

National Workshop on State Building Energy Codes

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National Fenestration Rating Council

Rating the Energy Performance of Fenestration Systems

- How windows perform
- What the NFRC standards represent
- What the codes/programs say
- What do changes to the standards denote
- What does this mean to you?
- Q/A

How do windows perform

Energy from the sun is either transmitted, reflected or absorbed (and transmitted or reflected) by windows.

This energy is in the form of waves:

- Short wavelengths (UV)
- Medium wavelengths (Visible)
- Long wavelength (IR)

U-factor (thermal transmission)

- The rate of heat transfer through the fenestration product
- The lower the U-factor the more efficient the energy performance of the unit
 - Depends upon size, temperature and components in the window
 - Component properties include;
 - Conductivity
 - Emissivity

Solar Heat Gain Coefficient

The rate of heat transfer through a window product depending upon both directly transmitted solar gain and absorbed solar gain.

The lower the SHGC, the lower the heat gain through a window.

(SHGC is a ratio based on 0 to 1)

- Depends upon size, temperature and components in the window
- Component properties include:
 - Emissivity
 - Transmittance

Visible Transmittance

The amount of visible light transmitted through the window unit.

Depends upon unit size, glass-to-frame ratio and transmittance of the glass.

Important for determining the potential for daylighting.

NFRC Standards

NFRC 100 – U-factor

NFRC 200 – SHGC

NFRC 300 - Optical Properties

NFRC 400 – Air Leakage

NFRC 500 – Condensation Resistance

What Codes/Program Say

IECC Requirements: (fenestration)

U-factor and SHGC shall be determined in accordance with NFRC 100 or 200 by an independent accredited laboratory (or through use of limited default tables)

- products must be labeled and certified

US DOE/EPA ENERGY STAR WINDOWS

- Requires NFRC Certified Products

Changes to NFRC Standards 2001

Why did we change?

- New algorithms (latest technology and updated to ISO)
- Industry finally agreed upon one rating size (in unison with North American Standards)
- Addresses a multitude of products in one document (not only windows, but TDD's, garage doors, site-built products, etc.)

Changes to NFRC Standards

Biggest change = the rated size (both 100/200):

Go from two sizes (residential and nonresidential to One Size

For example: (*1997 standards*) =

Casement Window

Residential = 24" x 48" (610 mm x 1219 mm)

Nonresidential = 36" x 60" (762 mm x 1524 mm)

New NFRC size (2001 Standard) =

600 mm x 1500 mm

Changes to NFRC Standards

What does this mean to you?

U-factor and SHGC ratings may change for individual products

- It is the most up-to-date and accurate ratings available
- New NFRC Label will show only ONE rating (less confusion in the marketplace)

Changes to NFRC Standards

What does this mean to you?

- Watch the NFRC website for up-to-date information (www.nfrc.org)
- Note when the new ratings become effective
- Review the impact on your local energy codes

For additional help

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