (more glass/less frame) than many other replacement windows.

5. **Dual Seal** - The insulating glass in Renewal by Andersen windows is secured with two sealants: a compressed butyl and a specially formulated silicone. We also remove the Low-E coating around the embedded glass edge to make sure the sealant has a clean

surface to adhere to. Other manufacturers leave the coating around the edge which can contribute to seal failure. Our precise sealing process helps provide a longer life for the windows, helping to prevent moisture from leaking in between the double glazing, and preventing the argon gas blend from leaking out. After 20 years, your Renewal by Andersen® windows will still provide better insulation than most other brands.\* The chart below documents failure rates of glazing sealants in a study done by the Sealed Insulating Glass Manufacturers Association. Renewal by Andersen has significantly lower seal failure rates than industry standards. In fact, our glass is in a class of its own. That's real value!

\* Ask your sales representative for a copy of the Renewal by Andersen 20/2/10 year limited warranty.

## **INSTALLATION** completes the picture

A window must fit well in the opening to provide long-term energy efficiency. Renewal by Andersen® replacement windows are custom made to precisely fit each window opening in your home, and they are installed by professional Renewal by Andersen installers.

Window energy efficiency ratings assume an ideal installation of the window, but many things can go wrong during installation. An installer may cut flashing incorrectly or use the wrong kind of weatherstripping. Rough handling during transportation or installation can compromise the seal of the glass to the frame. Any of these things and more can keep your window from performing. We consider installation so important to the window's performance that we back it in a written limited warranty.

## **RATING ENERGY EFFICIENCY**

### **NFRC**

To help homeowners compare window products, in 1992 the National Fenestration Rating Council (NFRC) established an independent industry-wide standard for rating and labeling windows. Renewal by Andersen displays the NFRC label on all its windows. The NFRC label shows thermal insulating performance based on U-Factor—the lower the better. This label means that the entire window unit has been tested, not just the center of the glass or part of the frame.

### **R-U confused?**

R-value and U-Factor—what do they measure and which is better? These terms are both widely used in home improvement, and it's easy to get them mixed up. Both of these popular terms measure conduction—the transfer of heat in and out.

R-value is most often used to measure the insulating performance of an individual part of the window, such as the framing material or the center of the glass. The higher the R-value, the better the insulating quality of that part. These numbers range from 1 to 99. R-value measures an individual part, and the higher number is better.

The U-Factor represents the performance of the entire window system (the glass, the frame and the spacer). The U-Factor is a measure of how much indoor heat might be lost or transferred through a window. When comparing windows, a lower U-Factor means better insulating quality. U-factors run from .01 to .99. U-Factor measures the whole window, and a lower number is better.

Compare windows to windows. NFRC-certified U-Factors are the only measure of whole window thermal performance. That's why the NFRC label is so important, and why it's important for you to compare the NFRC labels from one window to another. The NFRC label—and an ENERGY STAR® qualification ranking—helps you know which windows perform better in your area of the country.

### **ENERGY STAR®**

Some windows also are ENERGY STAR® qualified. ENERGY STAR qualified windows save you energy and money, increase the comfort of your home, and help protect your valuable possessions from sun damage. They are also better for the environment because lowering your energy use means less air pollution from power plants. All ENERGY STAR qualified windows must be NFRC rated.

Renewal by Andersen® windows are ENERGY STAR® qualified for all climate zones of the United States. When you compare windows, make sure they are rated for your region of the country. For more information, visit [www.energystar.gov](http://www.energystar.gov).

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### **Green Seal Certified**

Green Seal is the national nonprofit environmental organization that helps consumers choose environmentally responsible products. Green Seal awards a “Green Seal of Approval” to products found to cause significantly less harm to the environment than similar products. Renewal by Andersen windows meet Green Seal's environmental standards for:

- Excellent window performance that will last for years\*
- Knowledgeable, helpful sales consultants
- Professional installation
- Reputable, responsive company
- Written limited warranty on window and installation\*
- Windows meet or exceed energy efficiency requirements determined by NFRC and, ENERGY STAR®

\*Ask your sales representative for a copy of the Renewal by Andersen 20/2/10 year limited warranty.

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