



RENEWAL
by **ANDERSEN**
FULL-SERVICE WINDOW & DOOR REPLACEMENT

ENERGY EFFICIENCY



Energy Efficiency – Always compare whole-window performance and not just the individual components.

Windows have played an important role in home design for centuries. Historically, window development focused on the right balance between the benefits of natural light and ventilation and the disadvantages of cold drafts, water leakage and the extensive maintenance of early window designs.

Traditionally, energy use was minimized by the design and setting of a home related to the environment it was built in. Trees were used to buffer cold winds, or to shade the heat of the summer sun. With the advent of powerful heating and cooling systems in the 1950s and 60s, and relatively inexpensive energy, home

design strayed from the concerns about energy efficiency. The energy crisis of the 1970s created a new generation of manufacturing and construction methods that focused once again on a home's energy needs.

Today, a new standard of energy efficiency is required. The Renewal by Andersen® window replacement process helps meet these new standards with product technology and installation methods that will help solve our environmental and energy challenges while withstanding the test of time.¹

Whole-Window Performance

While individual components contribute to energy efficiency, it's whole-window performance that's most important.

Renewal by Andersen windows will help you save money on your energy bills. 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. 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.

At Renewal by Andersen, we believe our outstanding whole-window performance is the result of:

- Framing material
- Glass
- Professional installation

When you choose Renewal by Andersen window replacement, you will help improve comfort with low-maintenance, energy-efficient windows.



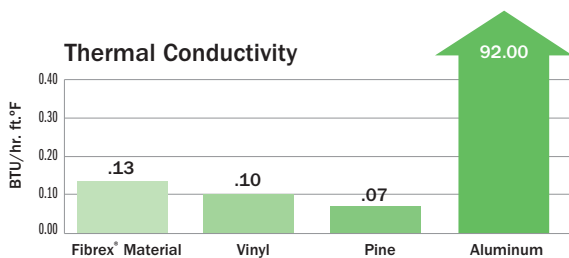
¹ See Renewal by Andersen® products and installation transferable limited warranty for details.

FRAMING MATERIAL – Makes a Difference

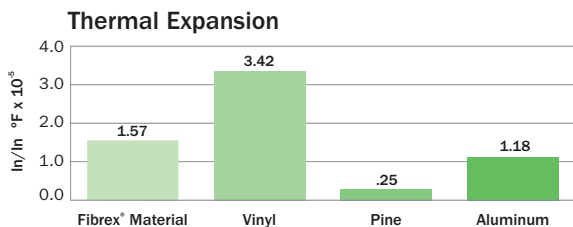
Andersen® products and patents have revolutionized the window and door industry for more than 100 years. We know windows and window materials.

In 1958, Renewal by Andersen’s parent company, Andersen Corporation, tested and rejected aluminum as a framing material. It conducted heat and cold, plus it could pit and corrode. Also in the 1950s, Andersen developed the first hollow vinyl window in the U.S. We liked the low-maintenance feature of vinyl, but concluded that it didn’t have enough structural integrity. In 1966, Andersen created the “wood-clad” window and door category with the Perma-Shield® line of products.

Fibrex® Composite Material Performance Comparison



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



Fibrex material is durable and reliable and much like wood, fiberglass and aluminum, it expands and contracts very little. However, vinyl can expand and contract significantly. Vinyl may cause cracks, bowing and air and water leaks. Windows made of Fibrex material will perform better in winter and summer than windows made of vinyl.

In the 1970s, Andersen began experimenting with reclaimed wood fibers. In 1991, after decades of development and testing, Andersen patented and introduced Fibrex material, a composite of wood fibers and polymer. Fibrex material combines the strength and stability of wood with the low-maintenance benefit of vinyl. Renewal by Andersen® windows made with Fibrex material also meet the strictest indoor air emission standards in the U.S.² and are certified for recycled content.

GLASS – There’s More Than Meets the Eye

At first glance, all window glass may look the same, but not all glass performs the same.

Renewal by Andersen offers four different glass options:

- High-Performance Low-E4® glass
- High-Performance Low-E4® SmartSun™ glass
- High-Performance Low-E4® SmartSun™ glass with HeatLock® technology
- High-Performance Low-E4® Sun glass

While not all our glass options will have appreciable differences in their appearance, each provides a unique set of benefits and differing levels of performance. Each glass option incorporates a special low-emissivity (or “low-E”) coating that defines the performance and aesthetic characteristics of that offering. The right glass solution for you will depend on the climate you live in, the architectural design of your home, the orientation of your windows to the sun and the personalized comfort level you wish to achieve in your home.

Glass Coatings

All our low-E coated glass options feature specially designed low-emissivity coatings. These coatings are considered spectrally selective, meaning they allow visible light portions of the solar spectrum to pass through while blocking varying amounts of solar radiant energy that can contribute to unwanted heat gain and lead to an uncomfortable living space. Essentially, low-E coatings serve as a type of thermal barrier that reflects energy back in the direction it came from – meaning that heat stays in your home in winter, and heat is reflected away in summer.

Glass options

High-Performance Low-E4 glass is our standard offering. High-Performance Low-E4 glass is 45% more energy efficient in winter and 56% more efficient in summer compared to ordinary dual-pane glass. That can cut your energy bills by up to 25%.³

Center of Glass Performance Values

| | Low-E4® | Low-E4® HeatLock® | Low-E4® SmartSun™ | Low-E4® SmartSun™ HeatLock® | Low-E4® Sun |
|--------------|---------|-------------------|-------------------|-----------------------------|-------------|
| U-Factor | 0.25 | 0.20 | 0.24 | 0.20 | 0.26 |
| SHGC | 0.41 | 0.41 | 0.27 | 0.27 | 0.25 |
| VT | 0.72 | 0.70 | 0.65 | 0.63 | 0.40 |
| UV (blocked) | 84% | 84% | 95% | 95% | 84% |

² Renewal by Andersen and its parent company, Andersen Corporation, are the only window companies to receive Scientific Certification Systems (SCS) Indoor Advantage Gold™ certification for indoor air quality. This level of certification conforms to the criteria of a number of North America’s indoor air emission standards, including the California 01350 standard, recognized as among the strictest in the U.S. ³ Values are based on comparison to U-Factors and SHGCs for clear glass non-metal frame default values from the 2006 International Energy Conservation Code (IECC).

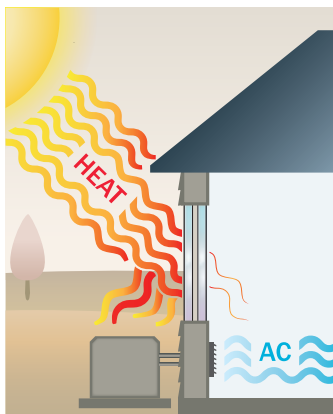
High-Performance Low-E4® SmartSun™ glass is the most energy-efficient glass option we have ever offered. High-Performance Low-E4 SmartSun glass is 49% more energy efficient in winter and 70% more efficient in summer when compared to ordinary dual-pane glass.⁴ It has our highest efficiency rating in cool weather and is exceptional in hot climates where solar heat gain can lead to excessive air conditioning expense. SmartSun glass blocks the sun's heat, while letting in almost as much natural daylight as clear glass, reducing your need for artificial lighting. What's more, SmartSun glass blocks 95% of harmful UV rays, which helps reduce fading on your carpet, drapes, artwork and furniture but has virtually no effect on the clarity or color of the light that enters your home.

High-Performance Low-E4® SmartSun™ glass with HeatLock® technology meets today's stringent energy codes and requirements with near triple-pane performance in a dual-pane window. HeatLock glass reflects escaping heat back into the room.

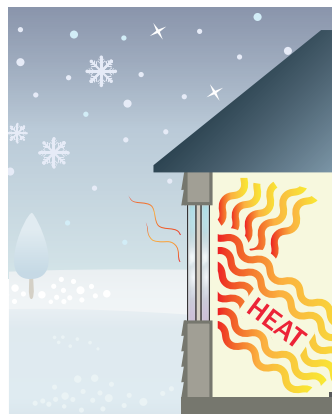
High-Performance Low-E4® Sun glass offers our highest rating against solar heat gain coming through your glass, helping keep your home cooler in warm weather. Our Sun glass has a tint coating applied,⁵ reducing the amount of visible light and sunshine streaming in from too bright to just right!

Double Glazing

Two panes are better than one pane. Optimizing the width of the air space between the two panes of glass is important. When there is not enough space between the two panes of glass, the benefit of the air space diminishes and reduces the energy efficiency. If the two panes of glass are too far apart, convection can occur within the space, which provides a means of increasing heat loss instead of reducing it. Renewal by Andersen optimizes the space between the two glass panes for the best thermal performance.



Warm Weather Performance

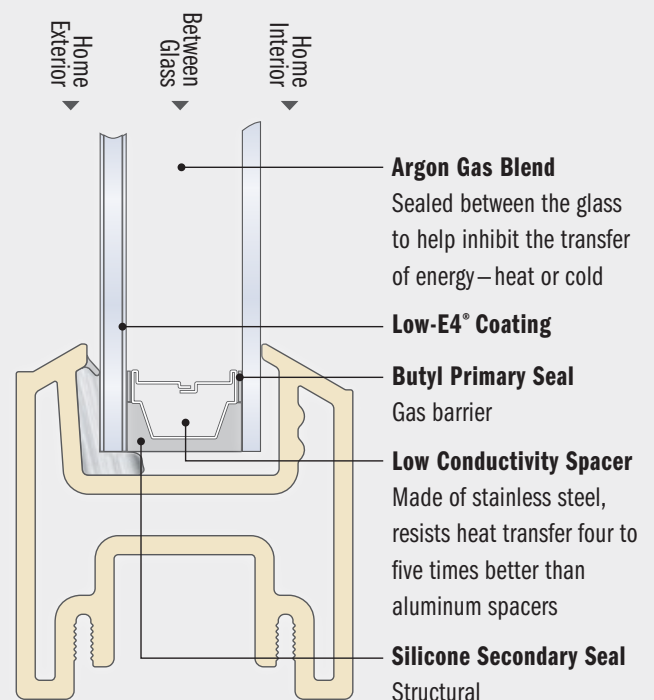


Cool Weather Performance

Spacer

Renewal by Andersen uses a low-conductivity spacer made of stainless steel that resists heat transfer better than aluminum spacers used by 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. A thinner spacer wall conducts less energy. An inferior spacer may move, causing seals to break. Some window manufacturers even use plastic for their spacers. Plastic can deteriorate over time, causing seal failure. Plastic spacers may also emit a gas when heated by the sun, which can cause a chemical fog between the two panes of glass and affect visibility.

Renewal by Andersen Sash Cross Section



Argon Gas Blend

Manufacturers first started using double glazing back in the 1950s. At first, manufacturers used only air between the panes. In the 1970s, some manufacturers used carbon dioxide and Freon. These gases improved insulation value, but proved susceptible to seal failure and could easily discolor. In the 1980s, argon and krypton proved to be more efficient for fill. Manufacturers of better double-pane glass products fill the space with an inert argon gas blend which can improve the thermal performance of the overall product, but on a much smaller scale compared to the benefit of the Low-E coating.

⁴Values are based on comparison of Renewal by Andersen® double-hung window U-factor to the U-factor for clear dual pane glass non-metal frame default values from the 2006, 2009, 2012, 2015 and 2018 International Energy Conservation Code "Glazed Fenestration" Default Tables. ⁵ Exterior tint may vary from unit to unit.

Dual Seal

Renewal by Andersen insulating glass (IG) units use a dual-seal technology: a compressed butyl primary seal, and a specially formulated silicone secondary seal. The precise IG sealing procedure used on Renewal by Andersen glass units helps provide a longer product life by preventing moisture from entering the sealed unit, which can lead to failure. The IG units used in Renewal by Andersen products are some of the best in the industry.

Long-Term Glass Performance

Renewal by Andersen uses only glass constructions certified for durability by the world's leading organizations on the engineering and manufacturing of insulating glass. Our experience and research allow us to stand behind our glass with a non-prorated limited warranty⁶ – one of the strongest warranties you will ever find. We make our warranty freely available on our website, in our showrooms and for the asking from our sales representatives. As you read our warranty, you will find that it is not riddled with the fine print and exceptions you often see from other window companies. The Renewal by Andersen warranty is real and matches our confidence in the long-term performance you can expect from an industry leader in window replacement.



Renewal by Andersen labels every window with its own identification number and our toll-free number.

If service is ever needed, call our toll-free number or your local Renewal by Andersen showroom.

INSTALLATION – Completes the Picture

A window must fit well in the opening to provide long-term performance and 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.



Improper installation can easily occur if an installer cuts flashing incorrectly, uses the wrong sealant or does not insulate between the window and rough opening. 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 to the product's fullest performance level.

We consider installation so important to a window's performance that we back it in a written limited warranty. For a copy of the Renewal by Andersen Limited Warranty, ask your design consultant or visit www.renewalbyandersen.com.



⁶ See Renewal by Andersen® products and installation transferable limited warranty for details. [†] Renewal by Andersen has the Nation's Best Warranty coverage. It is the only warranty among top selling window companies that meets all of the following requirements: easy to understand terms, unrestricted transferability, installation coverage, labor coverage, geographically unrestricted, coverage for exterior color, insect screens and hardware, and no maintenance requirement. Visit renewalbyandersen.com/nationsbest for details.

NFRC – Rating Energy Efficiency

To help homeowners, in 1992 the National Fenestration Rating Council® (NFRC) established an independent third-party rating, certification and labeling program for windows, doors and skylights (fenestration products). Renewal by Andersen displays the NFRC label on all its certified windows. The NFRC label shows the whole-window U-Factor, Solar Heat Gain Coefficient (SHGC) and Visible Transmittance. This label means that the entire window unit has been rated and certified, not just the center of the glass or individual components.



U-Factors, Solar Heat Gain Coefficients, Visible Light Transmittance and R-Values

U-Factor measures heat loss. The lower the number, the less heat loss through the window or door. When comparing window and door products, look for NFRC certified U-Factors to indicate the total unit product performance (glass, sash and frame). When comparing windows, a lower U-Factor means better insulating quality. U-Factor values generally fall in the range from 0.20 (most energy efficient) to 1.20 (least energy efficient).

Solar Heat Gain Coefficient (SHGC) measure how well a product reduces heat gain. Ranging from 0 (no heat gain) to 1 (maximum heat gain), the lower the SHGC, the less heat gain is transmitted through the total unit. Products with low SHGC values can reduce air conditioning load in the summer and make you more comfortable.

Visible Transmittance measures the percentage of light that is transmitted through the total unit. Ranging from 0 (no light) to 1 (maximum light), the higher the number, the more visible light from the sun is let through the product. As the width of the frame of a window or door affects the light transmittance through the opening, it is important to look at the NFRC certified visible transmittance rating.

R-Value primarily measures resistance to heat loss. R-Value is most often used to measure the resistance to heat loss of homogenous (the material is the same throughout) materials. While R-Value is used to describe the energy performance of a window or door, it is really more applicable to materials such as insulation.

| | | |
|--|---|--|
|  National Fenestration Rating Council® |  RENEWAL by ANDERSEN <small>FULL-SERVICE WINDOW & DOOR REPLACEMENT</small> | |
| | Caseмент Picture Window Dual-Pane Low-E4® SmartSun™ Glazing with Argon Product Type: Fixed | |
| ENERGY PERFORMANCE RATINGS | | |
| U-Factor 0.26 1.48 <small>(U.S./I-P) (Metric/SI)</small> | | Solar Heat Gain Coefficient 0.23 |
| ADDITIONAL PERFORMANCE RATINGS | | |
| Visible Transmittance 0.53 | | Air Infiltration 0.00 |
| <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. NFRC does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer's literature for other product performance information. www.nfrc.org</small> | | |

Sample Label – National Fenestration Rating Council® (NFRC)

NFRC certified U-Factor values 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 helps you know which windows perform better in your area of the country.

ENERGY STAR®

ENERGY STAR is a government-backed program that helps consumers identify energy-efficient products. Every ENERGY STAR® qualified window and door must meet or exceed energy efficiency criteria set by the U.S. Department of Energy.



To be ENERGY STAR certified, a window or door must:

- Be NFRC certified and labeled.
- Meet the U-Factor and Solar Heat Gain Coefficient requirements that vary by climate zone across the country.

Most Renewal by Andersen windows with select glass options are ENERGY STAR® certified in all climate zones of the United States. When you compare windows, make sure they are certified for your Climate Zone. For more information, visit www.energystar.gov.



Compare our check list to your own. We think you'll agree, Renewal by Andersen whole-window performance offers a complete solution for your window replacement needs.

- ✓ Products that meet or exceed energy-efficiency requirements determined by ENERGY STAR®
- ✓ Windows and doors that are NFRC certified and labeled
- ✓ Reputable, responsive company
- ✓ Limited warranty on window and installation⁷
- ✓ Energy-efficient glass options
- ✓ Quality, durable framing material
- ✓ Professional installation



RENEWAL
by ANDERSEN
FULL-SERVICE WINDOW & DOOR REPLACEMENT

**The Better Way to
a Better Window®**