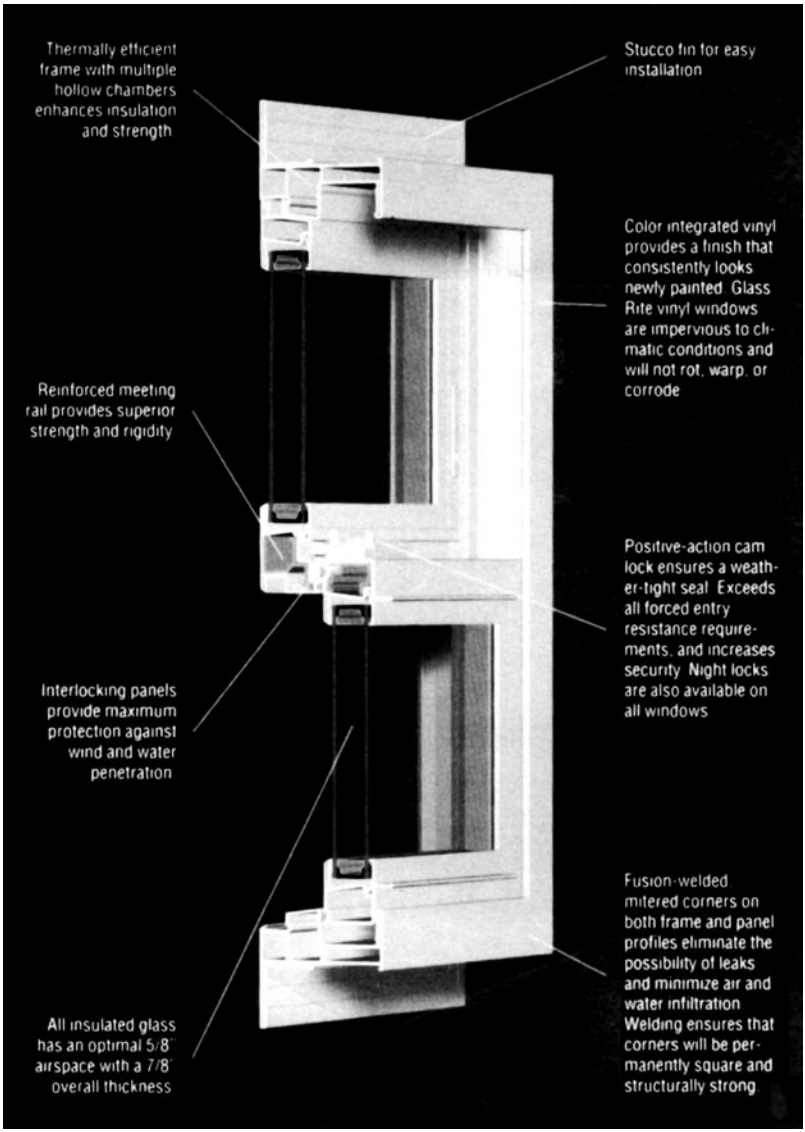
Seven Things You Need to Know Before You Buy Replacement Windows

Introduction

It's been said that, " Good judgment comes from experience and experience—well, that comes from poor judgment." We hope to provide you with information that will help you make a good judgment about window replacement even if you DON'T have any experience with windows.

When it comes to replacement windows for your home, there are seven things you need to take into consideration before you sign a contract with anyone:

- Reputation
- Glass Options
- Window Frame Options
- Window Types
- Installation Details
- Warranty/Service
- Price



Glass Rite Vinyl Window

Chapter 1 - Reputation

You might think this one should come last, but you can save yourself a lot of time and grief if you make it a top priority. The truth is, the construction industry has more than its share of incompetent, not really-in-business, and, sadly, downright dishonest people who want your business.

If you don't have your own horror story, I'm sure you won't have any trouble finding friends, neighbors and relatives who have dozens.

So ... burn the words *caveat emptor* (let the buyer beware) into your brain.

How to Check a Company's Reputation

- Ask for references. Excellent companies are more than willing to give you the addresses of completed jobs and the names of customers you can call for a reference.
- Check with the Better Business Bureau. They can tell you if a company has a history of complaints.
- Make sure that the company carries both liability and workers compensation insurance. You don't want to end up with a lawsuit because the company you're dealing with does not have proper insurance.
- Ask contractors you may know who they would recommend for window replacement.

Chapter 2 - Glass Options

You can spend a lot of money for the very best glass, but if it isn't the right kind of glass for your needs, it may still not do the job.

In the following few paragraphs, I'm going to give you an idea of some of the different kinds of glass. Exactly which kind will be best for you can be determined by a Glass-Rite replacement window consultant.

What Exactly is Insulated Glass?

Insulated glass is made up of two pieces of glass that have been sealed together to keep out dust and moisture. There are a number of different types of spacers that separate these two pieces of glass from each other.

A non-conductive Edgetech "super spacer" is the best type for efficiency since it eliminates conduction at the edge of the glass. In addition, the super spacer provides a double seal for the insulated glass unit.

Argon gas is an option that is used to improve the insulating ability of glass about 10%. When purchasing a window with argon gas, the way the insulated glass is made becomes crucial. At Glass Rite we use the Edgetech Superspacer system that provides a double seal and also has a non-permeable mylar backing that prevents the argon from leaking out.

Insulating Glass Performance

Here are some terms you should know when shopping for high-efficiency thermal windows:

U-Value - A measure of efficiency. A lower number means the glass is more efficient.

Solar Heat Gain Coefficient - A measure of the heat added to your home via natural sunlight. A lower number means you will gain LESS heat.

UV Transmittance - UltraViolet light (UV) is what fades your carpet, drapes and upholstery. The lower the % transmittance, the less UV light will get into your home.

Performance Specifications For Evaluating Energy Savings
1/8" Glass - 1/2" Air Space

Glazing	U-Value	SHGC	UV Trans.
Clear Single 1/8"	1.11	.85	73%
Clear Insulating	.50	.77	69%
Hardcoat Low-E/Clear	.35	.72	60%
Softcoat Titanium Low E (Ti-R)/Clear	.29	.47	30%
Softcoat Titanium Solar Low E (Ti-AC)/Clear	.29	.39	29%
TI-R with Argon	.24	.47	30%
TI-AC with Argon	.24	.39	29%

Glass Options for Different Needs

Glass options include:

- Argon Gas
- Hardcoat Low E glass
- Softcoat Titanium Low E glass (Ti-R)
- Softcoat Titanium Solar Control Low E glass (Ti-AC)
- Tinted glass
- Tempered glass
- And several patterns of obscure glass

Choosing the right type of glass depends on factors such as:

- Which direction a particular window faces
- Whether your home has a problem with heat gain or loss
- Various building codes

Some Facts about Types of Glass

High Performance Low E Glass

Low E stands for "Low Emissivity". Low E glass has a thin, almost transparent, metallic coating on the inside of the outside pane of the insulated glass unit. The coating adds extra insulating power to the glass.

Low E glass will not only help keep your home warmer in the winter but cooler in the summer as well.

In addition, the Low E coating reduces the amount of Ultra Violet light that comes through your windows. This is an added benefit to you because ultraviolet light is a major contributor to the fading of your drapes and carpet.

All Low E is not the same!

There are a variety of different manufacturers of Low E glass. In addition, there are different types of Low E coatings. When you are evaluating a window make sure you look at performance statistics for the specific type of Low E that will be used on your windows.

U-Value The U-Value for Low E glass can vary as much as 17% depending on the Type of Low E used.

UV Transmission	The amount of ultraviolet light that is transmitted can vary as much as 50%. Good Low E glass will have a UV transmission rate of about 30%. That means that 70% of the UV is blocked out.
Solar Heat Gain Coefficient	The Solar Heat Gain Coefficient measures how well a product blocks heat caused by sunlight. This coefficient can vary as much as 35% from one type of Low E to another. Good Low E will have Solar Heat Gain Coefficient below .40.

	SOFTCOAT Low E		HARDCOAT Low E
	Titanium	Titanium Solar	"Regular"
U Value	0.29	0.29	0.35
UV Transmittance	30%	29%	60%
SHGC*	0.47	0.39	0.72

* solar heat gain coefficient

A Guide to Understanding the Figures

The lower the "U" value — the lower your heating costs

The lower the UV transmittance — the less fading of your drapes and carpet

The lower the SHGC — the lower your cooling costs

Obscure Glass

Obscure glass is glass that is frosted or has a pattern that makes it difficult to see through. The standard obscure glass has a rough surface on the outside pane of the insulated glass unit. The inside pane is then either clear or Low E glass. Consult with the window manufacturer on availability and prices for some of the more decorative obscure glass such as rain pattern, aquatex, and fern leaf (also called glue chip).

Tempered Glass

Tempered glass is glass that has been heated and then quickly cooled. This procedure not only strengthens the glass but it also creates surface tension so that the glass cannot shatter into large jagged pieces.

Instead, it will break into small pieces that are less dangerous. This type of glass is also called "safety glass."

In general, building codes call for safety glass to be used in large pieces of glass that are less than 18 inches from the floor, any glass within a 24 inch arc of a door, or any glass within 60 inches of the drain of a shower or tub.

Codes vary in different areas so you'll want to make sure the window company is familiar with the codes for your home.

NFRC Label

The National Fenestration Rating Council (NFRC) energy performance label can help you determine how well a product will perform the functions of helping to cool your building in the summer, warm your building in the winter, keep out of the wind, and resist condensation. By using the information contained on the label, builders and consumers can reliably compare one product with another, and make informed decisions about the windows, doors and skylights they buy.

Energy codes in most states, including New Mexico, require NFRC certification of windows!

MY most important piece of advice to consumers is to compare windows by comparing the NFRC labels!!!

Window sales people love to muddy the waters by using "R" values instead of "U" values and comparing values for insulated glass units (which are better) to values

for the windows themselves. If you simply compare the NFRC labels for the different windows you automatically eliminate the confusion. Just be certain the label is for the company you are buying the windows from and has the options listed that you want. If a window is not NFRC certified you have no idea what the real values are!

NFRC adopted a new energy performance label in 1998. It lists the manufacturer, describes the product, provides a source for additional information, and includes ratings for one or more energy performance characteristics.

U-Factor

U-factor measures how well a product prevents heat from escaping. The rate of heat loss is indicated in terms of the U-factor (U-value) of a window assembly. U-factor ratings generally fall between 0.20 and 1.20, The insulating value is indicated by the R-value which is the inverse of the U-value. The lower the U-value, the greater a window's resistance to heat flow and the better its insulating value.

Solar Heat Gain Coefficient

Solar Heat Gain Coefficient (SHGC) measures how well a product blocks heat caused by sunlight. The SHGC is the fraction of incident solar radiation admitted through a window and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's solar heat gain coefficient, the less solar heat it transmits.

Visible Transmittance

Visible Transmittance (VT) measures how much light comes through a product. The visible transmittance is an optical properly that indicates the amount of visible light transmitted. VT is expressed as a number between 0 and 1. The higher the VT, the more light is transmitted.

Chapter 3 - Window Frames

One of the important decisions you'll be making is determining the best kind of window frame for your home. Each type has its advantages and disadvantages.

The three types of frames used for replacement windows are vinyl, thermally broken aluminum and wood.

Because choosing the right kind of frame is an important issue, you'll want to make sure the window company you deal with carries more than one type of frame.

In this way, you can be certain you will be advised on the type of frame that is best for you, not pressured to buy the only type sold by that company.

Now, let's take a look at each kind of frame.

***Vinyl Frame*s**

Some of the early vinyl windows did not perform very well. As a result, vinyl windows have a negative connotation in many people's minds.

However, all of that has changed now. In fact, vinyl frames are actually more efficient than thermally broken aluminum, and in some cases, even more efficient than wood.

Here are some other pluses:

- Vinyl never needs painting and is guaranteed not to peel, chip or warp.

- Because vinyl is the same color throughout, scratches are virtually unnoticeable.
- Good quality vinyl windows are welded together, not held together with screws.
- Because screws tend to pull out of vinyl, good quality vinyl windows will have metal reinforcements in the parts of the windows where hardware (such as a lock) is screwed in.
- Vinyl windows are generally available in two colors: white or beige. Dark colored vinyl frames gain too much heat in our New Mexico climate and are not recommended.

Other Important things to look for in vinyl windows are:

1) The window should be certified by the National Fenestration Rating Council
2) Air space between the panes of glass should be at least 1/2 inch
3) Sashes should be interlocking
4) High quality extrusions that use vinyl that exceeds ANSI/AAMA specification 101-93.
5) Vital parts such as the handle pulls need to be a molded part of the frame and not an add-on, “snap in part”
6) Metal re-inforcement in parts where hardware is screwed into.

Thermal Break Aluminum Frames

Good quality aluminum windows have a thermal barrier that prevents the frame from conducting heat or cold. However even with the thermal barrier, these windows are not as efficient as vinyl or wood.

Thermal break aluminum windows are generally available in two colors: dark bronze and white.

Other important things to look for in a Thermal Break aluminum window are:

1) The window should be certified by the National Fenestration Rating Council.
2) Air space between the panes of glass should be at least 1/2 inch
3) Interlocking sashes
4) Good quality roller systems on sliding windows
5) Double locks on windows over 30 inches
6) Variety of glass options

Wood Frames

If you choose to use wood windows for your home, you'll want to look for the following features:

1) The window should be certified by the National Fenestration Rating Council.
2) Airspace between the panes of glass of at least 1/2"
3) Metal or vinyl clad exterior to reduce maintenance and eliminate painting
4) High quality hardware and locks
5) Uses good quality wood that won't warp or twist

Chapter 4 – Window Types

There are as many different configurations of windows as you can imagine. However here we'll go over the most common:

1) Fixed-non operable picture windows
2) Single hung, a window where the bottom sash slides up
3) Double hung, a window where the bottom sash slides up and the top sash slides down.
4) Horizontal slider, which slides open to the side.
5) Picture slider, which has 3 sections; a fixed part in the center and two end vents that slide open to the middle.
6) Casement, a window that cranks open and is hinged on the side.
7) Awning, a window that cranks open and is hinged on top.

The type of operation for your windows depends on a variety of factors including the type of look you want for your home, fire codes, and cost or design constraints. You will want to discuss your options with a knowledgeable consultant that can advise you on what will work best for your circumstance.

Chapter 5 - Installation

Please Note!

Quality installation is as important as a quality window.

Proper installation of replacement windows is a job that even seasoned contractors often fail to perform adequately.

There are as many different types of installation as there are types of homes. As a consumer, the important thing is to make sure the company you choose to install your windows gives you detailed information on how your windows will be installed.

When the company that installs the windows also manufactures them (as in Glass-Rite's case) you never get caught in the middle. You know, the old "It's not our fault, it's theirs" routine.

Here are some questions that will help you evaluate the installation company:

- Will subcontractors be used on the job? It is usually better if the windows are installed by employees and not by subcontractors. Since employees are paid by the hour and not by the job, they will generally take the time to do the job right.
- Will your stucco be damaged in the process? If so, is patching repair included in the price?
- What type, if any, trim will be used? How will it be attached? How will it look?
- Will solid shims be used under the sills of vinyl windows? If not the windows won't operate properly a year from now.

- Will installers use tarps and clean up broken glass?
- Will the old windows be hauled off?
- What type of caulking and insulation will be used around the windows?
- Does the company specialize in windows? Can the salesperson explain the installation process to you?

Chapter 6 - Warranty/Service

Warranties are always difficult to interpret. But, in general, the simpler and more straightforward the warranty, the better.

Usually warranties are only as good as the company that issues them. So, make sure that you are dealing with a reputable company (see chapter 1).

In addition, it's better if the same company that manufactures the windows also installs them. That way you won't get caught in the role of deciding if a problem with the windows is a result of a manufacturing defect or an installation problem.

Don't ask a salesperson about the warranty, ask to see a written copy of the warranty. This way, you are evaluating the warranty itself and not a salesperson's "interpretation" of it.

When evaluating warranties, keep in mind that many warranties make great claims about lifetime guarantees but neglect to mention that you have to pay inflated prices for labor or shipping.

In addition, free repairs don't help if you have to wait two months for a simple service call. Check references regarding how the company handles service work for other customers.

Remember, the most critical problems are with window installation (such as leaks), and not with the windows themselves. These are often not included in the warranty. A good company will cover all installation-related problems (including labor and materials) for at least 3 years.

Chapter 7 - Price

You want the best price, right? We all want that. But, smart buyers know you can get a low-ball price and ***still*** **get less than you paid for**. By the same token, you can get a price that seems high and end up **getting more than you paid for**.

Here's the problem. Unless you really know a lot about a product or service, it's hard to determine exactly when you are getting a fair price.

A price that's too cheap means corners are going to be cut and you will pay the price later. A price that's too high means you're being taken for a ride. What you really want is *a quality product and a fair price*!

Here are some things to look for:

- Does the company have "repeat" business? In other words, do customers buy from them time after time?

- Has the company been in business for at least ten years?
- Do their consultants "help" you make a good decision or do you feel you're being high-pressured into buying?
- Is the price clearly spelled out in writing?

Finally, if all the things we've talked about in this booklet are being delivered, chances are, the company you're dealing with will be giving you a fair price.

Conclusion

The reason I wrote this little book is because I felt there was a great need for customers, such as yourself, to have a better understanding of how to buy replacement windows.

After all, if you're doing a house full of windows, it's going to cost you some money. And, I believe you have a right to expect honesty, integrity, quality, and service from whatever company you've been good enough to spend your money with.

I do ask that, when you're looking for replacement windows, you consider calling Glass-Rite and have one of our consultants come to your home and go over the project with you. You will find that we will NOT pressure you into buying windows or bore you with a three hour presentation. We simply explain our products, make our recommendations, answer your questions, and leave you with a solid quote on the cost of your project.

Glass•Rite Vinyl Windows

	Glass•Rite	Company X
Our Company		
In business since 1984	✔	
Windows are our ONLY business	✔	
Company is headquartered in New Mexico	✔	
Windows are manufactured in Albuquerque, New Mexico	✔	
Licensed and bonded New Mexico general contractor GB98 #027856	✔	
Fully insured with both workers compensation and liability coverage	✔	
Warranties		
Straightforward (no small print) Limited Lifetime warranty	✔	
Warranty is direct to the manufacturer (that's us!)	✔	
Warranty is included on the installation, not just the windows	✔	
Windows		
Frame depth: 3 1/4 inches	✔	
AAMA 101 Structural Rating: C-30	✔	
U- value with Low E Argon: .31	✔	
Solar Heat Gain Coeficient with Low E: .31/.35	✔	
Air infiltration: .1 cfm/ft≤	✔	
Certified by the National Fenestration Rating Council	✔	
Exceeds US DOE energy Star requirements for all four climate zones	✔	
Highest quality extrusions from Mikron Industries	✔	
All meeting rails are reinforced for added strength and security	✔	
Double locks on all windows over 30"	✔	
Fusion welded corners on sashes and frames	✔	
Handle is part of extrusion for added strength	✔	
Your choice of 2 types of AFG Titanium Low E glass	✔	
Edgetech Superspacer provided double seal and warm edge technology	✔	
Interlocking sashes for security and weather tightness	✔	
Installation		
No subcontractor crews, all installations done by employees	✔	
Stucco fin instead "stick on" angled trim	✔	
Unique methods for reducing/elimination stucco damage	✔	
Non expandable foam insulation with high R value	✔	
Solid shims used on all sills	✔	

Glass•Rite Aluminum Windows

		Glass•Rite	Company X
Our Company			
In business since 1984		✔	
Windows are our ONLY business		✔	
Company is headquartered in New Mexico		✔	
Windows are manufactured in New Mexico		✔	
Licensed and Bonded New Mexico General Contractor GB 98 #028756		✔	
Fully insured with both workers compensation and liability coverage		✔	
Warranties			
Straightforward (no small print) Limited Lifetime warranty		✔	
Warranty is direct to the manufacturer (that's us!)		✔	
Warranty included on installation, not just the windows!		✔	
Windows			
Frame depth:	2 3/4 inches	✔	
AAMA 101 Structural Rating:	C-40	✔	
U- value with Low E:	.44	✔	
Solar Heat Gain Coeficient with Low E:	.31/.38	✔	
Air infiltration:	.07 cfm/ft≤	✔	
Certified by the National Fenestration Rating Council		✔	
Exceeds US DOE Energy Star requirements for the Southern climate zone		✔	
Structural thermal break increases energy efficiency		✔	
Your choice of 2 types of AFG Titanium Low E glass		✔	
Edgetech Superspacer provided double seal and warm edge technology		✔	
Double interlocking sashes for security and weather tightness		✔	
Installation			
No subcontractor crews, all installations are done by employees		✔	
Glass•Rite designed Trim System for stucco, instead of "stick on" angled trim		✔	
Unique methods for reducing/eliminating stucco damage		✔	
Nonexpandable foam insulation with high R value		✔	
Solid shims used on all sills		✔	

Jeld-Wen Vinyl Windows

		Glass•Rite	Company X
Our Company			
In business since 1984		✔	
Windows are our ONLY business		✔	
Company is headquartered in New Mexico		✔	
Windows are manufactured in Cheyenne, Wyoming by Jeld-Wen		✔	
Licensed and Bonded New Mexico General Contractor GB 98 #028756		✔	
Fully insured with both workers compensation and liability coverage		✔	
Warranties			
Straightforward Limited Lifetime warranty		✔	
Warranty is included on installation, not just the windows!		✔	
Windows			
Frame depth:	2 3/4 inches	✔	
AAMA 101 Structural Rating:	R-20	✔	
U- value with Low E:	.35	✔	
Solar Heat Gain Coeficient with Low E:	.34	✔	
Air infiltration:	.16 cfm/ft≤	✔	
Certified by the National Fenestration Rating Council		✔	
Exceeds US DOE energy Star requirements for all four climate zones		✔	
Highest quality extrusions from Mikron Industries		✔	
All meeting rails are reinforced for added strength and security		✔	
Fusion welded corners on sashes and frames		✔	
Handle is part of extrusion for added strength		✔	
Cardinal Low E squared glass available		✔	
Interlocking sashes for security and weather tightness		✔	
Installation			
No subcontractor crews, all installations done by employees		✔	
Stucco fin instead “stick on” angled trim		✔	
Unique methods for reducing/elimination stucco damage		✔	
Non expandable foam insulation with high R value		✔	
Solid shims used on all sills		✔	

APPENDIX

(For those who want really technical stuff!)

Window Performance Testing

There are two different types of window testing: Structural testing and Thermal testing. **Structural testing** is where air and water infiltration, forced entry, wind loads and Operating force are evaluated. **Thermal Testing** is where the window is evaluated for "U" values and Solar Heat Gain Coefficients.

Both types of testing are done by independent laboratories that specialize in window testing. Test results will include a description of the test window.

Structural test standards should be AAMA/NWWDA 202/I.S.2-97 Voluntary Specification for Aluminum, Vinyl and Wood Windows and Doors. AAMA is an abbreviation for "American Architectural Manufacturers Association". NWWDA is an abbreviation for "National Wood Window and Door Association. Test results should identify the laboratory where the tests were conducted.

Thermal test standards should use NFRC (National Fenestration Rating Council) Test procedure for Measuring the Steady State Thermal transmittance of Fenestration Systems (April 1997 edition).

STRUCTURAL TESTING

Performance classes for structural testing are Residential (R), Light Commercial (LC), Commercial (C), Heavy Commercial (HC), and Architectural (AW). Performance is designated by a number which follows the type and class designation. For example a Double-Hung residential window may be designated H-R15. The "H" stands for "hung window", the "R" for Residential and the 15 is the design pressure, in this case 15 psf. The structural test pressure for all windows and doors is 50% higher than the design pressure which, for the example H-R-15 window would be 22.5 psf.

Class	Minimum Design Pressure	Minimum Test Size Single Hung
Residential	15	44" X 60"
Light Commercial	25	44" X 77"
Commercial	30	54" X 90"
Heavy Commercial	40	60" X 96"
Architectural	40	60" X 96"

Glass Rite Vinyl Window

Single Hung:	H C-30
Slider:	H C-30
Fixed:	F LC-25

Glass Rite Aluminum Window

Single Hung:	H C-40
Slider:	HS C-45
Fixed:	F C-60

In addition to increasing the design pressure on windows as the performance class moves from Residential to Architectural, The AAMA standard also requires a larger window be tested. A larger window is inherently more susceptible to failure in the test chamber. In fact, in the higher classes, the test sizes exceed the maximum sizes that most manufacturers would make. Moving to a higher design class means both higher test pressure and a larger test window, so that means you can expect big differences in overall performance between windows from the varying design classes.

Structural testing of windows follows a set sequence. First windows must pass a maximum operating force test. After that come an air infiltration test, a water resistance test, as well as uniform structural load, forced entry, and deglazing tests. In general, the water resistance test is often the determining factor of the windows test limits.

THERMAL TESTING

Thermal testing results are shown on the NFRC label on the window or are available, by manufacturer, on the NFRC website, www.nfrc.org . Look in the certified products directory. It is important to use NFRC values as opposed to values for glass only when making comparisons. NFRC values take into account the entire window including frame, while values for glass usually use the "center of glass" as a value and are generally much different. (See comparison below)

	Three Options, All with AFG TR-I Low E glass		
	Glass Only	Glass Rite Thermal Break Aluminum Single Hung	Glass Rite Vinyl Single Hung
U-value	.29	.44	.35
SHGC	.47	.38	.36
Visible Transmittance	.71	.55	.52

The NFRC tests for three items: U-value, solar heat gain coefficient, and visible transmittance. The lower the U-value, the better the efficiency a window will have against heat loss (gain). U factor ratings for windows generally fall between .25 and .75. The solar heat gain coefficient (SHGC) measures how well a window blocks heat from the sun. SHGC is expressed as a number between 0 and 1. The lower the SHGC, the better a window is at blocking unwanted heat gain. Visible transmittance measures how much light comes through a window. It is expressed as a number between 0 and 1. The higher the visible transmittance, the higher the amount of daylight is allowed inside.

You can reach **GLASS•RITE** at:
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