

CALIFORNIA ENERGY COMMISSION

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Regulatory Advisory

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Fenestration Labeling

California's 2016 *Building Energy Efficiency Standards* (Energy Standards), Section 110.6 requires manufactured fenestration products to meet labeling criteria for U-factor, Solar Heat Gain Coefficient (SHGC), Visible Transmittance (VT), and Air Leakage. Fenestration includes:

- Windows – including bay, dual-pane garden, and glass block windows.
- Exterior doors with at least 50% glazing – including sliding glass and French doors.
- Skylights – including tubular skylights and atrium roof systems.

Energy Standards Section 10-111 prescribes two options for labeling fenestration products:

1. Product certification and labeling by the National Fenestration Rating Council (NFRC)
2. A label with Energy Commission default values from Section 110.6 of the Energy Standards

Using standardized procedures to calculate U-factor and SHGC ensures that the thermal or energy efficiency performance for each type of fenestration product is accurate, and that data from different manufacturers can be easily compared and independently verified. For buildings to receive Energy Standards compliance credit for performance features such as low-emissivity, manufactured fenestration products must be tested and certified according to the NFRC.


NFRC Certification and Labeling

Section 10-111(a) of the Energy Standards designates the NFRC as the entity responsible for rating and certifying manufactured fenestration products. To verify compliance, products are required to have both a temporary and a permanent label. Temporary (removable) NFRC labels must list the U-factor, SHGC, VT, and Air Leakage values. Permanent (non-removable) NFRC labels must display the NFRC Certified Products Directory number, which can be used to verify product energy performance on the NFRC website. Permanent labels can be attached adhesively to the window frame or etched between glass panes.

Example of NFRC Temporary Label

 World's Best Window Co. Series "2000" Casement Vinyl Clad Wood Frame Double Glazing • Argon Fill • Low E XYZ-X-1-00001-00001	
ENERGY PERFORMANCE RATINGS	
U-Factor (U.S. / I-P)	Solar Heat Gain Coefficient
0.35	0.32
ADDITIONAL PERFORMANCE RATINGS	
Visible Transmittance	Air Leakage (U.S. / I-P)
0.51	≤ 0.3
<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. www.nfrc.org</small>	

Examples of NFRC Permanent Label

	This product has been rated and certified in accordance with National Fenestration Rating Council procedures	Series: 2013 Double Hung Type: VSDH Code: XYZ-T-13
		NFRC XYZ-13 13-T

The NFRC program ensures that participating manufacturers properly label their products, and NFRC can impose fines up to \$5,000 per product line plus \$100 per product for violations of labeling requirements. For more information about NFRC labeling visit <http://www.nfrc.org>.

California Energy Commission Default Labeling

The Energy Standards require that any manufactured fenestration products not certified by the NFRC must incorporate an alternative temporary label that lists the Energy Commission default U-factor, SHGC, and VT values from Energy Standards Section 110.6, Table 110.6-A.

Example of California Energy Commission Temporary Default Label

2016 California Energy Commission Default Label XYZ Manufacturing Co.		
Key Features:	<input type="checkbox"/> Doors	<input type="checkbox"/> Double-Pane
	<input type="checkbox"/> Skylight	<input type="checkbox"/> Glass Block
Frame Type	Product Type:	Product Glazing Type:
<input type="checkbox"/> Metal	<input type="checkbox"/> Operable	<input type="checkbox"/> Clear
<input type="checkbox"/> Non-Metal	<input type="checkbox"/> Fixed	<input type="checkbox"/> Tinted
<input type="checkbox"/> Metal, Thermal Break	<input type="checkbox"/> Greenhouse/Garden Window	<input type="checkbox"/> Single-Pane
<input type="checkbox"/> Air space 7/16 in. or greater <input type="checkbox"/> With built-in curb <input type="checkbox"/> Meets Thermal-Break Default Criteria	-----	To calculate VT see NA6
California Energy Commission Default U-factor =	California Energy Commission Default SHGC =	California Energy Commission Calculated VT =
Product meets the air infiltration requirements of §110.6(a)1, U-factor criteria of §110.6(a)2, SHGC criteria of §110.6(a)3 and VT criteria of §110.6(a)4 of the 2016 Building Energy Efficiency Standards for Residential and Nonresidential Buildings.		

Non-Compliant Labels

Manufacturer-generated values (such as “Simulated Performance Alternative” values) do not comply with the labeling requirements and cannot be used to verify fenestration compliance.

Building Department Enforcement

The Energy Standards are enforced by city and county building departments in California. Temporary fenestration labels must not be removed before building department inspection. If temporary NFRC or default labels are not available on site for verification, the building inspector should not allow further fenestration installation until a compliant label is produced.

Building inspectors should confirm that the U-factor, SHGC, and VT values on compliant labels are equal to or better than those on the CF1R compliance document associated with the permit.

For additional questions about the *Building Energy Efficiency Standards*, contact the Energy Standards Hotline at (800) 772-3300 (within California), (916) 654-5106 (outside California), or via email at title24@energy.ca.gov.