

Glossary

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A

Acoustical performance ratings

Measure the amount of sound transmission through a window. The higher the sound transmission rating, the better the product is at blocking noise from coming through the window.

Air Chambers

Small honeycomb spaces within the sash and frame extrusions that help to insulate and strengthen the window.

Air Leakage

Measures how much outside air comes into a home or building through a product. Air leakage rates typically fall in a range between 0.1 and 0.3. The lower the air leakage, the better a product is at keeping air out. Air leakage is an optional rating, and manufacturers can choose not to include it on their labels. This label displays air leakage in U.S. units; labels on products sold in markets outside the United States may display air leakage in metric units.

Argon Gas (1)

A gas that is heavier than air – it can be used to fill the airspace of an insulated glass unit. Argon is a safe, colorless, odorless, tasteless, non-toxic gas, which is six times denser than air. Argon increases the insulating value of an insulated glass unit as well as helps improve sound insulation qualities.

Argon gas (2)

Added inside an insulated glass unit air space, argon gas is an invisible, insulating gas with lower thermal conductivity than atmospheric air. During the manufacturing process, the atmospheric air is displaced when argon gas is pumped into the glass unit airspace. When combined with Low-E glass the Low-E glass helps reflect heat away, while the argon gas helps reduce thermal transfer to enhance the glass unit insulating performance.

Awning Window (1)

A window that is hinged at the top horizontal edge, and cranks open or shut from the bottom.

Awning Window (2)

A window that opens from a top hinge and projects outward.

B

Balance

The system in the side jambs of a single or double-hung window that helps open and support the weight of the sash, and helps hold the sash in place while in an open position.

Bay Window

A bay window is generally made up of three windows. The side or flanker units project out from the building at 30, 45, or 90 degree angles. The center is parallel with the building wall and is made up of one or more joined windows. All of the units can be stationary, operating, or any combination of the two. Typically the center section is stationary, while the side units are operating for ventilation.

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Beveled Exterior

An extension of the vinyl frame that adds an aesthetically pleasing dimension to the exterior of the window.

Bow Window

A series of three or more adjoining window units, commonly five in number, each connected at 10-20 degree angles to form a circular arch appearance.

Brick Mould

Exterior casing trim around a window or door. Brick mould covers the gap between the frame and masonry opening. In some cases, siding is installed up to the edge of the brick mould.

BTU-British Thermal Unit

The amount of heat required to raise the temperature of one pound of water one degree Fahrenheit. 1 BTU = 252 Calories (CAL)

Buck Size

The exact (net) window size, not including the nail fin.

C

Casement Window (1)

A window containing one or more side-hinged openings that open either outward or inward. A conventional casement window has a sash that projects outward.

Casement Window (2)

A window unit in which the single sash that opens outward to the left or right, projecting off the plane of the wall. The sash unit is hinged on one side and is operated by a crank mechanism.

Casing

Inside casing is a flat, decorative moulding that covers the inside edge of the jambs and the rough openings between the window unit and the wall. Outside casing (or brickmould), serves the same purpose.

Caulking

A compound for filling joints to prevent air and water leakage. Caulking is used where air and water leakage and/or movement may occur.

Circle Top

A generic term referring to any of a variety of window units having a curved top frame member, and are often used over another window or over a door opening.

Condensation

The formation of water vapor from the air on any cold surface, whose temperature is below the dew point.

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Condensation Resistance

Measures how well a product resists the formation of condensation. Condensation resistance is expressed as a number between 1 and 100. The higher the number, the better a product is able to resist condensation. Condensation resistance is an optional rating, and manufacturers can choose not to include it on their NFRC labels.

Cottage Window

A double hung or single hung window with a larger proportioned bottom sash, as compared to the top sash.

D

Design Pressure

The pressure a product is designed to withstand. This value is a measure of a product's capacity to withstand the forces of wind loading, in both positive and negative directions, while it is closed and locked.

Design Pressure Rating

Design pressure, or also referred to as DP, expresses a numerical value that defines the structural wind loading requirements (in pounds per square foot) for a building and the components and cladding of a building. For windows and patio doors, the higher the DP rating indicates better performance under wind load (eg: a DP-50 window is structurally more sound than a window rated DP-35). Coastal regions often require higher DP ratings by code to anticipate higher wind velocities that can be encountered in proximity to the coast line.

Dew Point

The temperature at which condensation occurs.

Divided Lite

A window opening divided into smaller sections by a grid system on the interior or exterior of the glass, between the glass panes, or any combination of these three.

Double Glazing (1)

Two panes of glass separated by a sealed air space, forming a glass panel that increases energy efficiency and provides other performance benefits such as improved outside noise reduction.

Double Hung Window (2)

A window unit that contains two vertically-sliding operable sashes, which move vertically in the frame.

Double-hung means that both sashes in a frame are operable.

Drip Cap

A molding designed to divert water from the top of a window unit so that water moves beyond the outside of the frame.

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Dual Action Window

A window that operates in two different ways -- typically, the window consists of a sash that may tilt from the top or may swing inward from the side.

E

Egress Window

A window opening large enough, as defined by local building codes, for exit or entry in case of an emergency. Typically required in bedrooms where no other means of exterior escape exists.

Emissivity

Is the ability of a product's surface to reflect heat back into a room during a cold winter day or to keep the heat outside on a hot summer day.. A product with high emissivity, such as a clear piece of glass, will allow over 84% of the infrared energy from a warm room outside to the cold air. The lower the emissivity of the glass, the lower the rate of heat loss and the lower the U-factor.

ENERGY STAR®

A government-backed program helping businesses and individuals protect the environment through the use of energy efficient products. ENERGY STAR® qualifying products, such as windows and doors, mean these items use less energy, save money and help protect the environment. Energy Star is a registered trademark of the U.S. Department of Energy.

Energy Star® windows

The Department of Energy (DOE) and the Environmental Protection Agency (EPA) have developed the Energy Star designation for products meeting certain energy performance criteria.

Extrusion

A particular cross-sectional shape produced by forcing material through a die.

E

Fenestration (1)

An industry term of Latin origin that refers to the broader category of windows, doors and skylights.

Fenestration (2)

Refers to any products that fills an opening in a building and includes windows, doors, skylights, and curtain walls? These products are designed to permit the passage of air, light, vehicles, or people.

Fixed Window

A window that is non-venting or non-operable, such as a picture window.

Flashing

A metal or plastic strip attached to the outside of the head or side jambs of windows and doors to provide a weather barrier, resisting leakage between the window or door frame and the wall.

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Frame (1)

The combination of head, jambs, and sill to form a precise opening in which a window sash or door panel fits.

Frame (2)

The enclosing structure of a window, door, or skylight which fits into the wall or roof opening and receives either glazing, sash, or vents.

Fusion Welded

Refers to vinyl frames and sash attached together at corner joints, using a heat source to create a fused, weather tight corner joinery.

G

Garden Window

A window that projects out from an exterior wall, often used as a greenhouse window for house plants. It has a slanted glass roof that allows heat and light from the sun to enter.

Geometric Window

Specialty windows of various shapes including: rectangles, triangles, trapezoids, octagons, pentagons, half-rounds, quarter rounds, full rounds sectors and ellipses.

Glass

An inorganic, amorphous substance, usually transparent, composed of silica (sand), soda (sodium carbonate), and lime (calcium carbonate) with small quantities of other materials.

Windows are often described by the number of glazings they contain:

Single-Glazed	=	One pane of glass
Double-Glazed	=	Two panes of glass
Triple-Glazed	=	Three panes of glass*
Quad-Glazed	=	Four panes of glass*

*In some instances, at least one layer of glass may be replaced by a lighter transparent material to lessen the weight of the total window

The space between the layers of glass is filled with a gas or combination of gasses, which is then sealed in place, creating a sealed insulated glazing unit. Though there are a number of gasses used (such as Argon, Krypton, Xenon, and others), and each window manufacturer may have its own proprietary formula, all are chosen for the increased ability of the gas (compared to normal air) to insulate the window. (The gasses used are odorless and harmless should the window break.)

In addition to the gas fill, window glass may be treated to further increase the energy efficiency of the window. There have been significant technological developments involving low-emissivity (low-E) coatings on the glass. There are many glass products available with low-E coatings, which are typically used with multiple-pane insulating glass units.

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Glazing

The process of sealing glass to a sash or frame for a weather tight seal.

Glazing

The transparent or semitransparent in-fill material in a glazing system.

Glazing Bead

A removable decorative trim around the glass perimeter, covering the gap between glass and frame.

Grille

A decorative grid on the interior or exterior surface of the glass, or, more commonly found between sealed between glass panes in an insulated glass unit, or in any combination of these locations that divides a window opening into smaller openings to create simulated divided lite or true divided lite. Grilles may or may not be removable.

Greenhouse/Garden Window

A window unit that consists of a three-dimensional, five-sided structure generally protruding from the wall in which it is installed. The window may or may not open.

H

Head

The main horizontal member forming the top of the window or door frame.

Hinged Escape / Rescue / Egress Window

A window that opens wide enough to allow escape from inside (and entrance for rescue workers). Many building codes require egress windows in all bedrooms that do not have doors that exit the building. For example, a basement room cannot be described as a “bedroom” unless there is an egress window (and large enough window well) or door to the exterior of the building. Please check your local codes for additional requirements.

There are many varieties and styles of egress window, some of which operate differently than the example shown. It is important for all family members to understand how the egress windows work; fire drills are recommended

Hopper Window

The sash is hinged at the bottom so that the window opens into the house. Primarily used in basement applications.

Horizontal Sliding Window

One or more sash that slide horizontally past each other. One or more sash may be fixed (inoperable), or each sash may operate to open and close.

I

Infiltration

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Air that is able to flow through cracks and other spaces around a window or door, and also at the meeting rail within a window unit.

Insulation

Material that insulates: material that prevents or reduces the passage of heat, electricity, or sound, e.g. a special fabric or a layer of air - prevention of conduction: the act of covering or surrounding something to prevent or reduce the passage of heat, electricity, or sound.

Insulated Glass (IG) (1)

A combination of two or more panes of glass with a hermetically sealed air space between the glass panes. This space may or may not be filled with an inert gas, such as argon gas.

Insulated glass (2)

Insulated glass consists of two pieces of glass hermetically sealed to a spacer. This creates a sealed, insulated air space between the two pieces of glass, resulting in better thermal insulation performance. Insulated glass also helps reduce condensation while keeping the heat in during the winter, and heat out during the summer.



J-Channel

“J” configuration designed into window frame exterior shape for the primary purpose of receiving siding to self-trim around a window perimeter.

Jalousie

A series of rectangular, horizontal overlapping glass slats held together by metal end-frames attached to a side-jamb mechanical unit that simultaneously opens or closes the slats in unison.

Jamb

The main vertical members forming the sides of a window or door frame.



Lift Rail Handle

Handle or grip installed on the sash of a window to make it easier to raise or lower the sash.

Lite

A unit of flat glass; one glass panel expressed as a “lite”.

Low-E glass

Low-E stands for low-emissivity glass – this is a nearly invisible coating on the glass surface that are microscopically thin metallic oxide layers primarily to reduce the U-factor by suppressing radiative heat flow. The principal mechanism of heat transfer in multilayer glazing is thermal radiation from a warm pane of glass to a cooler pane. Coating a glass surface with a low-emittance material and facing that coating into the gap between the glass layers blocks a significant amount of this radiant heat transfer, thus lowering the total heat flow through the window. Low-E coatings are nearly transparent to visible

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light. Our primary glass supplier, Cardinal Glass, offers informative details on their website:
www.cardinalcorp.com

Low-E (Emissivity) Glass

Glass treated with a thin transparent coating of metallic oxide (generally silver). Allows natural light and short-wave heat energy to freely penetrate glass during the winter, while reflecting long-wave heat energy back outside during the summer months. Helps keep your home cool in the summer and warm in the winter. It greatly reduces ultraviolet light to enter the home, minimizing fading exposure to carpet and furnishings.

M

Meeting Rail

The joinery point where horizontal or vertical sections of the top and bottom sash meet when the window is closed. On sliders, the meeting rail is vertical. On single and double hung windows, the meeting rail is horizontal.

Moulding

Strips of wood usually shaped to a curved profile, used to accent and emphasize the ornamentation of a structure and to conceal surface or angle joints.

Mulled Unit

Two or more window units structurally joined together.

Mullion

A metal or vinyl extrusion used to structurally join two or more windows.

Muntin

The pieces of decorative grid that help divide a window opening into smaller sections. Also called a grille or a grid.

Muntin Bar

See: muntin.

N

Nailing Fin

Used to secure the window into a rough opening.

NFRC

The National Fenestration Rating Council (NFRC) is a non-profit, public/private organization created by the window, door and skylight industry. It is comprised of manufacturers, suppliers, builders, architects and designers, specifiers, code officials, utilities and government agencies. NFRC has established a

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voluntary national energy performance rating and labeling system for windows, doors and skylights. For more information, visit their website: www.nfrc.org

NFRC Label

The National Fenestration Rating Council (NFRC) is a nonprofit organization that empowers consumers who are in the market for energy efficient windows, doors, and skylights. When you see the NFRC label on these products, this is your assurance that it's going to perform the way it's advertised to perform. NFRC Participants have their products certified by one of four Inspection Agencies (IA).

Each certified product should have a permanent label provided by their IA. These labels can be found between the panes of glass, the bottom of the sill, and sometimes along the side or top of the product.

The NFRC label provides ratings for U-factor and Solar Heat Gain Coefficient, and Visible Transmittance (required ratings), and may include information on testing for Air Leakage and Condensation Resistance.

O

Obscure/Translucent Glass

A frosted or textured glass that transmits light, but obscures the view.

Oriel Window

A double hung or single hung window with a larger proportioned top sash, as compared to the bottom sash.

P

Pane

A framed sheet of glass within a window or door frame.

Panel

Usually refers to the separate panel or panels in a door frame. A panel may be operable or stationary (fixed).

Picture Window

A fixed window that contains no operable sash.

Pitch

The pitch of a roof is the degree of the inclination upward from horizontal or flat. It may be expressed in degrees, or as the ratio of the number of inches it rises in each 12 inches of horizontal span: a 4/12 pitch means the roof rises four inches for every running foot of horizontal span.

Q

Quad

A group of windows mullied in combination of fours.

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R

R-Value

Resistance to thermal transfer or heat flow. Higher R-value numbers indicate greater insulating value. It is the inverse of the U-Value ($R=1/U$).

Rail

The horizontal top and bottom members of a window sash or door panel.

Replacement Window

A window designed to replace and fit into an existing window opening once the old window is removed.

Rough Opening

The framed opening in a wall into which a window or door unit is to be installed.

S

Sash

A single assembly of stiles and rails made into a frame, designed to hold the glass in a window, which is then set into a main frame. A sash may be operable or inoperable.

Sash Balance

A system of cords, and/or springs that assist in raising a sash, while keeping the sash in any placed position by counter-balancing the weight of the sash.

Sash Lock

Generally, a cam-action or other latch-type lock applied to the sashes of a sliding window to both pull the sashes tightly together and to seal the sash tightly to the frame, both for security and to create a weather tight seal.

Sash Stop

An extrusion molding piece, generally about 2" long that covers the joint between window sash and the jamb, stopping the operable sash at its maximum opening.

Seal

Tight or perfect closure. A tight closure that prevents the entrance or escape of, e.g. air or water, or a substance or device that forms such a closure.

Shading Coefficient - (SC)

The ratio of the solar heat gain through a given glazing system to the solar heat gain under the same conditions for clear, unshaded double strength window glass (DSA). Shading coefficient defines the sun control capability or efficiency of the glazing system.

Solar Heat Gain Coefficient (SHGC)

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Measures how much heat from the sun is blocked. SHGC is expressed as a number between 0 and 1. The lower the SHGC, the more a product is blocking solar heat gain. Blocking solar heat gain is particularly important during the summer cooling season in hot Southern climates. By contrast, people in Northern climates may want solar heat gain during the cold winter months to lessen the cost of heating the home. SHGC is expressed as a number between 0 and 1.

Shims

Wood, plastic or composite wedges used to secure the window or door unit in the rough or masonry opening in a square, level and plumb position both during and after installation.

Sidelight

Tall, narrow, fixed or operating sash on either or both sides of a door to light an entryway or vestibule.

Sill

The main horizontal member forming the bottom frame portion of a window or door.

Simulated Divided Light (SDL)

A method of constructing windows in which muntins are affixed to the inside and outside of a panel of insulating glass to simulate the look of true divided light panes.

Single-hung (1)

Means that one of the windows sashes is fixed in place and does not move.

Single Hung Window (2)

Window with a fixed top sash and a vertically operating bottom sash.

Single Glazing

Use of a single pane of glass in a window. Not as energy-efficient as insulated glass.

Skylights

In addition to the Tubular Daylighting Device shown above, skylights may also be flat panels (similar to a regular windows) but designed to perform on an angle or flat (depending on the roof surface), and they may be operable or non-operable. There are additional designs for skylights, but the purpose of all is to provide additional natural daylighting into the building.

Slider Window

Window that slides horizontally to the left or right.

Sliding Patio Door

A patio door in which a vent panel moves horizontally on a sill track system past a fixed or operable panel.

Solar Heat Gain Coefficient (SHGC)

A measure of how effective a window or door is at keeping out solar heat. It is calculated by taking the

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amount of solar heat that enters a room through a window or door, divided by the amount that is actually contacting the exterior of the unit. The lower the value, the better the unit keeps out solar heat.

Solar Heat Gain Coefficient (SHGC)

The number to know when selecting windows and patio doors – it measures how much of the sun’s heat is transmitted through these fixtures, expressed in a number from zero to one. A window that has a SHGC of .30 will allow 30 percent of the sun’s heat to pass through. Whether you want a higher or lower number will depend on your goal. Especially in the South, you will be primarily interested in a window or patio door with a low SHGC that will help to block solar heat gain inside your home, thus reducing cooling loads in hot weather. Northern climates often look for higher SHGC performance to harness passive solar warmth on cold, sunny winter days.

Sound Transmission Class (STC) Rating

Measures the amount of noise reduction that can be achieved with a given product. The higher the number, the better the product is at suppressing sound transmission.

Spacer

The component that separates and maintains the space between the glazing surfaces of an insulating glass unit (IGU), excluding any sealants.

As with the glazings and frame, there is no “one” spacer type and manufacturers are always experimenting with new ways to reduce the window spacer’s impact on the overall energy performance. Current spacers may be made of metal, non-metal materials, or a combination of both. Because they are located within the window structure, spacers can affect the overall window performance rating based on the conductance of the material(s) from which they are made.

Stile

The vertical member of a window sash or frame, or of a door panel.

Storm Window

A glazed window attachment product designed to be mounted to the inside or outside of a window to create an air space between the window and the storm window. This is sometimes called an “energy panel.”

Structural performance ratings

Measure the amount of air pressure (wind load) a window can resist before failing. The amount of structural pressure ratings required for windows in your area is often determined by local code requirements. The higher the structural performance ratings, the more wind load a window can resist.

Security performance ratings

Measure the ability of a window to resist different types of forces. For example, there are burglar-resistant windows, fire-resistant windows, bullet-resistant windows, wind-borne debris-resistant windows, and many others. Many of these products have special uses for different building types and may be covered by local building code requirements.

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I

Tempered Glass

A glass panel that is heated and subsequently rapidly cooled in its manufacturing process, creating a product that can withstand abnormal force or pressure on its surface, and which does not break into sharp pieces (also known as 'safety glass'); code requires tempered glass in all doors (including patio doors), and in windows that are located near doors, bathtubs, or showers.

Thermal Break

An element of low conductance placed between elements of higher conductance to reduce the flow of heat (or cold). In thermal break window frames, a non-metallic polyurethane material separates the transmission of cold between the frame's exterior and the frame's interior. Thermal Break is used for harsher environments on both our frame and panels. Thermal break lowers u-factors, limits condensation, increases energy performance, and most of all reduces thermal conductivity.

Tilt Window

A window designed in such a way that the sashes tilt inward for easy cleaning of the outside glass surface.

TON-HR

One ton of air conditioning = 12,000 BTU/Hour (3.52kW)

Total Solar Energy Rejected

The percent of incident solar energy rejected by a glazing system equals solar reflectance plus the part of solar absorption which is re-radiated outward.

Total Solar Transmittance

The ratio of the amount of total solar energy in the full solar wavelength range (300-2,100 nanometers) that is allowed to pass through a glazing system to the amount of total solar energy falling on that glazing system. Value is usually expressed as a percent.

Total Solar Reflectance

The ratio of total solar energy which is reflected outward by the glazing system to the amount of total solar energy falling on the glazing system. On filmed windows this reflectance is a function of the side of the film facing the window surface. Value is usually expressed as a percent.

Total Solar Absorption

The ratio of the amount of total solar energy absorbed by a glazing system to the amount of total solar energy falling on the glazing system. Solar absorption is that portion of total solar energy neither transmitted nor reflected. Since solar transmittance and solar reflectance are measured directly, the following equation should be used in calculating solar absorption. $\text{Solar absorption} = 1.00 - (\text{solar transmittance}) - (\text{solar reflectance})$

Transom

A small window placed over the top of a door or window, primarily for additional light and aesthetic value.

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Transom

A non-operable window that is often installed above either another window or a door. Transoms may consist of a glazed frame or a non-operable sash within a frame.

Tubular Daylighting Device (TDD)

A non-operable device primarily designed to transmit daylight from a roof surface to an interior ceiling surface via a tube. The device consists of an exterior glazed surface, a light transmitting tube with a reflective inside surface, and an interior sealing device, such as a translucent ceiling panel.

Triple

A group of windows mulled (joined) in combination of threes.

Twin

A group of windows mulled (joined) in combinations of twos.

U

U-factor (1)

The U-factor is a measure of heat flow or conductivity through a material, the reciprocal of R-value. Although R-values are used as for measures of the resistance to heat flow for individual building materials, U-factor is always used to measure the conductive energy of building enclosures.

U-factor (2)

Measures how well a product prevents heat from escaping a home or building. U-factor ratings generally fall between 0.15 and 1.20. The lower the U-factor, the better a product is at keeping heat inside the building. U-factor is particularly important during the winter heating season in colder climates. This label displays U-factor in U.S. units. Labels on products sold in markets outside the U.S. may display U-factor in metric units.

U-Factor (3)

The overall heat transfer coefficient of the glazing system, U -Factor is a measure of the heat transfer that occurs through the glazing system, and its outer and inner surfaces. This value is a function of temperature, and is expressed in BTU per square foot per hour per degree Fahrenheit (BTU/ sq. ft./hr. degrees F). The lower the U- Factor, the better the insulation qualities of the glazing system.

U-Value (U-Factor) (4)

A calculation expressing the rate of heat transfer through a window or door. The lower the U-value, the better the insulating properties of the window or door.

Ultraviolet (UV) Transmittance

The ratio of the amount of total UV solar energy (300-380 nanometers) that is allowed to pass through a glazing system to the amount of total UV solar energy falling on the glazing system. Ultra-violet is one portion of the total solar energy spectrum which greatly contributes to fading and deterioration of fabric and furnishings.

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V

Visible Light Reflectance (1)

The percent of total visible light to be reflected by a glazing system that can be seen visually.

Visible Light Transmittance (2)

The ratio of the amount of total visible solar energy (380-780 nanometers) that is allowed to pass through a glazing system to the amount of total visible solar energy falling on the glazing system. Value is usually expressed as a percent. Glare is influenced by visible light transmittance through a glazing system.

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. (VT) is expressed as a number between 0 and 1.

W

Water infiltration

Measures the amount of water and pressure that a window can resist to keep the water from leaking through it. The higher the water infiltration rating, the better the window is at resisting water leakage.

Weatherstrip

Various shaped metal, vinyl, plastic or fiber strips that fit tightly against the window or door frame to resist air and water infiltration through gaps and cracks.

Weep Hole

A small hole (or holes) found along the bottom sill frame edge of a window or door unit that allows any trapped water to escape to the exterior.

Wind Load

Force extended on a surface by moving air.

Window

Glass-covered opening in building: an opening in a wall of a building, usually with an inner frame of wood or metal with glass fitted in it, to let in light or, when opened, air

FAQ

What is a good source for window installation information?

We recommend that you refer to the American Society of Testing and Materials (ASTM) guide entitled: ASTM E 2112 “Standard Practice for Installation of Exterior Windows, Doors and Skylights” for comprehensive installation guidance and best practices: www.astm.org

For coastal region installation consideration, you can also refer to the American Architectural Manufacturers Association (AAMA) guide 100-07: www.aamanet.org

Glossary

How should I evaluate the energy performance of a window or patio door?

Look for the National Fenestration Ratings Council (NFRC) label on the window or patio door. This label shows the U-Value, Solar Heat Gain Coefficient, and Visible Light Transmittance values. All values are backed by independent lab test reports on file with every window and door manufacturer.

Energy Star® program

Energy Star is a voluntary partnership among the U.S. Department of Energy, the U.S. Environmental Protection Agency, product manufacturers, local utilities, and retailers. Partners help promote efficient products by labeling with the Energy Star logo and educating consumers about the benefits of energy efficiency. By choosing Energy Star-labeled products, you'll help to keep your utility bills lower, and help the environment at the same time. For more information, visit their website: www.energystar.gov (Energy Star® is a registered trademark of the U.S. Department of Energy).

Can you provide me with an independent, informative website where I can learn more about energy efficient windows?

For extensive information, backed with details provided by the U.S. Department of Energy, refer to: www.efficientwindows.org

Benefits of Improving Windows

Improve Energy Efficiency

Improve Comfort

Reduce Fading

Window Film

Improve Safety and Conform to Codes

What's the Difference between U-factor and R-value?

The biggest difference between U-factor and R-value is that U-factor measures the rate of heat transfer (or loss) while R-value measures the resistance to heat loss. R-value is a measure of conductance and resistance. A product with high conductance will conduct heat quickly, like a hot pan on the stove or a single pane of glass on a cold day. U-factor, on the other hand, takes into account more than conductance. It also is affected by the airflow (convection) around the window and the emissivity (radiated or reflected heat) of the glass.

Types of Frame

Wood, metal (aluminum), vinyl, fiberglass, and composite (combination of materials)

The choice of frame material for your window can depend on many factors – style preference, cost, building needs (weight of material, for example), and upkeep. Material choice can also affect the window's overall rating performance, as some material may have benefits in one area at the expense of lower performance in another with regard to conductance and convection (see discussion for "spacer"). With improving technologies, manufacturers have developed products that incorporate several materials to gain the advantages of each; manufacturers have also developed treatments for the various materials that improve their overall performance.