

# **The Window Salesman's "Little Red Book": A Reference for Your Window and Meter Questions**

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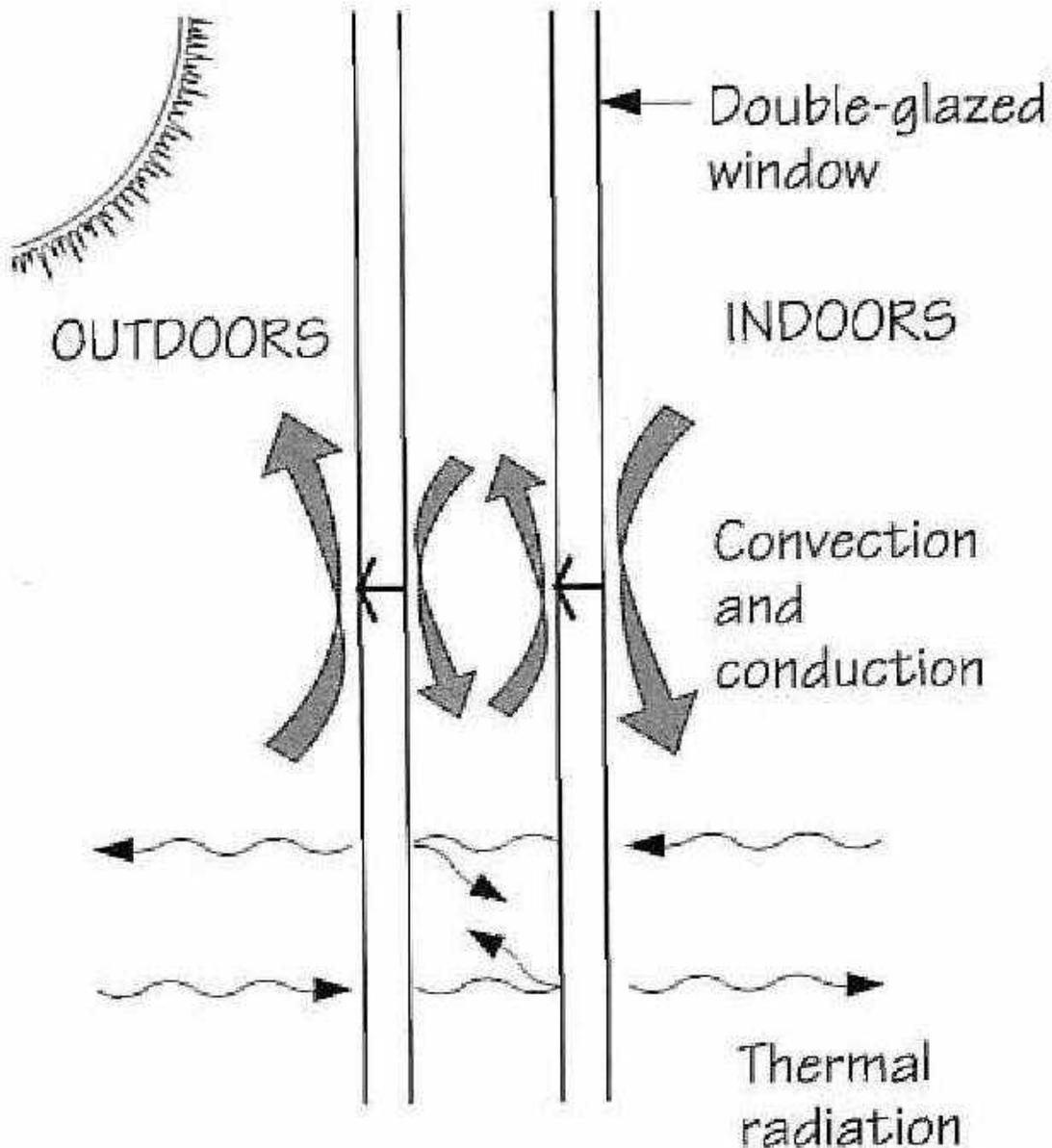


## **Introduction**

EDTM has been in business for over 25 years looking to educate both the consumer about the windows that they are buying and the window sales engineers as well. The way we did this was through the use of revolutionary handheld testing equipment, designed to show the consumer precisely what they are buying. Yet that was only the beginning of our end goal. We here at EDTM still desire to train the window sales engineers about what they are selling. Why do we say window sales engineers and not salesmen? Because salesmen sell used cars, not caring anything about their product other than trying to move their merchandise. A window sales engineer, on the other hand, is extremely familiar with their product and how it affects their customer. In light of this knowledge, we here at EDTM have put together a short booklet detailing various aspects that every sales engineer should know. These points include common window terms, various organizations common in the window field, and equipment that is simply a must to own to operate well in the field. It is our goal to pass on to you our decades of experience in the next several pages. Remember you have a responsibility to your company and your clients to be knowledgeable in your field so enjoy the next few pages of information and prepare to sell like a sales engineer.

## Insulating value

Insulating value is the measurement of heat transfer through a window by three means: convection, conduction, and radiation. Convection is the transfer of heat through gases and liquids. Examples of this can be seen in steam from a tea kettle or hot air rising from a heating register. Convection requires a means of transferring energy. Conduction is the transfer of heat through a solid object.

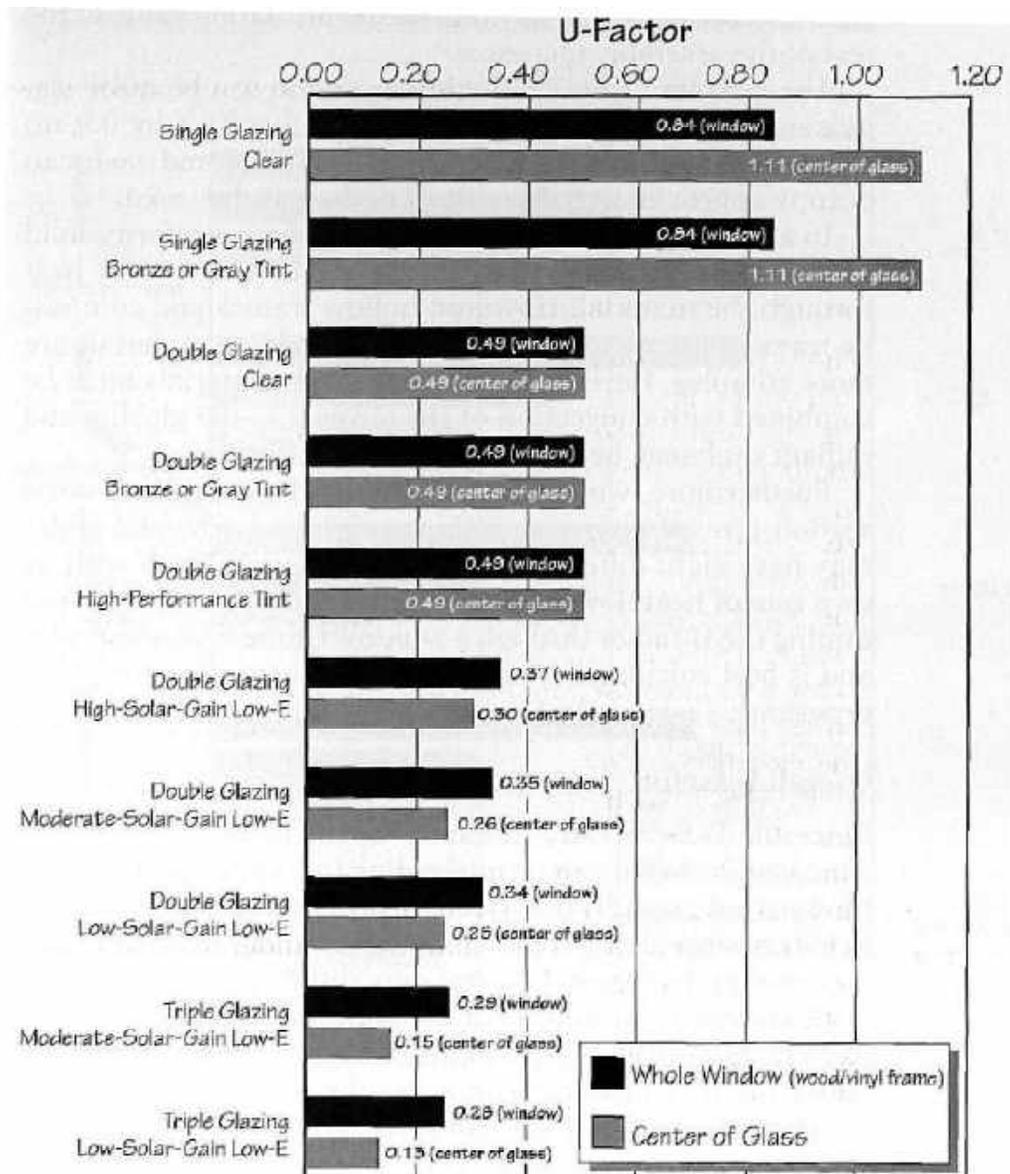


Examples of Conduction would be the heat that you feel if you put your hand up to the glass of a window on a warm day. Similar to convection, conduction requires an object through which to move. Radiation is heat or energy that doesn't require air or a solid object to move. You can feel radiant heat flow from one's own person, and all physical objects radiate energy. Generally, radiant energy you feel is from the hottest object in the area.



# U-Factor

U-factor (U-value) is the measurement of all the heat loss through a window. This includes all three of the forms of heat transfer: convection, conduction, and radiation. Generally, U-factor is measured in America by the number of BTUs per hour per every square foot of the window. The lower the U-factor of the window the better window is equipped in resisting heat transfers.

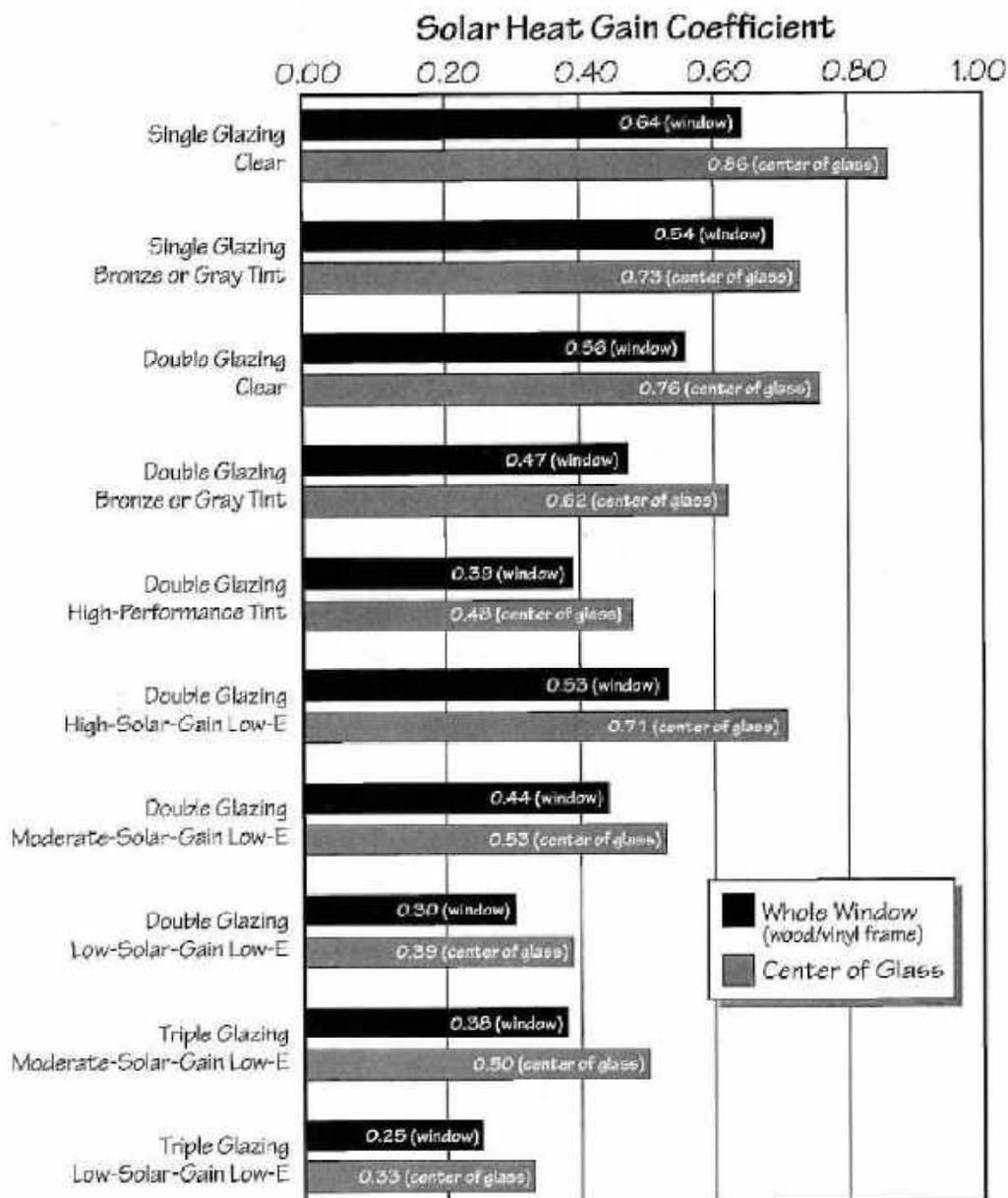


The U-factor of a window is also related to the type of windows that the consumer is purchasing. For instance, a single pane window with glazing will have a higher U-factor than a triple pane with moderate Low-E. Currently, U-factor is measured by the factory and provided in the information that comes with the window. At the time of writing, there exists no hand-held test equipment that can measure U-factor because the window in its entirety, including the frame and the glass, must be measured.



## Solar Heat Gain Coefficient

Solar Heat Gain Coefficient (SHGC) measures the amount of radiation that can pass through the entirety of the window (glass, frame, etc.) Although the measurement of solar radiation has in the past depended on the Shading Coefficient, most measurements presently are given in SHGC.



The unit of measure for SHGC is a number between 0-1. Whether a consumer will desire windows with a higher or lower SHGC value will largely depend on their location in the country. For instance, a high SHGC in the South may result in higher energy bills as compared to the North where the higher SHGC will result in lowered energy costs over the year. Therefore, it is important to be able to measure SHGC. EDTM's WP4500 is able to provide a measurement which can estimate the SHGC value of a window.



## **Shading Coefficient**

Shading Coefficient is similar to SHGC in that it attempts to measure the level of heat that passes through a window. However the measurement is taken only through the glass and does not include a measurement of the frame. Shading Coefficient has several problems that can lead to inaccurate measurements and therefore is falling into disuse in the industry. The Shading Coefficient is a number between 0-1 with the higher values indicating a higher solar gain. It is possible to convert shading coefficient to an approximate Solar Heat Gain Coefficient (SHGC) value. Simply multiply the Shading Coefficient by 0.87. The result will give an approximate value in SHGC.

## **Air Leakage**

Air Leakage or infiltration is the unregulated and unwanted admittance of air through a window. The result can be a significant increase in the cost of heating and cooling homes. Due to this, it is necessary to have well-fitting windows that minimize air leakage. Air leakage can also be affected by wind conditions in the area or how well the window is protected from the local weather. Various hand-held meters are able to measure the level of air leakage through a window. Draft sensors can be used to determine whether there is unwanted air leakage around a window.

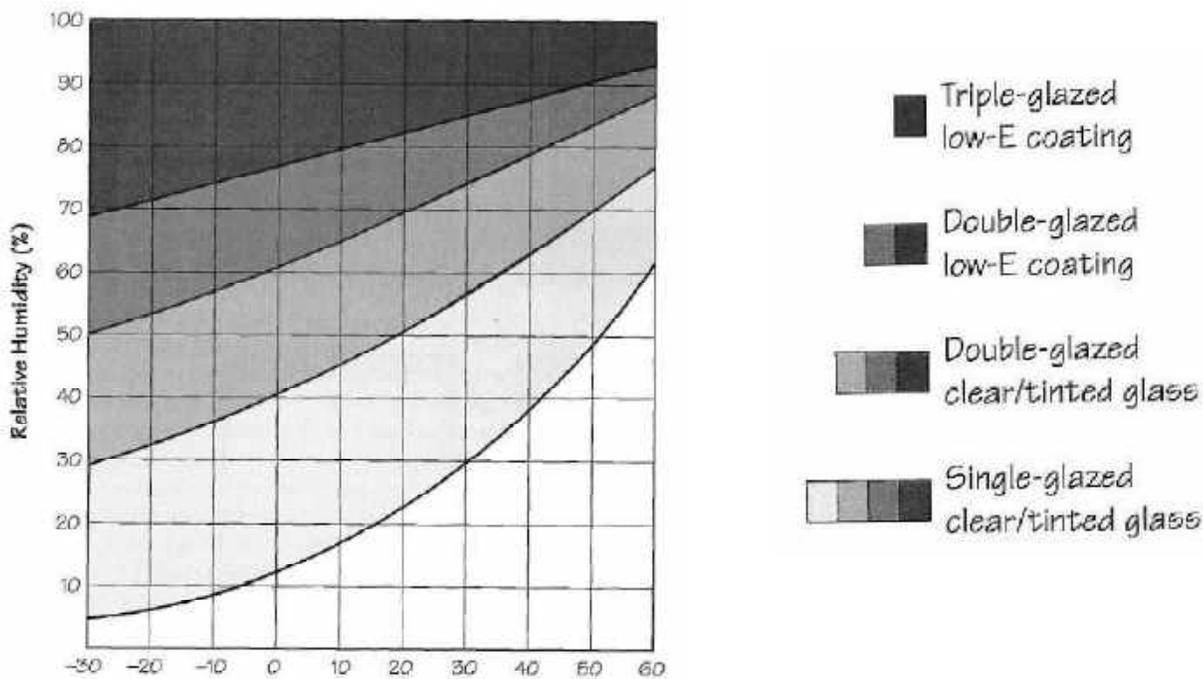
## Visible Transmittance

Visible Transmittance is the measurement of the amount of visible light that will go through a window. Various factors can affect the amount of visible light that will go through a window including the number of panes a window possesses and the type of glazing that are on the panes of glass. Visible Transmittance is measured in decimals between 0-1. Generally, the higher the level of glazing, an increase in the number of panes of glass (i.e. single, double, or triple pane), or a higher level of low-E on the window will all decrease the amount of visible transmittance for a window. The WP4500 is an excellent unit to measure visible light transmittance.



## Condensation

Condensation is the accumulation of water on the glass of a window. There are two forms of condensation that the window engineer needs to be concerned about. The first is interior condensation. Interior condensation is condensation that occurs on the inside of the window between the panes. The cause of this is moisture being

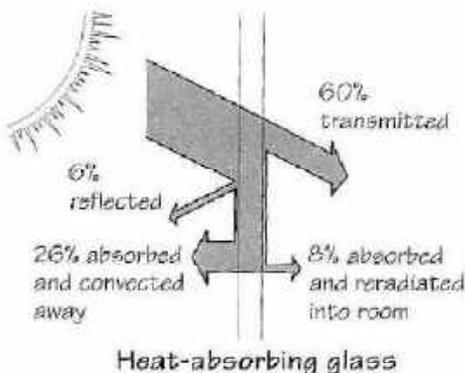
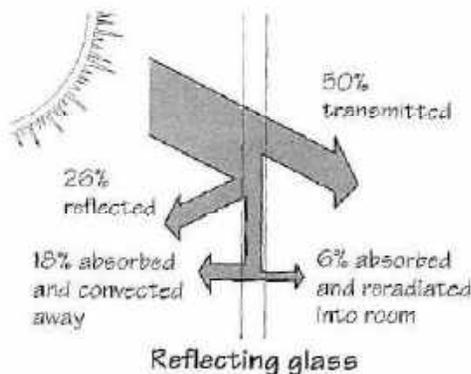
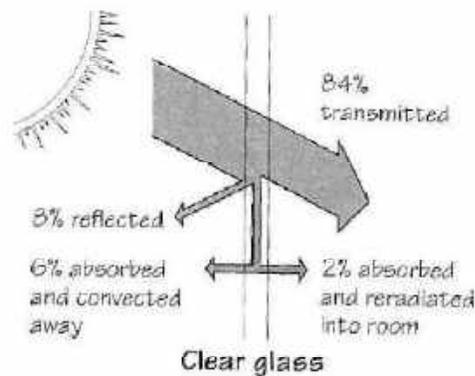


inside window at the time of its creation or the window seal breaking. There is currently no meter that is able to measure whether there will be condensation on the inside of a window. The second is exterior condensation. Exterior condensation occurs on the outside of the window and is the result of cooler temperatures outside the house and a high level of humidity in the house. The result is water build up on the windows which can lead people to suspect that the window is leaking. The

problem is easily fixed with a decrease of the humidity in the house. Whether there will be exterior condensation is directly related to the type of windows the customer has, the number of panes the window is made from, and the level of humidity in the house. A simple solution to the problem is to provide the customer a Thermo-Hygrometer (TH1900) which measures the level of humidity in the house and would allow the customer to regulate their homes humidity. It is important to catch exterior condensation quickly due to the damage that can happen to walls and flooring.

## Types of Glass

There are three types of glass that the window engineer needs recognize: clear, reflecting, heat absorbing. Clear glass is a common non-treated glass that is not designed with the express purpose of lowering SHGC or reflecting radiation and light away from the building. Reflecting

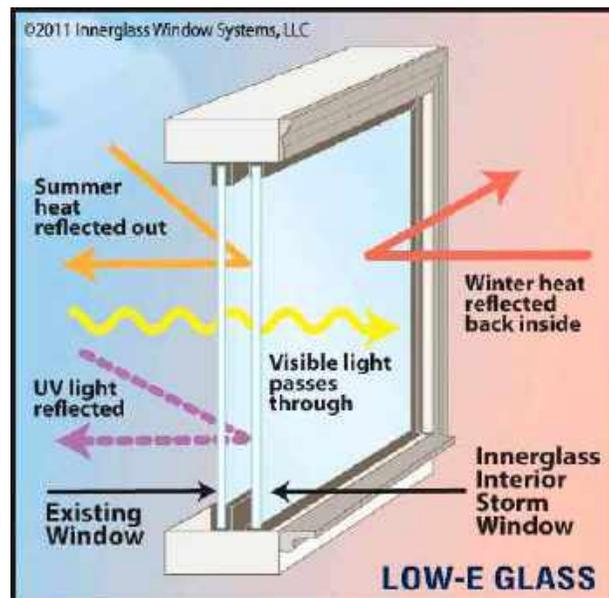


glass is designed with the express purpose of reflecting either infrared energy or solar gain away from the building. This glass is made by metallic products being added to the glass. The glass tends to reflect heat back into the building and can lower heating and cooling costs. Heat absorbing glass is designed to absorb solar energy. It is often tinted in gray or blue-green colors and absorbs part of the energy of the sun. The goal of the window is to reduce the effort it takes to cool a building. Clear and reflecting glass can be measured with an EDTM Glass-Chek ELITE.



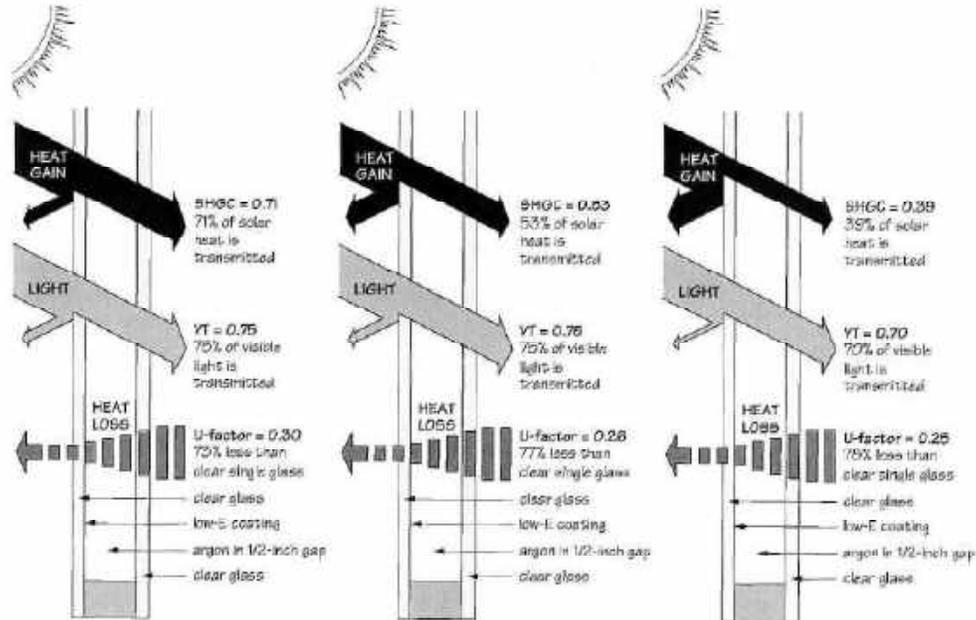
## Low-E Coatings

Low-E stands for Low-Emittance coatings which is a glaze designed to allow windows to specialize in their ability to handle SHGC, U-factor, and visible light. The result of adding a coat of Low-E can have the same value as adding another pane of glass to the window without the cost. There are three forms of Low-E



coating: High-Solar-Gain, Moderate-Solar-Gain, and Low-Solar Gain. High-Solar-Gain Low-E is designed to handle windows that will deal with a high level of heat such as a south-facing window or windows in the South. Low-Solar-Gain Low-E windows are designed for the exact opposite situation and are meant to have a low SHGC value and a low U-Factor value. These windows are designed for northern climates that have to deal with cool temperatures. Moderate-Solar-Gain Low-E is a combination of the two and specializes in handling

climates that have to deal with fluctuations between hot and cold weather. Meters able to measure Low-E would be EDTM's Glass-Chek ELITE.



## Logos

### Energy Star Label

The Department of Energy and the Environmental Protection agency devised a logo to mark out energy efficient windows that meet the organization's standards. Since windows have become so specialized in their applications and climates the Energy Star Label is placed on windows and doors for the consumer's peace of mind.



## **National Fenestration Rating Council**

The National Fenestration Rating Council (NFRC) is a non-profit organization that rates the entirety of a window. The labels they place on windows provide the U-Factor, Solar Heat Gain Coefficient, Visible Transmittance, Air Leakage, and the Condensation Resistance of a window.



## **Types of Buyers**

In the Window industry there tend to be two types of buyers that the savvy sales engineer needs to be prepared to address.

### **Analytical Buyers**

Analytical Buyers tend to be more focused on the numbers. How much money will these windows save me? Precisely how much more solar transmissions is your window able to stop as compared to the competition? are questions that you will hear from these buyers. To address customers with this tendency in mind it is optimal to use sales meters that aim at their interests. Meters that would fit this mark would be instruments like the WP4500, BTU meter, and an infrared camera which all focus on the technical side of windows.

### **Sensory Buyers**

Sensory Buyers tend to be the exact opposite of the Analytical buyer. Instead of being interested in the windows and the corresponding number values, Sensory buyers prefer to see the heat or cold that their window will be stopping. Excellent tools to keep the sensory buyer engaged in your sales presentation would be the EDTM heat lamp, heat sheet, and cold spray.

## Tools for the Field

### Window Energy Profiler (WP4500)

The WP4500 displays four real-time measurements of windows: the estimated SHGC value, UV, Visible Light, and Infrared Transmission values.



The WP4500 allows for all these tests to be done while the windows are still in their frame. The WP4500 allow for the customer to be able to "see" those qualities in your window that cannot be seen by the eye alone (Low-E). Excellent unit for appealing to analytical buyers.

### Temperature Gun with Laser Pointer (MT1575)

The Temperature Gun, when used on bright, sunny days, demonstrates the damaging solar and heating affects the sun has on the customer's furniture, rugs, etc which the present windows are failing to stop. Like the WP4500 the temperature gun gives a visible view to invisible

dangers. The SP2065 Solar Transmission Meter and Infrared Heat Lamp can be used together with the Temperature Gun very effectively to show how new windows and films will protect the buyer from solar rays.



### **Glass Sample Set (GS1331-1333)**

Glass Sample Sets allow for an easy demonstration of the benefits of various types of windows and various types of glazing. Want to show your customer why a triple pane window has a better insulation value than a double pane window? Is customer curious whether Low-

E windows actually have a superior energy level? Use a glass sample set to make any of these questions clear.



The glass sample set cooperate with other pieces of sales equipment such as the infrared heat lamp, the Solar Transmission and Power Meter, or the Heat Sheet to create a vivid demonstration for the buyer.

### **Infrared Heat Lamp (HL1040 & 2040)**

The sun's radiation accounts for 70% of the homeowner's heating and cooling bill. While cold spray demonstrations show the secondary effect of conduction, the heat lamp provides a clear demonstration of the sun's rays passing through a window.



Demonstrate the concept of a hot sun (heat lamp) being controlled by low-e coated windows through our infrared heat lamp. Use to assist in both analytical and sensory sales.

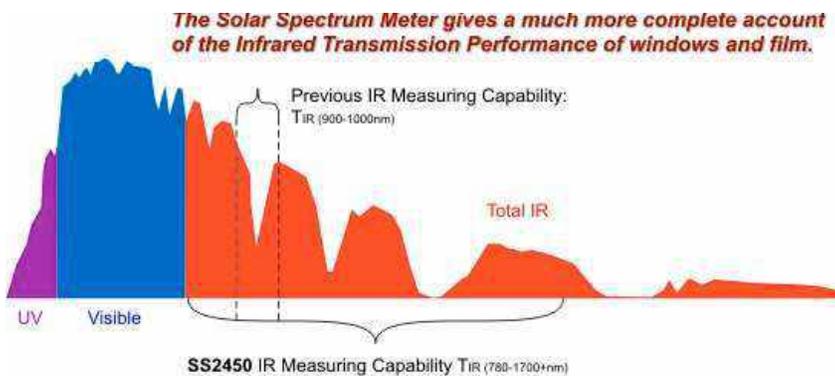
### **Solar Transmission and Power Meter (SP2065)**

The SP2065 has become a very popular staple of sales kits in the window and film industries because it is easy to use, and it displays a distinct and tangible difference between the energy performance of older windows and energy efficient replacement windows. Sales engineers are able explain complicated concepts in simple language to there customer through the use of Solar Transmission Percentages. For those customers who prefer to deal with BTU or Watts measurements, the SP2065 meter can easily be switched to these modes to measure incident solar energy. Excellent unit for analytical buyers.



## Solar Spectrum Meter (SS2450)

By using patented technology, the SS2450 effectively recreates the sun's solar spectrum within the meter. The biggest shortcoming with previous instruments of the Solar Spectrum Meter family was they only measured a small portion of the infrared transmission performance of glass or film. These previous instruments used a cost effective method of only showing performance in the 900 to 1000nm IR range. While these tools have been helpful in communicating energy performance, they haven't been telling the whole story. Using its patented technology, the Solar Spectrum Transmission Meter has greatly surpassed previous meters by displaying 780 to 1700nm+ as shown in the illustration below. The final "bump" of energy you see on the far right hand side of the chart accounts for less than 5% of the Solar spectrum. Allows a sales speech to be further specialized to focus on Analytical buyers.



## **HEAT-SHEET Demo Card (HS2050)**

The "HEAT-SHEET" Temperature Demo Card vibrantly changes color when it encounters heat. To demonstrate the heat-blocking capabilities of your glass or film and give the prospective a hands on experience with the new windows and use the Heat Sheet Demonstration Card in combination with a heat lamp. The visual demonstration makes a great addition to the tangible performance data shown with many of our other sales tools and give a personalized experience for sensory customers.



## **Glass-Chek ELITE (GC3200)**

The Glass-Chek ELITE is capable of locating Low- E coating on a double pane window from a single side. This is a major advantage while testing multi-story

buildings where you only have access to the inside of the window. Show your customer when the windows are installed that they are receiving precisely what they ordered. Dispel any final questions about the quality of the windows your company provides.



### **Infrared Camera (E4IR & C2IR)**

Use the E4IR or C2IR to demonstrate the outstanding performance your building product offers, and then use



the same instrument to analyze the customers existing building. Images can be stored and later downloaded

conveniently from the camera. Great tool for both analytical and sensory buyers.

### **LIFETILE Temperature Target (LT1910-1915)**

LIFETILE Temperature Targets make your heat lamp sales demonstration turn into a "real life" demonstration indoors. Simply place the tiles in front of your heat lamp in the Acrylic stand and bring the performance of your product to life.



The LIFETILE can also provide an easy comparison between a lesser performing product and your own energy efficient product. By doing this you are able to show how you control the temperatures inside an office space or residential homes. The temperature target behind the clear or uncoated window sample will increase in temperature instantly, while the target behind

your energy efficient product will remain near room temperature, bringing your window performance to life. The LIFETILES do a great job of collecting the heat that is transmitted through the windows. LIFETILES come in three different settings: Office Space, Automotive, and Residential settings. Customize your presentation even further for the benefit of your customer.

### **Freeze Spray for Seal Failure & Demonstrations (FS2060)**

EDTM Freeze Spray lowers component temperatures to -65°F (-54°C). The spray can be used to demonstrate the effectiveness of your energy insulating products, by showing how thermal conductance is minimized in your windows. The use of Freeze Spray can provide a clear comparative visual of both your own and competitors products. Excellent for sensory demonstrations.



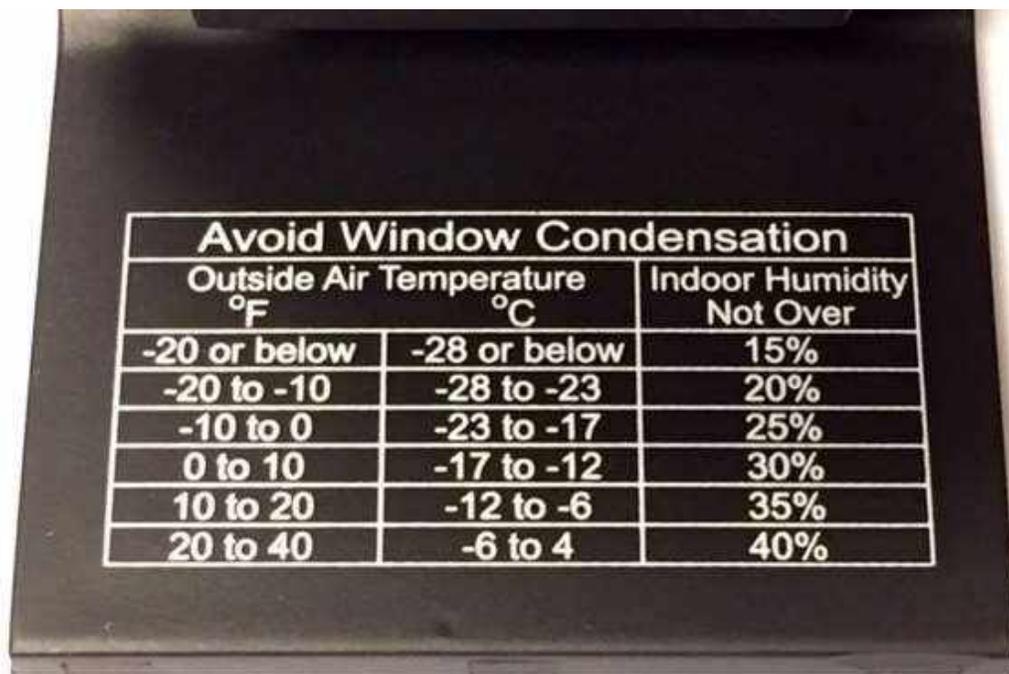
## **Thermo-Hygrometer (TH 1900-1901)**

Every winter, the phone starts ringing with customers complaining about condensation on their new windows! The problem is usually not a window defect but rather the high humidity inside homes compared with the low temperatures outside.



The TH1900 Thermo-hygrometer will accurately measure the relative humidity in the home, making it easy for the homeowner to self-diagnose their humidity levels which can drastically reduce expensive service calls. It's in a window manufacturer and homeowner's best interest to be pro-active and use an inexpensive

EDTM Thermo-hygrometer to catch and treat condensation on windows in the home. Condensation is a danger for homes but easily treatable with the Thermo-hygrometer.



Avoid Window Condensation		
Outside Air Temperature		Indoor Humidity Not Over
°F	°C	
-20 or below	-28 or below	15%
-20 to -10	-28 to -23	20%
-10 to 0	-23 to -17	25%
0 to 10	-17 to -12	30%
10 to 20	-12 to -6	35%
20 to 40	-6 to 4	40%

## Products and Time of Use List

It is important for the sales engineer to be able to customize his presentation to fit both the time of year and weather conditions that he is faced with. Below is a list of the sales products of EDTM and their corresponding restrictions due to weather, season, or time of day.

<b>Product Number</b>	<b>Season</b>	<b>Weather</b>	<b>Time of Day</b>
WP4500	All Seasons	All Weather	All times
MT1575	All Seasons	Sunny	Mid-Day
GS1331-1333	All Seasons	All Weather	All times
HL1040 & 2040	All Seasons	All Weather	All times
SP2065	All Seasons	All Weather	All times
SS2450	All Seasons	All Weather	All times
HS2050	All Seasons	All Weather	All times
GC3200	All Seasons	All Weather	All times
E4IR (exterior use)	Winter	All Weather	Evening
E4IR (interior use)	All Seasons	All Weather	All times

C2IR (exterior use)	Winter	All Weather	Evening
C2IR (Interior use)	All Seasons	All Weather	All times
LT1910- 1915	All Seasons	All Weather	All times
FS2060	All Seasons	All Weather	All times
TH 1900- 1901	All Seasons	All Weather	All times

# Notes

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