# NFRC 7100-2025 [E0A0]

## Windows, Doors, and Standard Skylights – PCP Product Requirements



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# *Foreword*

The National Fenestration Rating Council, Incorporated (NFRC) manages and operates a uniform rating system for energy and energy–related performance of fenestration products. The Rating System reports the U–factor, Solar Heat Gain Coefficient (SHGC), Visible Transmittance (VT), Air Leakage (AL), and Condensation. These ratings may be mandatory or optional based on the product category being certified. Together, these rating procedures, as set forth in documents published by NFRC, are known as the NFRC Product Certification Program (PCP).

The NFRC Rating System employs computer simulation and physical testing to establish energy and related performance ratings for fenestration products. The NFRC Rating System is reinforced by a certification program under which NFRC–licensed participants claiming NFRC product certification shall label and certify fenestration products to indicate those energy and related performance ratings, provided the ratings are authorized for certification by NFRC and under ongoing inspection and assessment by a recognized Inspection Agency (IA).

The requirements of the rating, certification, and labeling program (Certification Program) are set forth in this document and the most recent versions of documents referenced and associated with the PCP.

# *Disclaimer*

NFRC certification is the authorized act of a Manufacturer/Responsible Party in labeling a fenestration or related attachment product with an NFRC Permanent Label and/or, based on the product category, NFRC Temporary Label with the mandatory ratings, as well as any selected optional rating, as reported by NFRC–recognized simulation and testing laboratories, evaluated by an inspection agency and authorized for certification by NFRC. Each of these participants acts independently to report, recommend certification, and provide information to NFRC for certification based on the PCP requirements.

Certification by NFRC does not constitute a warranty or endorsement regarding any characteristic of a fenestration or fenestration–related attachment products. Certification is not an endorsement of or recommendation for any manufacturer's product or product line or any attribute of a product or product line. NFRC is not a merchant in the business of selling fenestration products or fenestration–related products and therefore cannot warrant products as to their merchantability or fitness for a particular use.

Questions about the NFRC Product Certification Program can be directed to the National Fenestration Rating Council.

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# 1. SCOPE

This document outlines the evaluation requirements and ratings of windows, doors, and unit skylights for Certification Authorization and recognition in the NFRC Product Certification Program (PCP), as well as defines the requirements for maintaining certification, product modifications, and inspection of manufacturing locations. This product specific requirement does not cover Tubular Daylighting Devices (See NFRC– 7103 for TDD requirements).

# 2. REFERENCES

- NFRC 7000: – NFRC Product Certification Program
- ANSI/NFRC 100: Procedure for Determining Fenestration Product U–Factors
- NFRC 102: Procedure for Measuring the Steady–State Thermal Transmittance of Fenestration Systems
- ANSI/NFRC 200: Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence
- NFRC 201: Procedure for Interim Standard Test Method for Measuring the Solar Heat Gain Coefficient of Fenestration Systems Using Calorimetry Hot Box Methods
- ANSI/NFRC 202: Procedure for Determining Translucent Fenestration Product Visible Transmittance at Normal Incidence
- ANSI/NFRC 400: Procedure for Determining Fenestration Product Air Leakage
- NFRC 500-2017: Procedure for Determining Fenestration Product Condensation Resistance Value
- ANSI/NFRC 500: Procedure for Determining Fenestration Product Condensation Index Ratings
- NFRC 600: Glossary and Terminology
- NFRC 706: Requirements for Participating Insulating Glass Certification Programs
- NFRC 7018: NFRC Labeling and Mark Usage Requirements
- NFRC 7019: PCP Extension and Waiver Process
- NFRC Fee Schedule (website)

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# 3. CERTIFICATION RATINGS

For certification purposes, the energy performance values are those recorded on the product matrix upload, determined from the simulation and/or physical test reports for the product line submitted, reviewed, and authorized for certification.

### 3.1 Mandatory Ratings

Windows, doors, and unit skylights shall be required, through simulation and/or physical testing, to have ratings for:

3.1.1 U-factor,

3.1.2 Solar Heat Gain Coefficient (SHGC), and

3.1.3 Visible Transmittance (VT).

### 3.2 Optional Ratings

In addition to the required ratings, optional performance ratings available to participants for certification authorization are:

3.2.1 Air Leakage (AL) and

3.2.2 Condensation Index (CI) or Condensation Resistance (CR).

### 3.3 Use of Insulating Glass Units

Insulating Glass Units (IGUs) used in NFRC-certified products shall be certified through a participating IGU Certification Program per NFRC 706. See Section 13 of this document for additional information on the use of certified IGU.

# 4. SIMULATION AND TESTING PROCEDURES

### 4.1 U–factor U–factor

4.1.1 ANSI/NFRC 100: Procedure for Determining Fenestration Product U–factors.

4.1.2 NFRC 102: Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems.

### 4.2 Solar Heat Gain Coefficient (SHGC) / Visible Transmittance (VT)

4.2.1 ANSI/NFRC 200: Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.

4.2.2 NFRC 201: Procedure for Interim Standard Test Method for Measuring the Solar Heat Gain Coefficient of Fenestration

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Systems Using Calorimetry Hot Box Methods.

4.3 **Air Leakage**

4.3.1 ANSI/NFRC 400: Procedure for Determining Fenestration Product Air Leakage

The reported date of test shall be no more than 10 years prior to the date of submission for certification authorization.

4.4 **Condensation Ratings**

4.4.1 Condensation Index: ANSI/NFRC 500–2020: Procedure for Determining Fenestration Product Condensation Index Ratings.

4.4.2 NFRC 500 (2017): Procedure for Determining Fenestration Product Condensation Resistance Values

## 5. PRODUCT SIMULATION AND TESTING

A Licensee shall obtain from an NFRC 701-Accredited Test Laboratory (test lab) or 701- Accredited Simulation Laboratory (simulation lab), physical testing and/or simulation reports for the required ratings for each product line to be authorized for certification. Ratings shall be obtained based on the following methods, depending on the ratings sought and the product line(s) obtaining certification authorization.

5.1 **Simulation for Certification**

5.1.1 Simulation methods are utilized to determine U–factor, SHGC, VT, condensation resistance (CR), and Condensation Index (CI).

5.1.2 For each product line to be rated, the licensee shall deliver the bill of materials, product assembly drawings, detailed dimension die drawings, other part drawings required for simulation, and all individual product options within the product line to a simulation lab.

5.1.3 The licensee shall direct the simulation lab to conduct computer simulations in accordance with applicable NFRC rating procedures per ANSI/NFRC 100, ANSI/NFRC 200, NFRC 500, and ANSI/NFRC 500 to develop a matrix of ratings for individual product options.

5.2 **Validation of the Simulation**

5.2.1 The licensee shall direct a test lab to conduct a physical test in accordance with NFRC 102 and shall obtain a physical test

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report from the test lab that contains the test results of the baseline product (the representative product of the product line) chosen by the licensee in order to validate the U-factor simulations for the product line.

5.2.2 The individual product options in the product line shall be authorized for certification if the validation meets the equivalency requirements in Table 4–4 of ANSI/NFRC 100.

### 5.3 Testing Alternative

This procedure is used for products that cannot be simulated and/or for ratings that can only be obtained through physical testing.

5.3.1 The licensee shall select products for testing, which shall be test samples of the sizes set forth by applicable NFRC technical procedures in ANSI/NFRC 100.

5.3.2 The licensee shall supply the test lab with the bill of materials, product assembly drawings, detailed dimension die drawings, and other part drawings required for testing. The licensee shall authorize the test lab to deliver a copy of the test report, along with copies of supporting data, to the licensee's NFRC-Licensed Inspection agency (IA).

5.3.3 Air Leakage ratings shall be obtained using the Testing Alternative method of evaluation in accordance with ANSI/NFRC 400. There are no procedures for the simulation of air leakage ratings.

## 6. SUBMISSION FOR CERTIFICATION AUTHORIZATION

It is the responsibility of the licensee to ensure that the selected simulation and test labs upload the necessary data and reports into the NFRC Product Certification Management System (NFRC PCMS) and provide copies of the uploads and reports to the selected IA.

### 6.1 New Licensees

6.1.1 New licensees or plants seeking authorization to produce certified products must submit and have approved, by their IA, a Quality Management System (QMS), meeting the requirements of Section 9, prior to certification authorization.

6.1.2 The initial plant inspection at all plants granted certification authorization shall occur within six months of the date of the first certification authorization.

6.1.3 Results of the initial inspection and QMS review shall be

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submitted to NFRC by the selected IA.

### 6.2 Current Licensees

6.2.1 Current licensees shall have the required simulation and testing information sent to the selected IA and NFRC.

6.2.2 The licensee and associated manufacturing plants shall be in good standing with NFRC and the selected IA.

### 6.3 Upload of Data and reports

The licensee seeking certification authorization shall:

6.3.1 Instruct the selected simulation and test labs to:

A. Upload the necessary data and simulation or test report to the IA assigned in the NFRC PCMS.

B. Provide the IA with a copy of the information required by the NFRC 701.

## 7. INSPECTION AGENCY EVALUATION

### 7.1 IA Evaluation of Submitted Information for Certification

After the necessary simulation and/or testing information has been uploaded to the NFRC PCMS and provided to the selected IA, the IA shall perform the following actions in the NFRC PCMS:

7.1.1 Pair the necessary reports to begin the validation for certification.

7.1.2 Once paired the IA shall:

A. Answer the necessary validation questions for the product line.

B. Evaluate any potential validation issues noted by the system to determine if they may be accepted under the current requirements of the program, and allow the validation to continue, or reject the validation.

I. If no potential issues are noted, the IA may accept the validation and forward the information to NFRC for review and certification authorization.

II. If the IA determines any potential issues are acceptable within the current rules of the program, the IA must include an explanation for allowing the acceptance. If the IA determines all potential issues

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are resolved, the IA may accept the validation and move it forward to NFRC for review and certification authorization.

III. If the IA determines that any of the potential issues must be resolved before accepting the validation, the IA shall reject the validation and select one of the following options in the system:

i. Unpair the reports and return to the Lab Report Summary to determine if incorrect reports were paired and restart the validation process.

IV. Reject only the simulation information and provide the rationale for the rejection which will be forwarded to the simulation lab for resolution and re-upload.

V. Reject both the simulation and physical test information and the rationale for the rejections which will be forwarded to both the sim lab and test lab respectively.

# 8. NFRC Certification Authorization Review

The NFRC Certification Authorization Review and Certification Decision ensures the necessary information is available and meets the requirements for certification authorization.

## 8.1 Certification Authorization Review

After evaluation and acceptance by the IA in the NFRC PCMS, NFRC Staff shall:

8.1.1 Review the responses to the questions in the NFRC PCMS;

8.1.2 Review any potential issues that have been accepted by the IA and the explanations included to allow for the review to move forward in the system; and

8.1.3 Ensure that the uploaded reports and information support the data and evaluation completed by the IA, including, if applicable:

A. Simulation Report,
B. Physical Validation Test report, and
C. Air Leakage Test report, if certified.

## 8.2 Certification Decision and Communication

8.2.1 Authorization Granted

If certification authorization is granted, NFRC Staff shall perform the following tasks:

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A. Generate and sign the Certificate of Authorization (CA).
B. Notify the Licensee of the successful certification authorization.
C. Notify the IA that authorization has been granted for the associated submittal.
D. Activate the product(s) in the NFRC PCMS to allow public search and viewing.

8.2.2 Authorization Denied

If certification authorization is denied, NFRC Staff shall perform the following tasks:

A. Reject the certification authorization review in the NFRC PCMS
B. Provide comments and an explanation as to why certification authorization has been denied, with notification to both the licensee and IA.
C. Return the rejected certification submittal to the IA through the NFRC PCMS for additional review and resolution to be performed by the IA and the licensee.

# 9. QUALITY CONTROL REQUIREMENTS

An NFRC Licensee shall establish and maintain a documented Quality Management System (QMS) to meet the minimum requirements of this section and to ensure accuracy and consistency as it relates to NFRC energy performance characteristics of products authorized for certification.

A licensee's QMS shall be reviewed by the selected IA and a copy of the approved QMS shall be made available to NFRC upon request.

## 9.1 QMS Minimum Requirements

The documented QMS shall address the following minimum requirements:

9.1.1 Current organizational chart by position applicable to the NFRC License Agreement.

9.1.2 Method to ensure that the documented QMS shall be kept current including all modifications and revision dates.

A. At a minimum, the QMS shall be reviewed annually by the licensee, and a log of the reviews shall be maintained.
B. The licensee shall submit the review and revision log, and if revised, a copy of the updated QMS shall be submitted to the IA.
C. Identification of incoming and in process non–conforming material – a process to ensure consistency

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with the necessary specifications and drawings of materials used in authorized products.

D. Identification of critical in–house inspection requirements, including but not limited to, the following periodic inspection of fully assembled product:
   I Method of verification that products are built in accordance with certification authorization.
   II Method for identifying, isolating, and disposition of material or products with non–conformities.

9.1.3 Procedures for Licensee's Product Inspection and Testing

A. Establish and maintain documented procedures to control, calibrate, and maintain inspection, measuring and testing equipment used by personnel to demonstrate the conformance of products to the specified requirements. These requirements shall make reference to and define:
   I Inspection and testing of equipment used in manufacturing,
   II Inspection and testing of inspection equipment used in quality control processes.
B. Procedures that clearly describe the use of all inspection and test equipment.
C. Required frequency of inspection and review of equipment.

9.1.4 Proper labeling of authorized products per NFRC 7018.

9.1.5 Procedures for Correcting Noncompliance

A. The QMS shall define and document procedures to be taken to investigate and correct the cause of non–conformities,
B. Licensees shall establish, perform, and maintain procedures for the control of non–conforming products. The procedures shall define criteria for action taken for all non–conforming products.
C. Licensees shall establish and maintain documented procedures for implementing preventative and corrective actions in the event of non–conforming products including:
   I Investigating the cause of non–conformities and recording the results,
   II Determining corrective action needed to eliminate the cause(s) of non– conformities,

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III Application(s) of controls ensuring corrective action has been effectively taken.

9.1.6 Process to maintain records of all complaints, internal and external, and reports of non–conformities of authorized products including corrective actions taken.

9.1.7 Procedures for documenting and implementation of changes to authorized products to include:

A. Revisions and engineering changes,
B. Revisions to approved components (such as lineal extrusions, IG units, seals, etc.).

9.1.8 Documented Evidence of Internal Quality Audits

A. At least annually, a company representative trained to perform audits shall perform and document an internal audit of the licensee's QMS.

B. The audit shall review the forms used and the records proving ongoing compliance with Section 9 of this document.

9.1.9 A record retention policy requiring the licensee to retain all quality control records for authorized products for a minimum of six years.

9.1.10 Procedures for notifying the respective IA and NFRC of changes to:

A. the legal, commercial, organizational status or ownership of the licensee,
B. personnel (e.g. key managerial, decision–making, or technical staff),
C. modifications to authorized products,
D. Licensee contact address and production sites.
E. major changes to the QMS

9.1.11 Quality control records for authorized products shall be made available to the IA during plant inspections and when requested by the IA or NFRC during the investigation of noncompliance issues.

## 9.2 Quality Personnel Requirements

A licensee's QMS shall identify, designate, and define competent personnel to ensure quality control. Duties for personnel include:

9.2.1 Oversight and maintenance of the licensee's QMS.

9.2.2 Supervision of production to ensure products meet the performance ratings for which certification authorization has been granted.

9.2.3 Regular audits of authorized products so that there is correlation between the

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fully assembled product and what is described on the label.

9.2.4 Provide direction to ensure products are properly labeled as NFRC–certified.

9.2.5 Supervision of production of authorized products at each manufacturing facility.

## 10. PRODUCT OR PRODUCT LINE MODIFICATIONS

Prior to the adoption of a modification in the design or construction of an authorized product line, the licensee shall submit changes using the waiver application form located on the NFRC website.

### 10.1 Modifications Within a Product Line

10.1.1 Modifications deemed to be in the same authorized product line per the rules in ANSI/NFRC 100 and ANSI/NFRC 200 shall require the submission of product performance indicating the modification is permitted to be included in the same product line.

10.1.2 Modifications to product lines shall follow the rules for waivers as defined in NFRC 7019.

### 10.2 Modifications Not Within a Product Line

10.2.1 Modifications determined to require a separate product line shall be processed as a new product line following all rules regarding product certification authorization.

## 11. PLANT AND PRODUCT SURVEILLANCE

Not less than once each year, a licensee's designated IA shall conduct an inspection of each licensee's production facility to ensure continuing compliance with the requirements of the PCP.

IAs shall be permitted, at their discretion, to provide advanced notice of inspection to ensure the proper personnel are onsite and available to assist.

### 11.1 In–Plant Inspections (initial and annual inspections)

11.1.1 The IA's representative shall be accompanied by the licensee's designated representative at all times while at the licensee's facilities. The IA's representative shall have access to such quality control records, products, and product components as necessary to assess processes and authorized/certified products to determine compliance with certification authorization and Manufacturer/Responsible Party license requirements.

11.1.2 A licensee's refusal, without good cause, to permit access to a licensed manufacturing facility or places essential to the inspection shall be cause for denial, withdrawal, suspension, or termination of certification authorization

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pursuant to the rules defined in NFRC 7000.

11.1.3 The IA shall notify the licensee and NFRC in writing of any non-conformities and shall require corrective action or a corrective action plan be in place no later than 15 business days from the date of such notification.

11.1.4 If necessary, the IA shall be permitted to conduct a re–inspection to determine whether corrective actions have been taken. Costs related to re–inspection shall be borne by the licensee.

11.1.5 Modifications in design or construction identified during an in–plant inspection of authorized/certified products shall be evaluated per Section 10.

# 12. MANAGEMENT OF IGU AS PART OF AUTHORIZED PRODUCTS

## 12.1 Certification of IGU

Licensees shall be responsible for assuring that all IGU used in certified products are certified in accordance with NFRC 706: Requirements for Participating Insulating Glass Certification Programs. A list of participating independent third-party IGU Certification Programs can be found on the NFRC website (www.NFRC.org).

## 12.2 Conditional IGU Certification

In cases where participating IGU Certification Programs allow for conditional IGU certification that meet the requirements of NFRC 706, NFRC shall accept that conditional status for a period of no more than nine months.

## 12.3 Delisting of a Participating IG Certification Program

12.3.1 In the event a previously listed Participating IG Certification Program becomes delisted by NFRC for any reason, NFRC shall send notice of the delisting to all licensees within 30 business days of delisting of the program.

12.3.2 In the event NFRC delists a participating IGU Certification Program, NFRC shall provide a transition plan to all licensees and remaining participating IGU Certification Programs.

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# 13. NONCOMPLIANCE

A licensee's compliance with all of the criteria and conditions of the PCP shall be permitted to be reviewed by NFRC and the selected IA at any time and shall be reviewed by the IA not less than once per year in connection with the in-plant inspection or as part of a challenge or notification to NFRC of potential noncompliance with PCP requirements.

## 13.1 Inspection Related Noncompliance

Noncompliance issues found during an inspection shall be separated into two categories, product and administrative.

13.1.1 Product noncompliance shall include, but is not limited to;

A. Changes to profiles,
B. Changes to glazing packages,
C. Changes to reinforcements or inserts,
D. Changes to weather seals,
E. Incorrect certification labeling,
F. Incorrect gas, gas concentration, or gas fill,
G. Use of non–certified IGU,
H. Glass Collapse:

Permitted Gap Reduction:

i ≤ 13 mm (1/2 in) design gap, 3 mm (1/8 in) maximum reduction permitted.

ii >13 mm (1/2 in) design gap, 6 mm (1/4 in) maximum reduction permitted.

iii There shall be no contact between glazing layers and components (e.g. dividers) except as noted.

13.1.2 Information on administrative noncompliance can be found in Section 13 of NFRC 7000.

## 13.2 Other Noncompliance

Other types of noncompliance shall include general labeling and mark usage not in compliance with NFRC 7018, non–conformance to PCP rules and requirements, or as the result of a challenge brought to NFRC or an IA. Additional information can be found in NFRC 7000, Section 13.

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# 14. NFRC FEES

Fees associated with the PCP and other programs can be found in the NFRC Fee Schedule.

# 15. RECERTIFICATION

## 15.1 Certification Period

15.1.1 The certification period of product lines shall be 5 years.

15.1.2 Product lines shall be permitted to be recertified at any time within the 5-year certification period.

15.1.3 See NFRC 7000 for additional information on recertification.

# 16. REVISION HISTORY

| Document Revision Log | | | | |
|---|---|---|---|---|
| **Section** | **Revision** | **Review** | **Approval** | **Date Released** |
| All | New Document Release | 11/4/2025-SRH | 11/7/2025-SRH | TBD |
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