



*Bringing Quality  
To Light*

# WARNING

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# Soft-Lite Training Session Testing and Associations



*Bringing Quality  
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**Soft-Lite**<sup>®</sup>  
Windows

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Rev. 111507

# What Makes a Great Window?

- Energy Efficiency
- Durability
- Maintenance Free
- Easy to Operate
- Strong Warranty
- Reliable,  
Established Mfg  
and Installation



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# How To **MEASURE QUANTIFY DEFINE**

## What Makes a Great Window?

**THIRD-PARTY  
INDEPENDENT  
CERTIFICATION:**

1. AAMA
2. NFRC
3. Energy Star

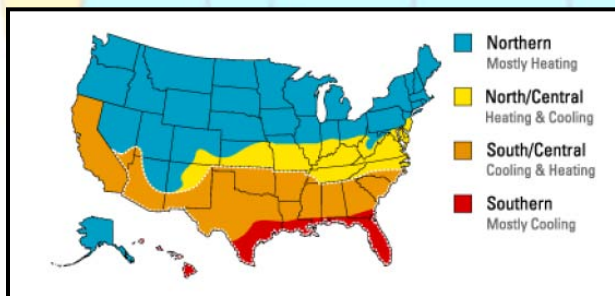


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# What is Energy Star?

1. Energy Star measures **NOTHING!**
2. It uses NFRC overall window thermal test results
3. It assigns U-Factor and SHGC "Zones"
4. To date, ignores AAMA Air, Water, and Structural results



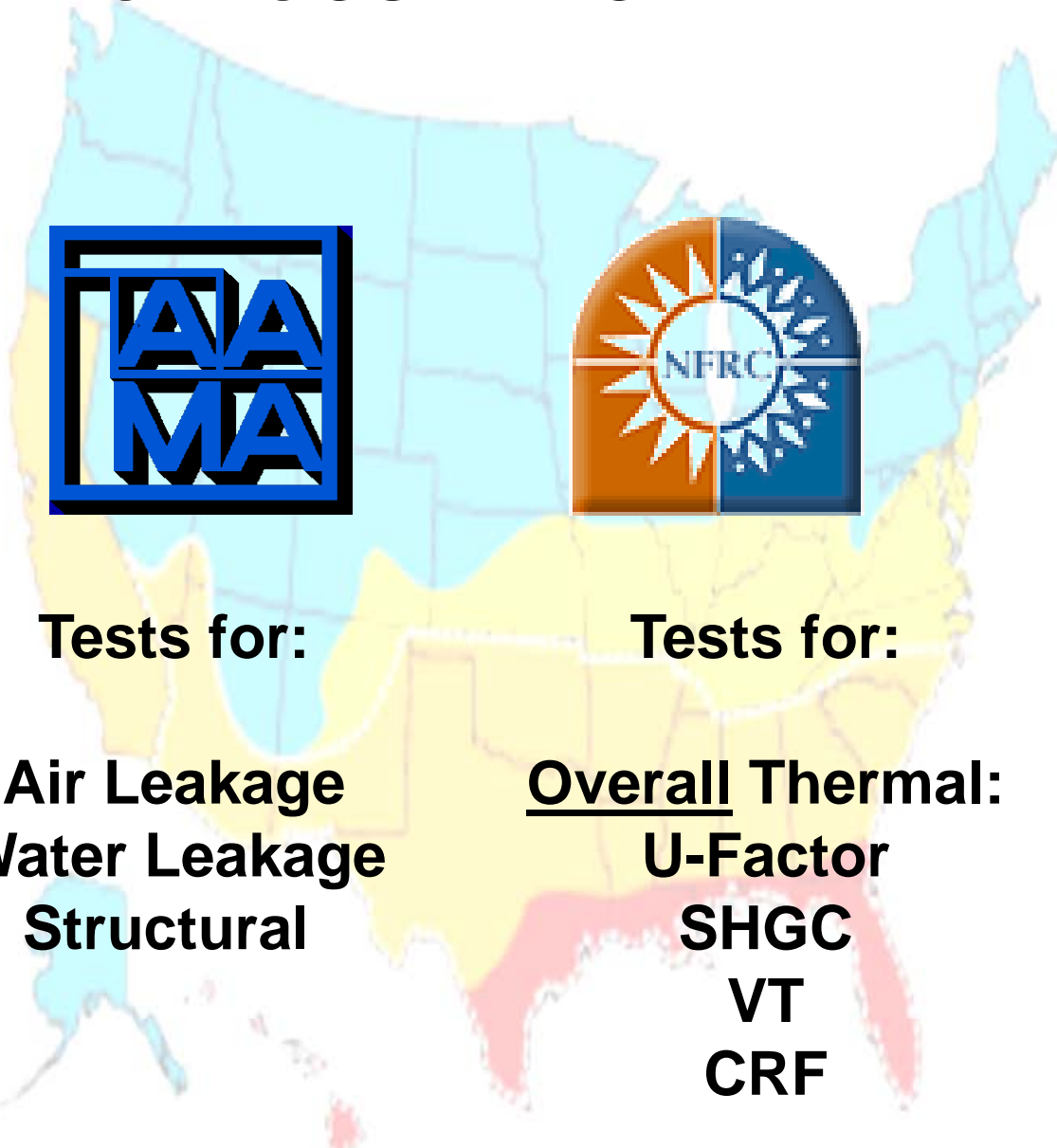
**.35** U-Factor Baseline (N. Zone)  
**53%** of all Windows Meet Criteria  
**47%** Fail (Rev. 100607)

- A. NFRC sets the thermal rules; test formula
- B. Independent labs apply for license to execute tests
- C. NFRC does not measure what AAMA measures
- D. AAMA does not measure what NFRC measures

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# Who Does What:

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**Tests for:**

**Air Leakage  
Water Leakage  
Structural**



**Tests for:**

**Overall Thermal:  
U-Factor  
SHGC  
VT  
CRF**

Northern  
Mostly Heating



**NO TESTS**

South/Central

**Sets Codes  
Using NFRC**

# AAMA Gold Label Certified

## Best of the Best

### The AAMA Authorized Label

Our symbol of certification, your sign of performance.

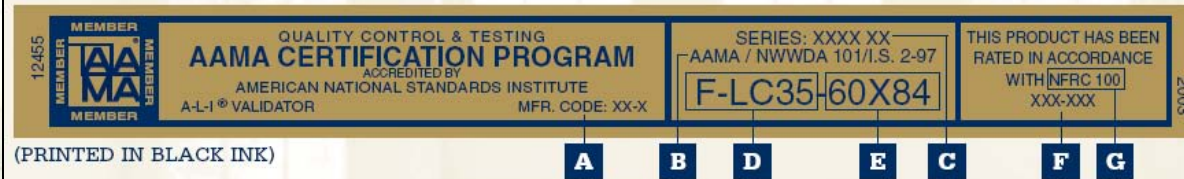
When windows and glass doors carry these labels, it's a sign that they have met all the requirements of AAMA's Certification Program.

#### PRIME & REPLACEMENT LABEL (AWS ONLY)



(PRINTED IN BLACK INK)

#### PRIME & REPLACEMENT LABEL (AWS & THERMAL)



(PRINTED IN BLACK INK)

#### PRIME & REPLACEMENT LABEL (THERMAL ONLY)



(PRINTED IN BLACK INK)

### KEY

- A** Manufacturer's Code Number. Code number is required, but manufacturer may also show company name.
- B** Air, Water, Structural Specification Identification
- C** Manufacturer's Series Number
- D** Product Type, Performance Class (design pressure), and Performance Grade
- E** Maximum Size Tested
- F** NFRC - assigned manufacturer's code and product line number
- G** Thermal Specification Identification



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# AAMA Gold Label Certified: *Best of the Best*



**(WE WILL RETURN TO THIS SLIDE FOR DETAILS LATER)**

Only windows that are certified under both AAMA and NFRC can carry the AAMA Gold Certification label which requires that the manufacturer is ***subject to surprise inspections*** to ensure that windows are made in compliance with AAMA and NFRC certification programs.

*\*Look inside the head of the frame of the window*

**WARNING!**

**If the AAMA label is not affixed to the window it is not a Certified Window!**

American Architectural Manufacturer's Association  
National Fenestration Rating Council





# AAMA Window Certification



- Three Tests Are Required:
  - **Air** Leakage
  - **Water** Resistance
  - **Structural** Strength (“DP”)
- Air leakage is “pass” or “fail”
- To be certified a window must have an official AAMA certification label affixed to the window from the factory of origin.
- AAMA **Gold Label** is the highest possible certification.
- Results are currently ignored by the Energy Star Program. This is expected to change 2008-2010.

American **A**rchitectural **M**anufacturer’s **A**ssociation

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# Window Test Specimen Sizes

Residential:



Light Commercial:



Laboratory Window Testing



44"x60" Structural (DH) - AAMA  
44"x77" Structural (DH) - AAMA  
72"x54" Structural (XO) - AAMA

36"x60" Small Thermal - NFRC  
48"x72" Large Thermal - NFRC

**WARNING!**

**Ask for the size of the specimen tested.  
Smaller windows test better.**

**Buyer Beware!**

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Windows

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# AAMA Air Leakage Test



- **25 mph** (disregard 15mph test)
- Any window with an air infiltration number above **0.30** cfm fails this test
- The lower the number, the less drafts and air infiltration into your home
- **Elements™** Window at **.01** is **THIRTY TIMES BETTER** than the minimum standard
- Windows with high air leakage (“AL”) will waste more energy and cost you money

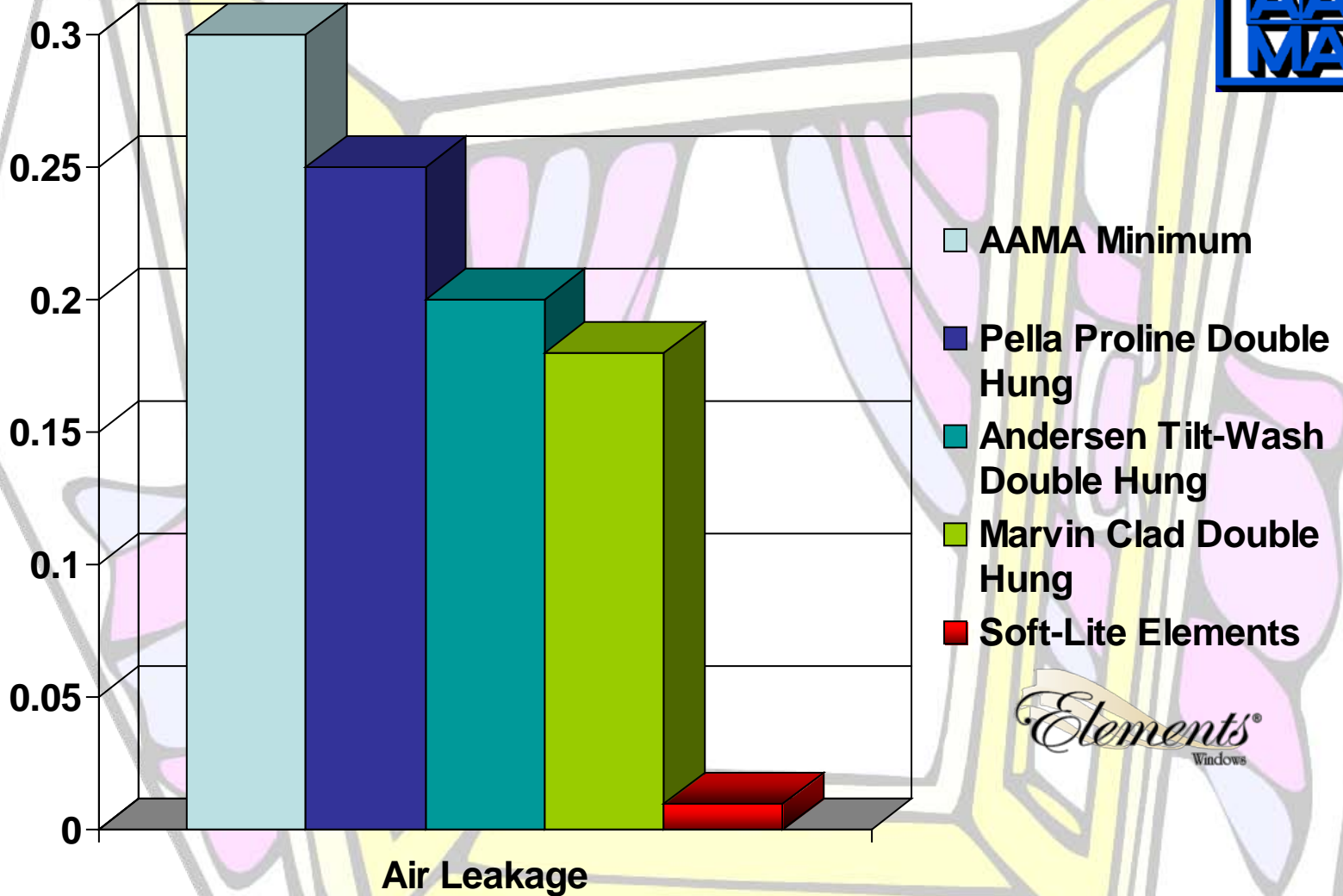
American Architectural Manufacturer's Association

The Elements Windows logo features the word 'Elements' in a large, elegant, cursive script font, with 'Windows' in a smaller, sans-serif font below it. A stylized window frame graphic is integrated into the background of the text.

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Windows

# Air Leakage Results



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# AAMA Water Leakage



- The window is subjected to **8 inches of rain per hour** and increasing wind loads until water leaks *through* the window
- The minimum standard is **33 mph**
- The ***Elements***™ withstands **59 mph - 70% BETTER** than the minimum standard



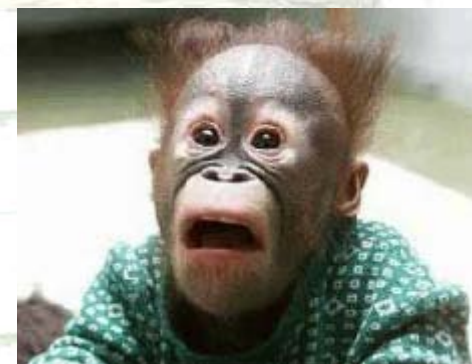
American Architectural Manufacturer's Association

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# AAMA Uniform Load Structural Test

- Increasing wind is blown against the window until it breaks
- The minimum standard is that a window must withstand **94 mph** winds before it breaks
- The *Elements*™ withstands **203 mph** winds - **MORE THAN DOUBLE** the minimum standard



"Wow! That's a durable window!"

*Elements*®  
Windows

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Soft-Lite®  
Windows

# Overall AAMA Rating

American Architectural Manufacturer's Association

<u>Water Resistance</u> Does not leak under equivalent of 8" of rain per hour pressured under a wind load of:	<u>AAMA Residential Rating</u> Set by the lower score of either water or DP test results:	<u>Uniform Load</u> <u>"Design Pressure" (DP)</u> Wind load the window can withstand before breaking:
33 mph	R15	94 mph
34 mph	R20	108 mph
38 mph	R25	121 mph
42 mph	R30	131 mph
45 mph	R35	143 mph
48 mph	R40	153 mph
51 mph	R45	162 mph
54 mph	R50	171 mph
56 mph	R55	180 mph
<b>59 mph</b>	<b>R60 LC60</b>	187 mph
62 mph	R65	195 mph
64 mph	<b>R70 LC70</b>	<b>203 mph</b>
66 mph	R75	210 mph
69 mph	R80	217 mph

*Low End*

*Mid Range*

*High End*

*Elements<sup>®</sup>  
Windows*

Remember, the lower of either Water or Uniform Load (Structural Design Pressure) results determine Residential Rating!  
"DP" results are only one of the three AAMA tests (air, water, structural). "DP" ignores water resistance test results.



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# Overall Energy Performance Labels



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## Washing Machines:

PL 305, App. K  
Clothes Washer  
Capacity: Compact

16 CFR Ch. I (1-1-94 Edition)  
(Name of Corporation)  
Model(s) SL301, SL309

# ENERGYGUIDE

Estimates on the scale are based on a national average electric rate of 4.9¢ per kilowatt hour and a natural gas rate of 36.7¢ per therm.

Only compact size clothes washers are used in the scale.

Electric Water Heater      Gas Water Heater

Model with lowest energy cost: \$22

Model with highest energy cost: \$67

**\$58** THIS MODEL

Model with lowest energy cost: \$20

Model with highest energy cost: \$24

**\$22** THIS MODEL

Estimated yearly energy cost

Your cost will vary depending on your local energy rate and how you use the product. This energy cost is based on U.S. Government standard tests.

How much will this model cost you to run yearly?

Loads of clothes per week	with an electric water heater					Cost per therm (100 cubic feet)	with a gas water heater					
	2	4	6	8	12		2	4	6	8	12	
Estimated yearly \$ cost shown below												
Cost per kilowatt hour	2¢	\$7	\$14	\$21	\$29	\$47	10¢	\$2	\$4	\$6	\$8	\$12
	4¢	\$14	\$29	\$43	\$57	\$85	20¢	\$4	\$8	\$12	\$16	\$24
	6¢	\$21	\$43	\$64	\$86	\$129	30¢	\$6	\$11	\$17	\$22	\$34
	8¢	\$29	\$57	\$86	\$114	\$172	40¢	\$8	\$15	\$23	\$33	\$46
	10¢	\$35	\$71	\$107	\$143	\$214	50¢	\$10	\$19	\$29	\$43	\$58
	13¢	\$43	\$85	\$128	\$172	\$256	60¢	\$12	\$22	\$34	\$44	\$68

Ask your salesperson or local utility for the energy rate (cost per kilowatt hour or therm) in your area, and for estimated costs if you have a propane or oil water heater.

Important: Removal of this label before consumer purchase is a violation of federal law (42 U.S.C. 6322)

SAMPLE LABEL (Part No. 829962)

## Windows:

ENERGY STAR® Qualified in Highlighted Regions

ENERGY STAR

NFRC

Soft-Lite Windows  
Bringing quality to light.

VINYL DOUBLE HUNG ELEMENTS

Triple Glazing, Krypton Fill, Low-E

ENERGY PERFORMANCE RATINGS

U-Factor (U.S./IP) **0.16**

Solar Heat Gain Coefficient **0.24**

ADDITIONAL PERFORMANCE RATINGS

Visible Transmittance **0.40**

Condensation Resistance **73**

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. Contact manufacturer's literature for other product performance information.

(Actual Elements NFRC label)

National Fenestration Rating Council



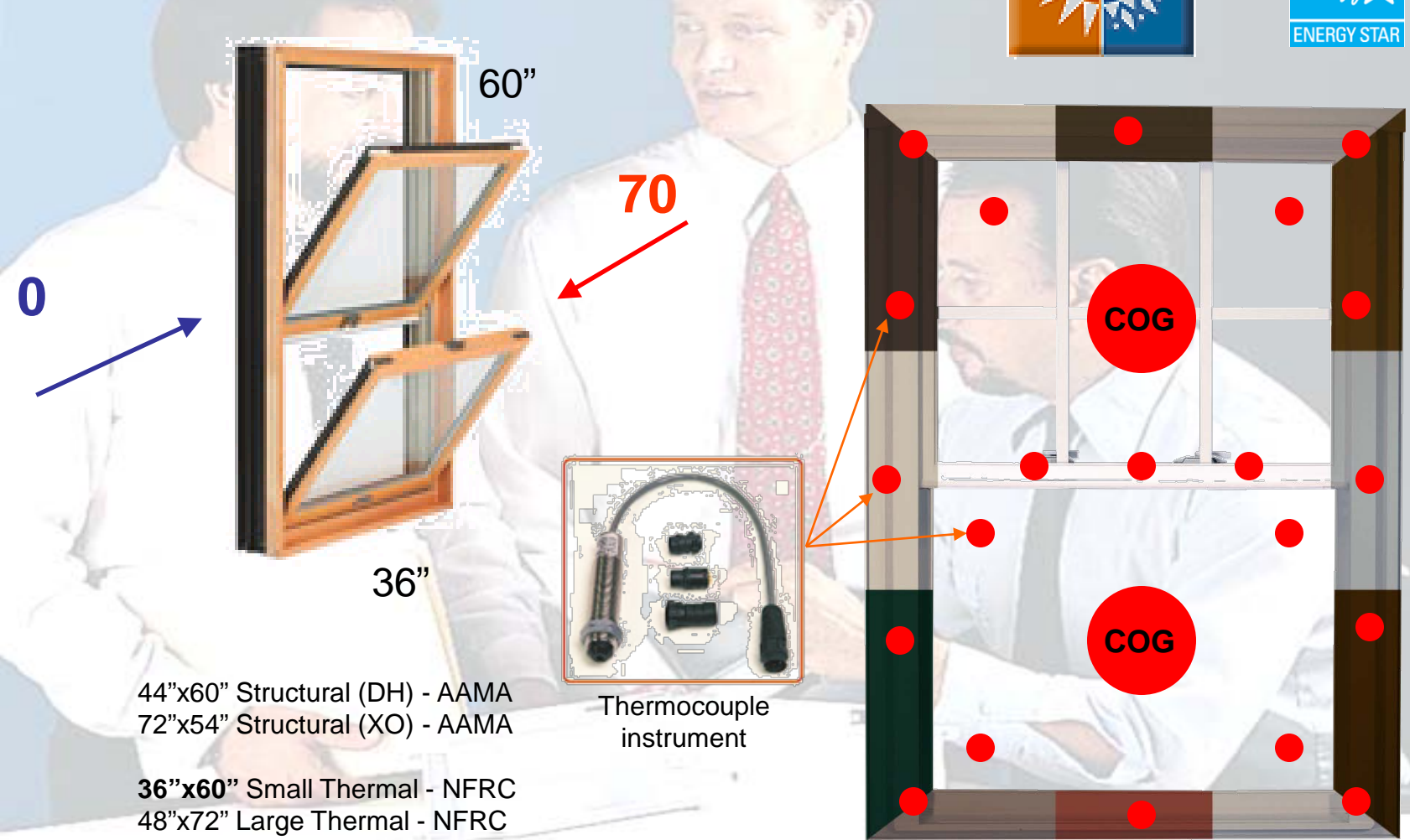
# Window Test Specimen OVERALL – Thermal



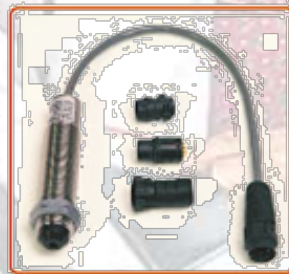
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Soft-Lite®  
Windows

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- 44"x60" Structural (DH) - AAMA
- 72"x54" Structural (XO) - AAMA
- 36"x60" Small Thermal - NFRC
- 48"x72" Large Thermal - NFRC



Thermocouple instrument

National Fenestration  
Rating Council

**COG** – Thermo-coupler at Center Of Glass ("COG" ONLY)  
**●** – Thermo-couplers compute OVERALL window thermal performance per NFRC (U-value) standards

1/R-factor = .U-factor

1/.U-factor = R-factor

(1 0.16 U = R 6.25)

The U-factor (U-value) measures the rate of heat loss or how well a product prevents heat from escaping. U-factor ratings generally fall between **0.20 and 1.20**. The lower the U-factor, the greater a product's resistance to heat flow and the better its insulating value. The lower the U-Factor the less heat you will lose through that window which means you'll use less energy in winter to heat your home, saving you more money.



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**ENERGY STAR® Qualified in Highlighted Regions**

	<b>Soft-Lite® Windows</b> Bringing quality to light. <b>VINYL DOUBLE HUNG ELEMENTS</b> Triple Glazing, Krypton Fill, Low-E
<b>ENERGY PERFORMANCE RATINGS</b>	
U-Factor (U.S.) (I-P) <b>0.16</b>	Solar Heat Gain Coefficient <b>0.24</b>
<b>ADDITIONAL PERFORMANCE RATINGS</b>	
Visible Transmittance <b>0.40</b>	Condensation Resistance <b>73</b>
<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. <a href="http://www.nfrc.org">www.nfrc.org</a></small>	

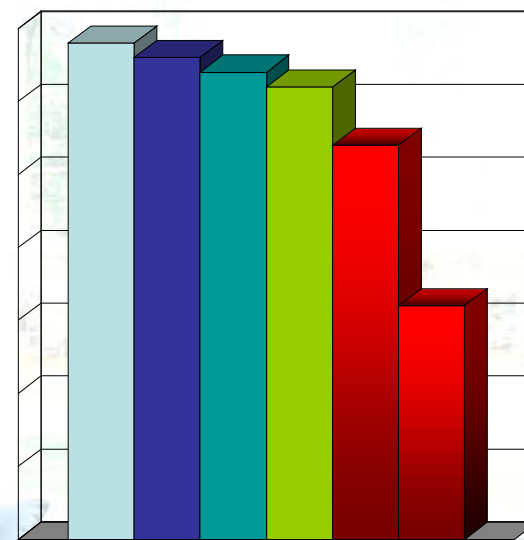
(Actual Elements NFRC label)

National Fenestration Rating Council

# U Factor Comparison



<p><b>Marvin Clad</b> Ultimate DH (CPD Mar-N-276-00004)</p>	<p>Double Pane/Triple Pane .34/?</p>
<p><b>Pella Fiberglass</b> DH (CPD Pel-N-102-00005)</p>	<p>.33/?</p>
<p><b>Pella Wood DH</b> (CPD Pel-N-34-00151)</p>	<p>.32/?</p>
<p><b>Andersen Renewal DH</b> (CPD And-N-29-00061)</p>	<p>.31/?</p>
<p><b>Soft-Lite Elements™ DH</b></p>	<p><b>.27/.16</b></p>



**National Fenestration Rating Council**

From published company literature and NFRC  
Best available performance shown per product  
As of January 12-20, 2007

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# Solar Heat Gain Coefficient

Keyword: "Shade"

The solar heat gain coefficient (SHGC) measures how well a product blocks heat caused by sunlight. The SHGC is expressed as a number between 0 and 1. The lower the SHGC, the less solar heat is transmitted through the window which means in summer, a window with a lower SHGC will admit less solar radiation. Your home will remain cooler and your air conditioner will not have to work as hard saving you money.



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Windows

**ENERGY STAR® Qualified in Highlighted Regions**

**ENERGY STAR**

**Soft-Lite®**  
Windows  
*Bringing quality to light.*

**VINYL DOUBLE HUNG ELEMENTS**  
Triple Glazing, Krypton Fill, Low-E

ENERGY PERFORMANCE RATINGS	
U-Factor (U.S.) (I-P)	Solar Heat Gain Coefficient
<b>0.16</b>	<b>0.24</b>
ADDITIONAL PERFORMANCE RATINGS	
Visible Transmittance	Condensation Resistance
<b>0.40</b>	<b>73</b>

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.

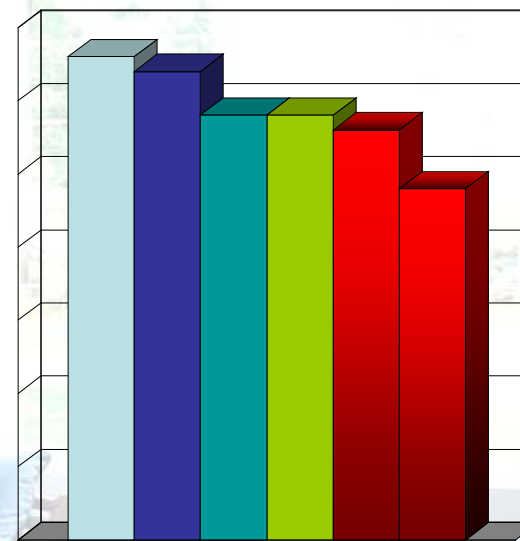
(Actual Elements NFRC label)

**National Fenestration Rating Council**

# SHGC Comparison



<p><b>Andersen Renewal DH</b> (CPD And-N-29-00061)*</p>	<p>Double Pane/Triple Pane .33/?</p>
<p><b>Pella Wood DH</b> (CPD Pel-N-34-00151)*</p>	<p>.32/?</p>
<p><b>Marvin Clad Ultimate DH</b> (CPD Mar-N-276-00004)*</p>	<p>.29/?</p>
<p><b>Pella Fiberglass DH</b> (CPD Pel-N-102-00005)*</p>	<p>.29/?</p>
<p><b>Soft-Lite Elements™ DH</b></p>	<p><b>.28/.24</b></p>



- Andersen Renewal
- Pella Wood
- Marvin
- Pella Fiberglass
- Elements (2)
- Elements (3)



**16.7%**

**National Fenestration Rating Council**

From published company literature and NFRC  
Best available performance shown per product

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# Visible Transmittance of Light



Keyword: “Clarity”

Visible transmittance (VT) measures how much light comes through a window. VT is expressed as a number between 0 and 1. The higher the VT, the more visible light is transmitted through the window

**ENERGY STAR® Qualified in Highlighted Regions**



**NFRC**  
National Fenestration Rating Council

**Soft-Lite® Windows**  
Bringing quality to light.

**VINYL DOUBLE HUNG ELEMENTS**  
Triple Glazing, Krypton Fill, Low-E

ENERGY PERFORMANCE RATINGS	
U-Factor (U.S./IP)	Solar Heat Gain Coefficient
<b>0.16</b>	<b>0.24</b>
ADDITIONAL PERFORMANCE RATINGS	
Visible Transmittance	Condensation Resistance
<b>0.40</b>	<b>73</b>

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(Actual Elements NFRC label)

**National Fenestration Rating Council**

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# NFRC Window Labels

National Fenestration Rating Council



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**ENERGY STAR**

**NFRC**  
National Fenestration Rating Council

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**VINYL DOUBLE HUNG ELEMENTS**  
Triple Glazing, Krypton Fill, Low-E

ENERGY PERFORMANCE RATINGS	
U-Factor (U <sub>S,TP</sub> )	Solar Heat Gain Coefficient
<b>0.16</b>	<b>0.24</b>
ADDITIONAL PERFORMANCE RATINGS	
Visible Transmittance	Condensation Resistance
<b>0.40</b>	<b>73</b>

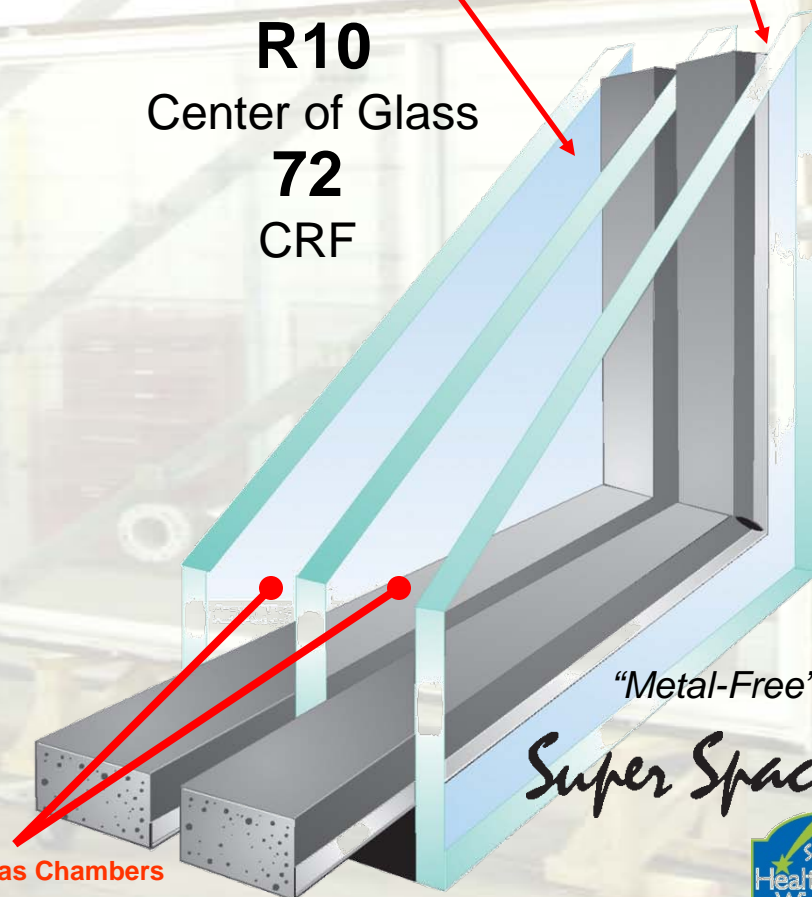
Manufacturer certifies that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and in specific product sizes. NFRC does not recommend any product and does not warrant the reliability of any product for any specific use. Consult manufacturer's literature for other product performance information. www.nfrc.org

**Ultimate Glass™**

Low-e<sup>2</sup> on surface 5

Low-e<sup>2</sup> on surface 2

**R10**  
Center of Glass  
**72**  
CRF



(Actual Elements NFRC label)

Results published on:

[www.nfrc.org](http://www.nfrc.org)



Two Krypton-gas Chambers

"Metal-Free"

**Super Spacer®**

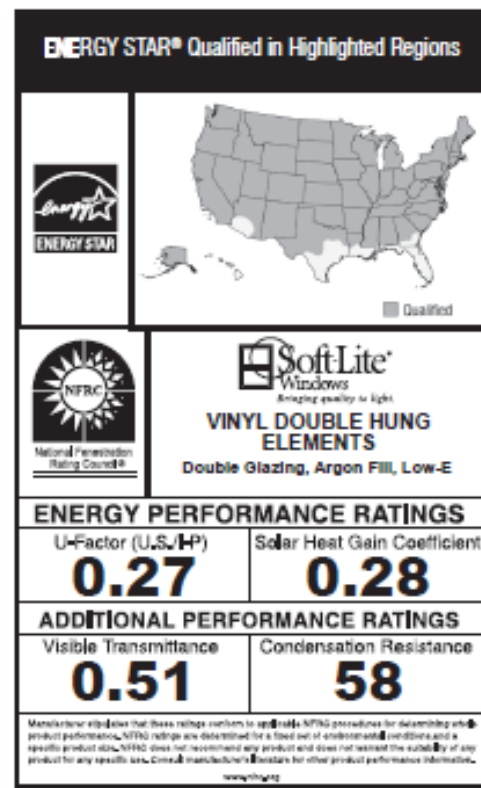
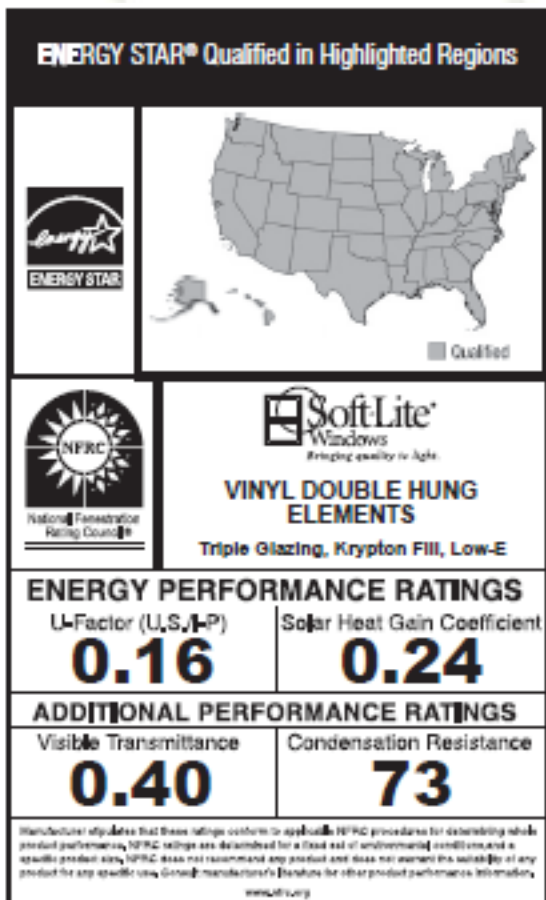


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# NFRC Window Labels

What is the **OVERALL THERMAL** performance difference between **TRIPLE PANE “R-10” GLASS** and **DOUBLE PANE LOW-E/ARGON?**



(Actual Elements NFRC labels)

**41% BETTER U-FACTOR**  
**14% MORE SHGC (SHADE)**  
**22% LESS VT (CLARITY)**



Results published on: [www.nfrc.org](http://www.nfrc.org)

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Windows



# AAMA Gold Label Certified

## Best of the Best

**Surprise Factory Inspections**  
**Audit: Production = Test Specimen**

(Actual Elements NFRC label)



Independent Test Lab Certifies Performance

Soft-Lite

Hung

Light Commercial Size

Specimen Size

NFRC ID

## Be Proud of the AAMA Gold Label

American Architectural Manufacturer's Association

[www.aamanet.org](http://www.aamanet.org)



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# Selected Window Industry Associations

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# Pop Quiz! Win a Prize!



## AAMA/NFRC Training Module



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Windows



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*Presents*

# *Educational Achievement*

## **AAMA NFRC TESTING**

*To*

# *Your Name Here*

*September 16, 2010*

**Sell The Truth™**

*Tom Italiano, Soft-Lite® Certified Technical Training Manager*



# Ten AAMA/NFRC Questions:



1. Name three reasons consumers buy windows:

**To save energy; existing windows ugly, don't work; noise; frame frost**

2. What makes a great window?

**Strong and durable, energy efficient, maint. free; warranty; manufacturer AND pro installation required!**

3. How do we measure what makes a great window?

**AAMA, NFRC THIRD PARTY testing, Energy Star certifications**

4. What does AAMA and NFRC stand for?

**American Architectural Manufacturers Association; National Fenestration Rating Council**

5. What 3 tests are required in the AAMA window certification program?

**Air leakage, Water infiltration, structural ("DP")**

6. For the Air test, what MPH pressure is applied to the window and what is the standard?

**25MPH; .30**

7. How does the water test work?

**8" rain per hour, increasing wind load until window leaks; minimum standard is: 33mph**

8. What does "DP" stand for and how does it differ from "R"?

**Design Pressure (MPH only); R is the ranking based upon lesser of water or structural results**

9. What does NFRC measure?

**OVERALL window thermal performance – not merely Center Of Glass or any other single component**

10. Describe U-value, SHGC, and VT

**$1/U = R$  and  $1/R = U$  (BTU "resistance"). Solar Heat Gain Coefficient (Shade); Visible Transmittance (Clarity)**

BONUS Q: Choose any window performance test and describe in detail how it works.



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