
NFRC – Your Ally in Energy Code Compliance

State Energy Code Workshop

June 2003

James C. Benney

NFRC Executive Director

Introduction to NFRC

- Fenestration – “ the arrangement, proportion and design of windows and doors in a building”

Webster New Collegiate Dictionary – 1972

- Why NFRC?

CREDIBILITY

- ❑ Represent Multiple Stakeholders
 - ❑ Develop Consensus Standards
 - ❑ NFRC Accredited Labs
 - ❑ Third Party Certification
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Introduction to NFRC

REMEMBER!

Look for System Performance

- GLASS
- EDGE
- FRAME

For Energy Performance Ratings

Introduction to NFRC

Energy Performance Standards and Ratings

- U-factor (thermal transmission) – NFRC 100
 - SHGC (Solar Heat Gain) – NFRC 200
 - VT (Visible Transmittance) – NFRC 200
 - Air Leakage – NFRC 400
 - Condensation Resistance – NFRC 500
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Building Applications

- NFRC Addresses both Manufactured Products and Site-Built (Field Assembled Products).
 - Utilize the same technical procedures (computer simulation/modeling; Validation testing; 3rd party verification)
 - Provide information in different way (label vs. label certificate)
 - Mfr. vs. Responsible party
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NFRC Labels

Manufactured Products

 <p>National Fenestration Rating Council</p> <p>CERTIFIED</p>	<p>World's Best Window Co.</p> <p>Millennium 2000+ Casement CPD#000-x-000</p> <p>Vinyl-Clad Wood Frame • Double-glazing, 0.5" Gap Argon-filled, Low-e=0.04 + Solar Control Coatings</p>			
	<p>ENERGY Performance</p> <ul style="list-style-type: none"> • Energy savings will depend on your specific climate, building, and use • For more information about this product, contact the manufacturer at [phone number and/or web site] • For more information about NFRC, visit NFRC's web site at www.nfrc.org 			
Technical Information				
Res	U-Factor	Solar Heat Gain Coefficient	Visible Transmittance	Air Leakage
	.32	.45	.58	.3
Non-Res	.31	.45	.60	.3
<p>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product energy performance. NFRC ratings are determined for a fixed set of environmental conditions and specific product sizes.</p>				

 <p>National Fenestration Rating Council</p> <p>CERTIFIED</p>	<p>World's Best Window Co.</p> <p>Millennium 2000+ Vinyl-Clad Wood Frame Double Glazing • Argon Fill • Low E Product Type: Vertical Slider</p>				
	<p>ENERGY PERFORMANCE RATINGS</p> <table border="1"> <tr> <td>U-Factor (U.S./I-P)</td> <td>Solar Heat Gain Coefficient</td> </tr> <tr> <td>0.35</td> <td>0.32</td> </tr> </table>		U-Factor (U.S./I-P)	Solar Heat Gain Coefficient	0.35
U-Factor (U.S./I-P)	Solar Heat Gain Coefficient				
0.35	0.32				
<p>ADDITIONAL PERFORMANCE RATINGS</p> <table border="1"> <tr> <td>Visible Transmittance</td> <td>Air Leakage (U.S./I-P)</td> </tr> <tr> <td>0.51</td> <td>0.2</td> </tr> </table>		Visible Transmittance	Air Leakage (U.S./I-P)	0.51	0.2
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Site Built

NFRC Label Certificate (for Site-Built Products)

 National Fenestration Rating Council CERTIFIED	World's Best Window Co. Millennium 2000+ Casement CPD#000-x-000 Vinyl-Clad Wood Frame • Double Glaze Argon Fill • Low E • Solar Control Coatings					
	ENERGY Performance					
• Energy savings will depend on your specific climate, house and lifestyle • For more information, call 1-800-123-4567 or visit NFRC's web site at www.nfrc.org						
Technical Information						
Res	U-Factor	.32	Solar Heat Gain Coefficient	.45	Visible Transmittance	.58
Non-Res		.31		.45		.60
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PROJECT LOCATION

Street address: 827 NINTH AVE
City, state, zipcode: SEATTLE, WA 98104
Project name (optional): SEATTLE TOWER Designer (optional): EVAN BROWN, AIA

PRODUCT LINE INFORMATION

Operator type (per NFRC 100, Table 1): GLAZED WALL SYSTEM (SITE BUILT)
Product line ID number: 123-4567 Individual product ID number: 01
How many of this individual product: Location in building: FLOORS 2-16, NORTH SIDE
Elevation drawing page: A6 Fenestration (window & door) schedule page: A15

FRAME MATERIAL SUPPLIER

Company name, address: ENERGY-EFFICIENT FRAMES, 4627 YELM AVE
City, state, zipcode: OLYMPIA, WA 98502
Contact person, phone & fax number: PHIL WILSON 360-827-1500 / 1501

GLAZING MATERIAL SUPPLIER

Company name, address: LOW-E GLASS, 89 ELM ST.
City, state, zipcode: YAKIMA, WA 98901
Contact person, phone & fax number: BERT JOHNSON 509-243-8700 / 8702

GLAZING CONTRACTOR/INSTALLER

Company name, address: TENDER LOVING CARE, 1507 23rd AVE S.
City, state, zipcode: SEATTLE, WA 98101
Contact person, phone & fax number: JIM PETERS 206-317-9205 / 9206

CERTIFICATION AUTHORIZATION

Independent Certification and Inspection Agency (IA): CAREFUL OVERVIEW
Date Certification Authorization Issued: 2 SEP 99

Why Change?

1997 to 2001 standards

To maintain the technical credibility of NFRC standards

- To keep up with current technology (improvements in modeling, heat transfer calculations)
 - For “harmonization” (international standards; standard sizes)
 - To reduce marketplace confusion (two sizes/ratings on the label)
 - To maintain the four-year cycle of reviewing and publishing NFRC standards
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Summary of Changes

Changing from NFRC 100-1997 to
NFRC 100-2001

- Size Changes
 - Modeling changes (dividers)
 - Rating of Skylights – 20 degree slope
 - Application of ISO 15099 (heat transfer)
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Size Changes

- Only one size in NFRC 100-2001 (rather than a residential and nonresidential size).

<u>Type</u>	<u>NFRC 100-1997(res)</u>	<u>NFRC 100-2001</u>
Slider	914 x 1524 (36 x 60)	1200 x 1500 (47 x 59)
Casement	610 x 1219 (24 x 48)	600 x 1500 (24 x 59)
Fixed	1219 x 1219 (48 x 48)	1200 x 1500 (47 x 59)
Patio Doors	1829 x 2083 (72 x 82)	2000 x 2000 (79 x 79)
Skylight	1219 x 1219 (48 x 48)	1200 x 1200 (47 x 47)
Entry Door	965 x 2083 (38 x 82)	1000 x 2000 (39 x 79)

Effects of change to NFRC 100-2001 from NFRC 100-97(res size)

<u>U-factor (100-97)</u>	<u>U-factor (2001)</u>	<u>Window Type</u>
0.48	0.44	ALTB Casement
0.40	0.37	ALTB fixed
0.61	0.52	AL Slider
0.37	0.35	A/C wd casement
0.35	0.33	A/C wd fixed
0.31	0.31	Vinyl Casement
0.31	0.31	Vinyl fixed
0.54	0.63	ALTB Skylight
0.40	0.50	A/C wd skylight
0.59	0.57	AL Curtainwall

Implementation

(transition to 2001 ratings and new label)

Mfrs. may use current (1997) ratings and labels (two size ratings) until they expire.

Mfrs. may switch to one size label without recertifying, but must use 1997 RES rating and must indicate (on label) the rating is based on 1997 procedures.

Windows can be submitted for rating to NFRC 100-2001 on 1/1/03; however, ratings (CAR) will not be issued until April 1, 2003.

April 1, 2004 labs will only follow 2001 ratings and the new label will only incorporate new (2001) ratings.

BENEFITS OF NFRC PROGRAM

- **Addresses the complexity of current fenestration products**
- **Provides a means for manufacturers to take credit for nuances and refinements to product design, thereby giving an incentive to and rewarding innovation**
- **Simulation provides an inexpensive means to explore options during the design phase**
- **Involvement of independent laboratories and IA's provides architects, engineers, designers, contractors, consumers, building officials, and utility representatives with greater confidence that the information is unbiased**

BENEFITS OF NFRC PROGRAM

- **By requiring simulation and testing, there is an automatic check on accuracy**
(remedies a shortcoming of previous State Energy Code that relied on testing alone, which allowed manufacturers to perform several tests and then use the best one for code compliance)
- **The certification process indicates that the manufacturer is consistently producing the product that was rated**
(this corrects a past concern where manufacturers were able to make an exceptionally high quality sample and obtain a good rating in a test, but not consistently produce that product)
- **NFRC Label Certificate that can be used by the building inspector to quickly verify Energy Code compliance**

What's New at NFRC?

- Can rate and label ‘tubular daylight devices’ for U-factor
 - Solar Calorimeter - can test, rate and label products for SHGC ratings (glass/acrylic block, etc.)
 - Entry Doors (w/ $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ glass) energy ratings and labels
 - Began work on rating attached films
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Thank You

For the latest information, check out our website:

www.nfrc.org

Or call Silver Spring office:

301-589-1776

jbenney@nfrc.org
