

Procedure for Using NFRC 100 - Part 2 for Non-Residential Products

Step 1: Determine Need for Non-Residential NFRC Certification

This procedure shall be used when a NFRC label certificate is required. The determination of whether a product falls into a non-residential category is based on the following definitions as per IECC 2000 (ASHRAE 90.1/90.2 definitions are similar). This procedure will apply to commercial (non-residential) buildings as defined below.

Commercial Building – All buildings over three stories in height above grade or buildings, other than residential buildings, that are three stories or less in height above grade.

Residential Building: (Type A-1) Detached one- and two-family dwellings.

Residential Building: (Type A-2) A building containing multiple (i.e., three or more) dwelling units where the occupants are primarily permanent in nature, such as townhouses, row houses, apartment houses, convents, monasteries, rectories, fraternities and sororities, dormitories and rooming houses, which are three stories or less in height above grade.

Step 2: Establish use of NFRC 100 – Part 2

Once it is established that the project involves a non-residential building, the NFRC 100 – Part 2 procedure shall be used. The existing NFRC 100 - Part 1 procedure will be used for residential buildings as defined above.

Step 3: Method Used

The manufacturer will declare to the simulator that the product line to be simulated is for non-residential purpose. The manufacturer shall submit details, bill of materials, assembly drawings and die drawings for the product to be simulated. This procedure will use a component based method using center of glass, frame/edge of glass, and spacer, component values, which will ultimately provide product and/or project specific performance values including U-factor, SHGC and VT.

Step 4: CS Simulation in THERM using Best and Worst (B/W) Options

The simulator shall model four generic options (considered the best and worst cases) as defined below.

- (a) B/B (or b1 in Table 2): Best glazing with Best spacer
- (b) B/W (or b2 in Table 2): Best glazing with Worst spacer
- (c) W/B (or w1 in Table 2): Worst glazing with Best Spacer
- (d) W/W (or w2 in Table 2): Worst glazing with Worst Spacer

Note: Configurations are assembled from two different generic glazing options at the extreme of the thermal performance and two generic spacer configurations at the extreme of thermal performance. Generic glazing and spacer options shall be defined in NFRC 100 - Part 2.

The simulator shall model glazing options to determine center of glass U-factors. The simulator shall also model spacer thermal performance by determine *keff*.

Step 5: Validation Testing Rules

Validation testing is required on new product designs or when there is a design change (to be determined by the group) to the product since the initial validation.

Note: This issue will probably require additional research and testing. When the Board agrees with the direction of the task group, the group will define design change.

Step 6: System Validation

When the system validates, continue to step #7.

If a non-validation is determined and the simulated values are higher than the tested results, the simulated values shall be used for rating purposes. If the test results are higher than the simulated results, one shall determine the percentage difference between the simulated and the test results and then all simulated results shall be adjusted to the percentage difference. The manufacturer has the option of sending another unit for test, re-simulating or taking the worst of the two.

Step 7: Upload to Database and IA Review (Using B/W component approach)

Once the system validates, the simulation summary sheet, which included component information is uploaded to the NFRC database to be reviewed by the IA. The IA will review the simulation and test results and authorize the base matrix (best/worst). The NFRC database shall be updated to include component information.

Step 8: IA Issues CAR

Each component manufacturer will be responsible for their component value in the event of a challenge. Component manufacturer will be issued a component certificate for their products included in the database.

Step 9: Use Integrator Tool to get certificate

A CAR will be issued to the responsible party for the whole system performance values. The whole system performance values shall be calculated using a NFRC integration tool. This tool will provide both NFRC standard size and size specific performance values.

Step 10: User Prints Label

The responsible party prints out a label certificate which can be submitted to the building owner, architect, contractor or engineer of record for the project. The label certificate will contain NFRC size specific values. This certificate can be used when making product comparisons or when using the prescriptive code compliance method for the fenestration product. For the performance code compliance method the label certificate will contain listing of project specific size values.

Items Under Consideration:

1. Frame grouping rules will be determined by the task group.
2. The task group will determine the non-residential simulated standard product size.