

What Makes an Energy Efficient Window?

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According to the U.S. Department of Energy, about 25-30% of home energy loss is through windows and doors. Therefore, one of the biggest changes a homeowner can make to reduce energy waste at home is to install high-quality energy-efficient replacement windows and doors. That means this change will reduce your family's carbon footprint more than almost any other at home and it can cut your electricity bills significantly. So, it's probably time to get to know a little more about energy-efficient windows. A good starting place is to take a look at what makes windows energy efficient.

Performance Criteria For an Energy Efficient Window

The National Fenestration Rating Council is the industry entity that conducts independent certification of energy efficient windows, skylights, and doors. Windows also must pass a government inspection to receive the EPA's Energy Star® rating and label that enables consumers to identify energy efficient windows in the market.

The NFRC does not rate windows on a scale from bad to good to excellent, etc. The organization provides efficiency ratings and certifications for those windows that pass their energy efficiency examination. The inspections cover these five types of NFRC window ratings:

U-Factor:

The U-Factor (or U-Value) is the measure of the rate of heat loss from a complete window assembly. A lower U-Factor means better insulative performance and greater resistance to heat transfer. Today's best energy efficient windows, featuring double glass panes, can

achieve a U-Factor of around 0.30 or even lower. Triple-pane versions can reach as low as 0.15, but may not be the best value when compared to the price and real-world performance of windows with a 0.30 U-Factor.

Solar Heat Gain Coefficient

The SHGC is the rating of a window's solar energy transference. It reveals how well the window can block solar heat. The SHGC is expressed in values from 0 to 1. The typical range of values is around 0.25 to 0.80. A lesser amount of heat from sunlight being transferred by a window means a lower SHGC rating.

Air Leakage

A window's Air Leakage (AL) rate is the total cubic feet of air that passes through one square foot of the window's surface area in one minute. The construction industry standard AL for many building codes in various areas of the country calls for a rate of 0.3cf-m/ft². The less air leakage from the window, the lower its AL rate, which means the higher its energy efficiency.

Visible Transmittance

A window's Visible Transmittance (VT) is the quantity of light that is being transferred through it. VT (like SHGC) is expressed in values ranging from 0 to 1. Typical energy efficient windows perform between 0.20 and 0.80. A high VT rating means the window allows a high amount of light to pass through it.

Condensation Resistance

Condensation Resistance is a measure of a window's effectiveness against the accumulation of water from temperature differentials on the two sides of the window. Resistance to condensation is a quality rating that is expressed as a range from 0 to 100. Many average windows do not perform well in this NFRC testing. The more effective a window is against water building up, the higher its CR Factor.

What Goes Into An Energy Efficient Window?

Modern energy efficient windows are built using today's state-of-the-art technologies in energy efficient glass, engineered framing, and spacers, and precision manufacturing processes.

Multi-Pane Glass: Double-pane and triple-pane glass create a dead air space that serves as an insulator, giving this construction a major advantage over single panes in retaining heat and cooling.

Argon or Krypton Gas Fill: In the best energy efficient multi-pane windows, an inert, non-toxic, odorless gas fill is used between the panels as an insulator to slow heat transfer from one side of the window to the other.

Low-Emissivity Glass: Low-E glass has a reflective coating applied to reflect infrared and ultraviolet light, to help prevent the sun's heat from transferring through the window glass into your home's interior.

Quality Frames and Sash: Vinyl is by far today's most popular window framing material, accounting for 70% of all new window frame sales in the United States. The material can be filled with foam insulation and reinforced with wood or metal. It's the least expensive, most energy efficient, and lowest maintenance of all window frame materials.

Window Spacers: Spacers are used to maintain precise distances between glass panes. In the best energy-efficient windows, advanced designs in spacers act as energy conductors and insulators, enabling reduced heat transfer of less energy-efficient framing materials like aluminum or wood.

The Best Energy Efficient Windows

With so much technology to improve energy efficiency, overall, today's windows perform on average much better than their previous generations. Of course, the most energy efficient replacement windows receive the best ratings in the above categories of performance measurement.

When selecting energy-efficient windows for your home, the best options for energy savings, improved home comfort, and reduced carbon footprint will be those with the best ratings throughout the above-described gauntlet of NFRC tests. Of course, any energy-efficient window you buy should also bear the EPA's conclusive EnergyStar® label.

INSTALLATION: Keep in mind when shopping for energy efficient windows that the product can only perform as well as the quality of window installation. Poor installation workmanship can result in major air leaks that lead to soaring heating and cooling costs, water damage to the building structure and contents of your home, mold spread, reduced property value, and other serious problems. So, work with the most well-established and reputable company with factory-trained installers available in your area.

Energy Shield Energy Efficient Replacement Windows

We are a leading energy-efficient replacement window manufacturer in the U.S. southwest region. We've achieved that status through decades of building the best-performing energy-efficient windows for our customers' use here in the extreme desert climate conditions.

For information on our beautiful selection of energy-efficient replacement windows, call Energy Shield Window & Door Company at (623) 349-7120, or contact us here online!
