



COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT

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Residential Window and Door Compliance through Alternative Materials, Design and Methods.

Scope:

This handout is intended to assist applicants in obtaining approval for residential windows and doors which lack the required certifications mandated by the California Residential Code (CRC) and California Energy Code (CEnC), under the code provisions for alternate materials, design and methods.

CRC, Sec. 104.11, Alternative material, design and methods.

An alternative material, design or method of construction shall be approved where the Building Official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code. Compliance with the specific performance-based provisions of the California Codes in lieu of specific requirements of this code shall also be permitted as an alternate.

CRC, Sec. R104.11.1, Testing.

Whenever there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for alternative materials or methods, the Building Official shall have the authority to require tests as evidence of compliance to be made at no expense to the jurisdiction. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the Building Official shall approve the testing procedures. Tests shall be performed by an approved agency. Reports of such tests shall be retained by the Building Official for the period required for retention of public records.

The Process.

If the windows and doors lack the required certifications mandated by the CRC and the CEnC, then documentation can be submitted providing evidence which verifies that the windows and doors meet or exceed all standards mandated by the CRC and the CEnC. This documentation must be accompanied by testing data from a third party accredited testing laboratory, and documentation on the accreditation agency who has certified the laboratory. Once assembled, this documentation must be submitted as a change order to the project permit, along with filling out an application for alternative materials, design and methods. This information will then be reviewed by the Building Official to determine if the products meet or exceed all requirements.

Minimum Residential Window and Door Requirements per the CEnC and CRC.

Energy Code (CEnC) Requirements:

- **Sec. 110.6(a)1, Air Leakage**
Standard: NFRC-400 or ASTM-E283
Minimum regulations: Shall have air infiltration rates not exceeding 0.3 cfm/ft² of window or door area.
- **Sec. 110.6(a)2, U-factor**
Standard: NFRC-100 or default factor in T-110.6A
Minimum regulations: Shall have U-factor ratings that meet or exceed factors in T-110.6A
- **Sec. 110.6(a)3, Solar heat gain coefficient (SHGC)**
Standard: NFRC-200 or default ratings in T-110.6B
Minimum regulations: Shall have ratings that meet or exceed factors in T-110.6B

Residential Code (CRC) Requirements:

Sec. R308, Safety Glazing

- **Sec. R308.3.1, Impact testing**
Standard: CPSC 16 CFR 1201
Minimum regulations: Glazing shall comply with test criteria for category II in T-308.3.1(1)
Glazing shall resist standard 100 lb pendulum test.
- **Sec. R308.1, Labeling**
Minimum regulations: Tempered identification shall be acid etched, sandblasted, ceramic-fired, laser etched, embossed, or be non-removable label.
For other than tempered glass, the Building Official may approve the use of a certificate, affidavit or other evidence confirming compliance.

Sec. R612, AAMA Certification for exterior windows and doors

- **Sec. R612.1, General**
This section prescribes performance and construction requirements for exterior windows and doors installed in exterior walls. Windows and doors shall be installed and flashed in accordance with the fenestration manufacturer's written installation instructions. Window and door openings shall be flashed in accordance with Sec. R703.8. Written installation instructions shall be provided by the fenestration manufacturer for each window and door.
- **R612.2, Performance.**
Exterior windows and doors shall be designed to resist the design wind loads specified in Table R301.2(2) adjusted for height and exposure in accordance with Table R301.2(3).

- **R612.3, Testing and Labeling.**

Exterior windows and sliding doors shall be tested by an approved independent laboratory, and bear a label identifying manufacturer, performance characteristics and approved inspection agency to indicate compliance with AAMA/WDMA/CSA 101/I.S.2/A440. **Exterior side-hinged doors** shall be tested and labeled as conforming to AAMA/WDMA/CSA 101/I.S.2/A440 or comply with Section R612.5.

- **AAMA Standards include the following test standards:**

- Design pressure rating (DP).
Standard: ASTM E330
Minimum performance: minimum 720 Pa or 15 psf
- Uniform load structural test pressure, 150% of the design pressure (DP)
Standard: ASTM E330
Minimum performance: minimum 1080 Pa or 22.5 psf.
- Water penetration resistance test.
Standard: ASTM E 331
Minimum performance: Minimum 140 Pa or 2.90 psf for 15 minutes
- Air leakage resistance.
Standard: ASTM E 283
Minimum performance: Maximum allowable leakage: 0.3 cfm/ft² with a positive test pressure of: minimum 75 Pa or 1.6 psf,
- Forced entry resistance.
Standard: Windows-ASTM F-588, Sliding doors-ASTM F-842, Side-hinged doors-AAMA 1304
Minimum performance: varies based upon standard.
- Operating force.
Standard: ASTM E 2068
Minimum performance: Per table 7 in AAMA standards.
- Hardware.
Standard: AAMA
Minimum performance: Varies based upon hardware type.
- Various Auxiliary tests specific to product type (whether casement, double hung, horizontal sliding, tilt, etc).
Standard: AAMA
Minimum performance: Varies based upon hardware type.

Sec. R612.5, Other exterior window and door assemblies.

Exterior windows and door assemblies not included within the scope of Sec. R612.3 or Sec. R612.4 shall be tested in accordance with ASTM E 330. **Note:** As indicated in R612.3, this section applies to exterior side-hinged doors and other fenestration products that are not exterior windows or sliding doors, ie., glass blocks, stained glass, etc.)

Sec. R612.8 Mullions

Mullions shall be tested by an approved testing laboratory in accordance with AAMA 450, or be engineered in accordance with accepted engineering practice. Mullions tested as stand-alone units or qualified by engineering shall use performance criteria cited in Sections R612.8.1, R612.8.2 and R612.8.3. Mullions qualified by an actual test of an entire assembly shall comply with Sections R612.8.1 and R612.8.3

If any questions regarding these requirements or the alternative materials process, please contact our Building Official:

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