



National Fenestration Rating Council Incorporated

NFRC 701-20189[E0A29]

Laboratory Accreditation Program Document

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FOREWORD

The National Fenestration Rating Council, Incorporated (NFRC) develops and operates a uniform rating system for energy and energy-related performance of fenestration and fenestration attachment products. The Rating System determines the U-factor, Solar Heat Gain Coefficient (SHGC), and Visible Transmittance (VT) of a product, which are mandatory ratings for labeling NFRC-certified products, and are mandatory ratings for inclusion on label certificates, and are supplemented by procedures for voluntary ratings of products for Air Leakage (AL), Ventilation Rating (VR), and Condensation Resistance. Together these rating procedures, as set forth in documents published by NFRC, are known as the NFRC Rating System.

The NFRC Rating System employs computer simulation and physical testing by NFRC-accredited laboratories to establish energy and related performance ratings for fenestration and fenestration attachment product types. The NFRC Rating System is reinforced by a certification program under which NFRC-licensed responsible parties claiming NFRC product certification shall label and certify fenestration and fenestration attachment products to indicate those energy and related performance ratings, provided the ratings are authorized for certification by an NFRC-licensed Certification and Inspection Agency (IA).

The requirements of the rating, certification, and labeling programs (Certification Programs) are set forth in the most recent versions of the following as amended, updated, or interpreted from time to time:

- NFRC 700 Product Certification Program (PCP)
- NFRC 705 Component Modeling Approach (CMA) Product Certification Program (CMA-PCP)

and through the Certification Programs and the most recent versions of its companion programs as amended, updated, or interpreted from time to time:

- The laboratory accreditation program (Accreditation Program), as set forth in the NFRC 701 Laboratory Accreditation Program (LAP)
- The IA licensing program (IA Program), as set forth in NFRC 702 Certification Agency Program (CAP)
- The CMA Approved Calculation Entity (ACE) licensing program (ACE Program) as set forth in the NFRC 708 Calculation Entity Approval Program (CEAP)

NFRC intends to ensure the integrity and uniformity of NFRC ratings, certification, and labeling by ensuring that responsible parties, testing and simulation laboratories, and IAs adhere to strict NFRC requirements.

In order to participate in the Certification Programs, a Manufacturer/Responsible Party shall rate a product whose energy and energy-related performance characteristics are to be certified in accordance with mandatory NFRC rating procedures. At present, a Manufacturer/Responsible Party may elect to rate products for U-factor, SHGC, VT, AL, condensation resistance, or any other procedure adopted by NFRC, and to include those ratings on the NFRC temporary label affixed to its products or on the NFRC Label Certificate. U-factor, SHGC and VT, AL, VR, and condensation resistance rating reports shall be obtained from a laboratory that has been accredited by NFRC in accordance with the requirements of the NFRC 701.

The rating shall then be reviewed by an IA that has been licensed by NFRC in accordance with the requirements of the NFRC 702. NFRC-licensed IAs review label format and content, conduct in-plant inspections for quality assurance in accordance with the requirements of the NFRC 702, and issue a product Certificate of Authorization (CA) and may approve for issuance an NFRC Label Certificate for site-built or CMA products and attachment products. The IA is also responsible for the investigation of potential violations (prohibited activities) as set forth in the NFRC 707 Compliance and Monitoring Program (CAMP).

Products that are labeled with the NFRC Temporary and Permanent Label, or products that are listed on an NFRC Label Certificate in accordance with NFRC requirements, are considered to be NFRC-certified. NFRC maintains a Certified Products Directory (CPD), listing product lines and individual products selected by the Manufacturer/Responsible Party for which certification authorization has been granted.

NFRC manages the Rating System and regulates the PCP, LAP, and CAP in accordance with the NFRC 700 (PCP), the NFRC 701 (LAP), the NFRC 702 (CAP), the NFRC 705 (CMA-PCP), and the NFRC 708 (CEAP) procedures, and conducts compliance activities under all these programs as well as the NFRC 707 (CAMP). NFRC continues to develop the Rating System and each of the programs.

NFRC owns all rights in and to each of the NFRC 700, NFRC 701, NFRC 702, NFRC 705, NFRC 707, NFRC 708 and each procedure, which is a component of the Rating System, as well as each of its registration marks, trade names, and other intellectual property.

The structure of the NFRC programs and relationships among participants are shown in Figure 1, Figure 2, and Figure 3. For additional information on the roles of the IAs and laboratories and operation of the IA Program and Accreditation Program, see the NFRC 700 (PCP), NFRC 701 (LAP), and NFRC 702 (CAP) respectively.

Figure 1

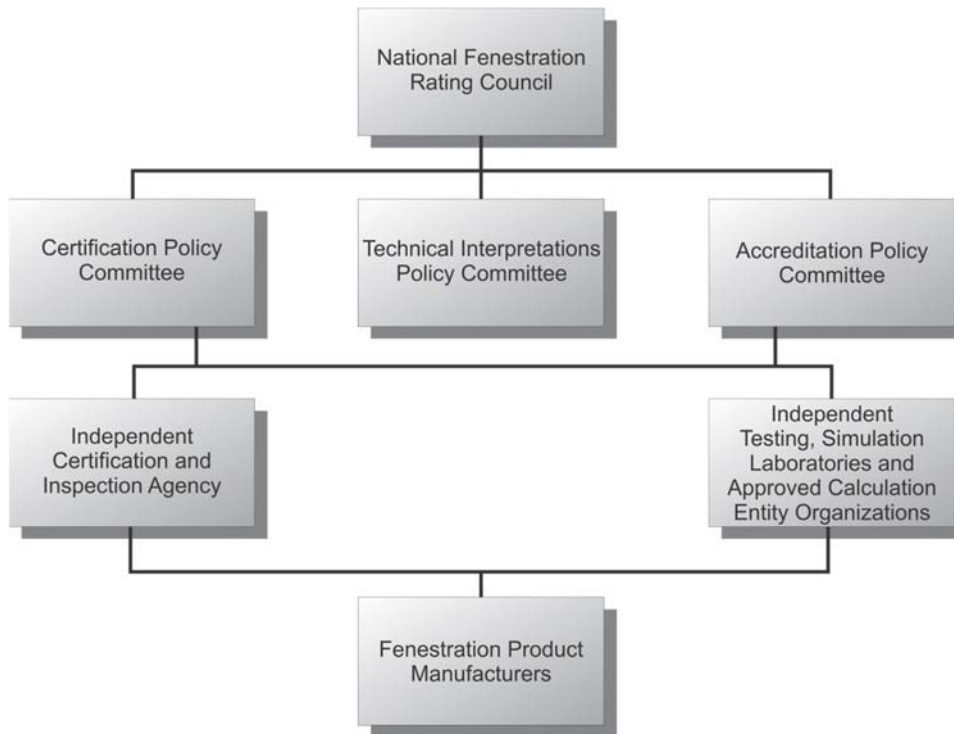


Figure 2

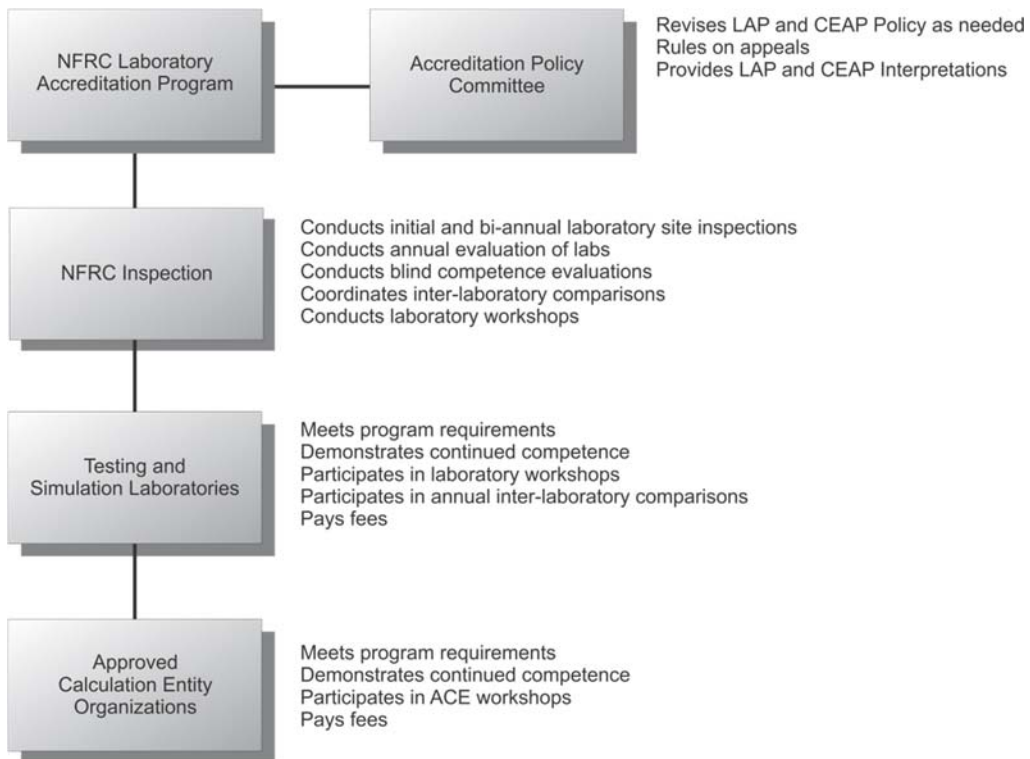
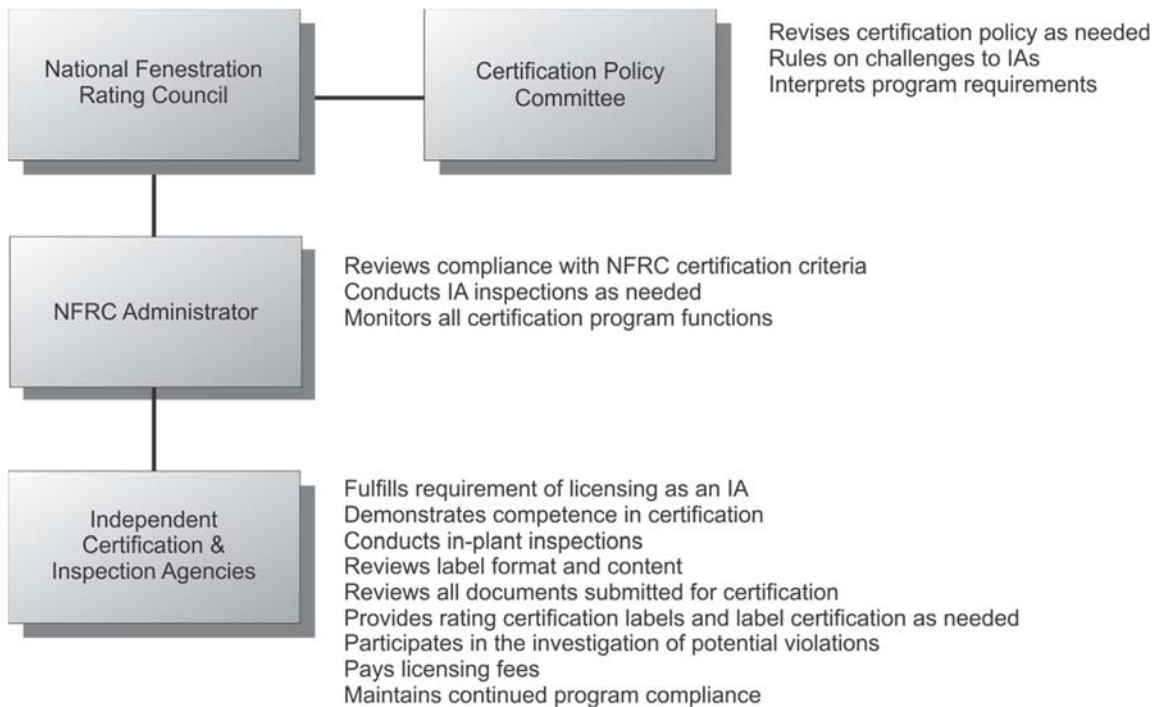


Figure 3



Questions on the use of this procedure should be addressed to:

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DISCLAIMER

NFRC certification is the authorized act of a Manufacturer/Responsible Party in: (a) labeling a fenestration or related attachment product with an NFRC Permanent Label and NFRC Temporary Label, or (b) generating a site built or CMA label certificate, either of which bears one or more energy-related performance ratings reported by NFRC-accredited simulation and testing laboratories and authorized for certification by an NFRC-licensed IA. Each of these participants acts independently to report, authorize certification, and certify the energy-related ratings of fenestration and related attachment products.

NFRC does not certify a product and certification does not constitute a warranty of NFRC regarding any characteristic of a fenestration or fenestration-related attachment product. Certification is not an endorsement of or recommendation for any 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.

NFRC THEREFORE DISCLAIMS ANY AND ALL LIABILITY THAT MAY ARISE FROM OR IN CONNECTION WITH SERVICES PROVIDED BY, DECISIONS MADE BY OR REPORTS OR CERTIFICATIONS ISSUED OR GRANTED BY ANY NFRC-ACCREDITED LABORATORY, NFRC-LICENSED IA OR ANY PRODUCT MANUFACTURER/ RESPONSIBLE PARTY; RELIANCE ON ANY NFRC PRODUCT DESCRIPTION, SPECIFICATION, RATING, TEST OR CERTIFICATION, WHETHER APPEARING IN A REPORT, A PRODUCT CERTIFICATION AUTHORIZATION OR A PRINTED OR ELECTRONIC DIRECTORY, OR ON A LABEL, OR ON A LABEL CERTIFICATE; OR THE SALE OR USE OF ANY NFRC-RATED OR CERTIFIED PRODUCT OR PRODUCT LINE; INCLUDING BUT NOT LIMITED TO DAMAGES FOR PERSONAL OR OTHER INJURY, LOST PROFITS, LOST SAVINGS OR OTHER CONSEQUENTIAL OR INCIDENTAL DAMAGES.

NFRC program participants are required to indemnify NFRC from and against such liability.



Table of Contents

Forward	iii
Disclaimer	vii
1. Scope of the Laboratory Accreditation Program (LAP)	14
1.1 SCOPE OF THE LAP	14
1.2 RESPONSIBILITY OF NFRC	14
1.3 RESPONSIBILITY OF NFRC ACCREDITED LABORATORY	14
2. Glossary of Terms	44
3. General Requirements	44
3.1 INDEPENDENCE REQUIREMENTS	44
3.1.1 Laboratory Independence Requirements	44
3.1.2 Independence Procedures.....	55
3.2 TECHNICAL COMPETENCE REQUIREMENT	66
3.2.1 Laboratory's In-Responsible Charge Personnel	66
4. NFRC Simulator Certification	77
4.1 INITIAL CERTIFICATION	77
4.2 CONTINUED CERTIFICATION.....	77
5. Accreditation Procedures	88
5.1 INTRODUCTION.....	88
5.2 DESCRIPTION OF OPERATION OF THE ACCREDITATION PROGRAM	88
5.3 LICENSING AGREEMENT	99
5.4 APPLICATION FOR ACCREDITATION OR RENEWAL OF ACCREDITATION	99
5.5 INITIAL REVIEW FOR ACCREDITATION	99
5.5.1 Laboratories (Initial Review).....	99
5.5.2 All Laboratories (Initial Review) Inspection Report.....	1040
5.6 GRANT OF ACCREDITATION	1040
5.7 DENIAL OF ACCREDITATION	1114
5.8 CERTIFICATES OF ACCREDITATION.....	1114
5.9 RENEWAL OF ACCREDITATION	1114
5.10 POST ACCREDITATION INSPECTIONS.....	1114

6.	Periodic Review and Proficiency Testing for Certification Maintenance and Accreditation Renewal.....	<u>1144</u>
6.1	CONTINUED LABORATORY ACCREDITATION AND SIMULATOR CERTIFICATION WORKSHOP REQUIREMENTS	<u>1144</u>
6.1.1	Scope of the Workshops.....	<u>1144</u>
6.1.2	Responsibility of NFRC.....	<u>1242</u>
6.1.3	Responsibility of NFRC Accredited Laboratory and Certified Simulator <u>1343</u>	
6.2	PERIODIC REVIEW	<u>1444</u>
6.2.1	NFRC Right to Reports.....	<u>1444</u>
6.2.2	All Laboratories.....	<u>1444</u>
6.2.3	Simulation Laboratories.....	<u>1545</u>
6.2.4	Testing Laboratories (U-factor, Condensation Resistance, SHGC, VT, and Air Leakage)	<u>1949</u>
6.3	INTERLABORATORY COMPARISON (ILC) TESTING AND SIMULATION	<u>242422</u>
6.4	ANNUAL PROFICIENCY TESTING.....	<u>252523</u>
6.5	BLIND COMPETENCE EVALUATION	<u>252524</u>
6.6	CONTINUING EDUCATION.....	<u>262624</u>
7.	Suspension and Revocation of Accreditation.....	<u>272725</u>
7.1	REQUIREMENTS OF LABORATORY UPON RECEIPT OF NON-COMPLIANCE NOTIFICATION	<u>272725</u>
7.1.1	Inspections.....	<u>272725</u>
7.1.2	LAP General Requirements.....	<u>282826</u>
7.2	GROUNDS FOR SUSPENSION OF ACCREDITATION	<u>313129</u>
7.3	GROUNDS FOR REVOCATION OF ACCREDITATION	<u>323230</u>
8.	Appeals Procedures	<u>323230</u>
8.1	APPEALS PROCEDURE AFTER DENIAL, SUSPENSION OR REVOCATION OF ACCREDITATION	<u>323230</u>
9.	Referenced Documents	<u>343432</u>

1. SCOPE OF THE LABORATORY ACCREDITATION PROGRAM (LAP)

1.1 Scope of the LAP

The LAP sets forth requirements applicable to a testing or simulation laboratory that wishes to participate in the NFRC Certification Program, including guidelines to become accredited under the Accreditation Program and to conduct day-to-day operations under the program.

1.2 Responsibility of NFRC

The NFRC has established and will sponsor and operate the Laboratory Accreditation Program (LAP). Under the Laboratory Accreditation Program the NFRC:

- B. The Accreditation Policy Committee (APC) is responsible for oversight of the LAP.
- C. The Senior Programs Manager, LAP Manager, and LAP Associate are the NFRC Staff liaison for the LAP.

1.3 Responsibility of NFRC Accredited Laboratory

- A. Accredited Simulation Laboratories
 - i. Simulation laboratories provide computer simulation testing services for one or more of the following tests; U-factor, solar heat gain coefficient, visible transmittance, and condensation resistance to fenestration manufacturers that participate in, or are applying to participate in, the NFRC Certification Program. The following NFRC approved software shall be used for fenestration product computer simulation modeling services:
 - a) WINDOW, for building the glazing systems and calculation of whole product U-factor, solar heat gain coefficient, visible transmittance, and condensation resistance. The only exception to using this software for whole product calculations is entry doors and vehicular access doors with panel/embossed panel systems (See Section A.ii)
 - b) THERM, for frame/sash modeling of fenestration cross-sections and spacer component modeling.
 - c) Component Modeling Software Tool (CMAST), for import of frame and spacer components from THERM

- ii. For products that cannot use WINDOW to calculate whole product rating values, then the simulation laboratory will be required to undergo an approval process to use their own proprietary calculation spreadsheet(s), as follows:
 - a) Compare the laboratory proprietary spreadsheet results against the NFRC Benchmark Entry Door Spreadsheet (Fiberglass/Metal Skin version or Solid Wood version) for the following: (1) an opaque door, (2) one glazing option without a divider for all size lites (1/4, 1/2, 3/4 lite, and full), and (3) one glazing option with a divider for all size lites. If the laboratory spreadsheet results are within 0.06 W/m²K (0.01 Btu/hr-ft²-F) of the NFRC Benchmark results, then proceed to A.ii.b.
 - b) Contact the NFRC LAP Manager with the results and the filename of the template spreadsheet to be filed on the approval list.
 - c) Each NFRC Inspection Agency will be supplied with the filename of the Entry Door Spreadsheet of that laboratory. That laboratory will be identified on the NFRC website as an approved laboratory for conducting Entry Door System simulations.
 - d) Currently, sidelight entry systems and vehicular access doors systems are exempt from the APC approval process until an NFRC Benchmark Spreadsheet is developed for those fenestration products

B. Accredited Testing Laboratories

- i. Thermal Transmittance Testing
 - a) Conduct physical tests of whole product test specimens in accordance with NFRC 102 to validate computer-simulated ratings; or, the specimen is tested as part of the NFRC IVP;
 - b) Conduct center-of-glass component tests in accordance with ASTM C1363 to determine a center-of-glass U-factor to be used by the simulation laboratory in the whole product U-factor calculation;
 - c) Conduct destructive analysis of a thermal test specimen in accordance with the NFRC IVP. No physical testing for U-factor will be determined.

- ii. Solar Heat Gain Coefficient (SHGC) Testing
 - a) Conduct physical tests using a solar calorimeter to test whole product test specimens that cannot be simulated; or, is tested as part of the NFRC IVP in accordance with NFRC 201;
 - b) Conduct center-of-glass component tests in accordance with NFRC 201 to determine a center-of-glass SHGC to be used by the simulation laboratory in the whole product SHGC calculation;
 - c) Conduct destructive analysis of a solar heat gain test specimen in accordance with the NFRC IVP. No physical testing for SHGC will be determined.
- iii. Condensation Resistance Testing
 - a) Conduct physical tests of whole product test specimens that cannot be simulated, in accordance with NFRC 500 to provide a condensation resistance rating.
- iv. Air Leakage Testing
 - a) Conduct physical tests of whole product test specimens in accordance with ANSI/NFRC 400 to provide an air leakage rating.
- v. Visible Transmittance Testing
 - a) Conduct center-of-glass component tests in accordance with NFRC 202 to determine a center-of-glass VT to be used by the simulation laboratory in the whole product VT calculation.
 - b) Conduct tubular daylighting device testing in accordance with NFRC 203 to provide an annual visible transmittance rating.
- C. All accredited testing laboratories are expected to maintain a high degree of technical and professional rigor and to exercise the highest level of professional ethics.
- D. The laboratory shall participate in the investigation of potential violations (prohibited activities) as set forth in the NFRC Compliance and Monitoring Program (NFRC 707).

2. GLOSSARY OF TERMS

Refer to NFRC 600.

3. GENERAL REQUIREMENTS

3.1 Independence Requirements

3.1.1 Laboratory Independence Requirements

A. Independence Criteria and Procedures

In order for a testing or simulation laboratory to become or remain accredited by NFRC, the laboratory shall meet the following laboratory independence requirements, so that NFRC services are rendered objectively and without bias:

B. No accredited laboratory, its equity owners, officers, directors, managers or employees, or any affiliate of such person, may:

- i. Have any financial interest in, or family or organizational affiliation to, any fenestration product or component manufacturer, supplier or vendor
- ii. Have any financial interest in, or family or organizational affiliation to any firm for which any one of them provides NFRC-licensed certification services
- iii. Advocate or recommend the use of any product (or product component) for which the accredited laboratory provides NFRC testing or simulation services
- iv. Advocate or recommend the use of a particular thermal performance certification agency providing NFRC-licensed services
- v. Be involved in the commercial design or fabrication of fenestration products or components.

C. No accredited laboratory, its equity owners, directors, officers or managers, or any affiliate of any such person, shall accept any payment or consideration of any kind, from any person, in exchange for the laboratory's reporting a rating or test or simulation result that appears to meet or comply with the requirements of NFRC Test Procedures when the test or simulation was not in fact conducted and reported in compliance with those requirements.

- D. Each accredited laboratory, its equity owners, directors, officers, managers and employees shall keep confidential all product information, test data and other proprietary information developed for or acquired from the laboratory's clients participating in the NFRC Certification Program, to the extent required by such clients, except as may be expressly required by NFRC in connection with the Certification Program or Accreditation Program.

3.1.2 Independence Procedures

In order for a testing or simulation laboratory to become or remain accredited by NFRC, the laboratory shall comply with the following independence procedures:

- A. Each accredited laboratory shall maintain a statement signed, on behalf of the laboratory, by an authorized officer, or in the case of a partnership or sole proprietorship, an authorized representative, and by each person performing services on behalf of the laboratory in connection with the Accreditation Program, ANSI/NFRC 100, NFRC 101, NFRC 102, ANSI/NFRC 200, NFRC 201, NFRC 202, NFRC 203, NFRC 300, ANSI/NFRC 400, NFRC 500 and other NFRC approved test or simulation procedure, that the laboratory and each such person is and shall be in compliance with the independence criteria contained in Section 3.1 at all times.
- B. Such persons shall include, but not be limited to: all management personnel at the laboratory, individual(s)-in-responsible-charge, person(s) performing NFRC related simulation or testing duties [test engineers, technicians, and technician assistants], and any person performing sub-contracted work related to NFRC activities. Also, the determination as to which person(s) shall be included will be made by the APC.
- C. Each accredited laboratory shall notify NFRC not later than 10 calendar days after a change in any fact affecting the laboratory's compliance with the independence criteria of Section 3.1.1. Such a change could result from, among other things, termination or hiring of any employee or a change in the equity ownership or management of the laboratory. Upon notification of such to NFRC, the APC shall be notified of this occurrence. The APC shall determine what action will, if any, be taken.

3.2 Technical Competence Requirement

3.2.1 Laboratory's In-Responsible Charge Personnel

- A. Each laboratory and each individual laboratory location shall demonstrate technical competence of its laboratory staff to conduct NFRC tests or simulations. Each laboratory and each laboratory location shall employ at least one, but preferably two, full-time staff members approved by NFRC as an "individual-in-responsible-charge," (IRC) or "simulator-in-responsible-charge" (SIRC) who shall be responsible for all technical and administrative aspects of the laboratory's participation in the Accreditation Program. A laboratory shall notify NFRC not later than 10 calendar days of any change in personnel performing NFRC accredited services listed on the application.
- B. Each IRC of an NFRC testing laboratory shall have a Bachelor's Degree or higher degree in engineering, quality control or a closely related physical science, or a minimum of four years experience in similar testing. If an applicant laboratory does not have a proposed or current IRC that meets these requirements, the APC, at their discretion, shall determine if their experience in the fenestration testing field or other factors, such as laboratory management role, may be substituted for the Bachelor's Degree requirement. If the IRC terminates employment see section 7.1.2.B here in.
- C. Each SIRC of an NFRC simulation laboratory shall have a Bachelor's Degree or higher degree in computer science, engineering or a closely related physical science, or a minimum of four years experience as an NFRC certified simulator. If an applicant laboratory does not have a proposed or current SIRC that meets these requirements, the APC, at their discretion, shall determine if their experience in the fenestration testing field or other factors, such as laboratory management role, may be substituted for the Bachelor's Degree requirement. The SIRC shall be an NFRC certified simulator having successfully completed an NFRC Simulation Certification Workshop and have passed an NFRC Simulation Certification Examination. The SIRC shall be trained and meet the competency requirements in all NFRC Simulation Procedures and approved computer software tools, shall be required to attend regularly scheduled workshop(s), and shall participate in NFRC's annual Interlaboratory Comparison (ILC) simulation. If the SIRC terminates employment see section 7.1.2.B here in.

4. NFRC SIMULATOR CERTIFICATION

4.1 Initial Certification

- A. Each individual shall attend the required NFRC Simulation Training Workshop and properly complete all tasks at the workshop.
- B. NFRC staff shall evaluate the simulation exams using the NFRC approved software tool(s) for computer simulations; and applicable documents in effect at the time the exam was mailed to the examinee.
- C. The NFRC staff shall submit the evaluation to the individual seeking the NFRC Certified Simulator status within 60 calendar days from the date the prospective simulator obtained the simulation examination from NFRC. NFRC staff will notify APC if additional time is required for evaluation of examinations. All Exam corrections if necessary shall be submitted to NFRC staff within 30 days.
- D. At the discretion from the APC, additional exams may be given to those persons who have taken and failed the applicable simulation examination. The APC shall respond within 45 days of receipt of a written request.
- E. All exams shall be based on currently approved simulation tools, technical documents, and program requirements.

4.2 Continued Certification

- A. In the event that the NFRC Board of Directors adopts a new version of any NFRC approved computer software program, procedures for simulation of energy performance, or revisions to any NFRC technical document; and the new version is deemed to be substantially different from the previously approved, then:
 - i. All NFRC Certified Simulators shall participate in an NFRC training program or workshop for the new version. Each participant shall complete a simulation examination, if deemed appropriate, as part of the competency evaluation to maintain individual certification.
 - ii. For NFRC accredited simulation laboratories, the APC shall make a determination as to whether a laboratory is competent in employing the new version before the laboratory may issue any NFRC certification report utilizing the new version of the computer program or procedure. The APC shall make the determination within forty-five (45) days from when the new version of the computer program or procedure has been approved by the NFRC Board of Directors.

- B. All NFRC Certified Simulators shall participate in all NFRC administered ILCs per Section 6.3, and pay the annual maintenance fee to retain the NFRC Certified Simulator status.

5. ACCREDITATION PROCEDURES

5.1 Introduction

To become or remain accredited, a laboratory shall meet the criteria set forth in the NFRC 701, the NFRC 701.08 for simulation laboratory accreditation and the NFRC 701.09 for test laboratory accreditations.

5.2 Description of Operation of the Accreditation Program

- A. To become accredited, an applicant laboratory shall submit an initial application for accreditation (NFRC 701.01 or NFRC 701.02) to NFRC and pay the application fees (NFRC 704). The applicant laboratory shall complete the accreditation process set forth in application for accreditation and this section of LAP. Upon completion of the accreditation process and approval by the APC, the applicant laboratory shall enter into a License Agreement with NFRC and pay any applicable fees.
- B. In order to maintain accreditation, a laboratory shall submit, by December 15th, an application for renewal of accreditation, if applicable, participate in regularly scheduled NFRC accreditation workshops and training programs in accordance with Section 6.1, participate in Periodic Reviews in accordance with Section 6.2, participate in all interlaboratory comparisons in accordance with Section 6.3, pay all applicable fees, including any fines which may be assessed under the NFRC Compliance Assurance Program, and shall otherwise comply with all requirements of this LAP and the License Agreement.
- C. The renewal application shall be submitted to include any and all changes that have occurred since the initial application for accreditation was submitted. This may be done by revising a copy of the initial application or by submitting an amended application with references to the specific sections of the initial application that have changed. If there are no modifications from the original application, the laboratory is not required to submit a renewal application.
- D. Subcontracted NFRC certification testing or simulation services by any NFRC accredited laboratory shall only be authorized to another NFRC accredited laboratory. NFRC accredited simulation laboratories may subcontract with any NFRC Certified Simulator to perform simulation services on their behalf for certification but they shall adhere to the independence criteria in Section 3.1.1 and that person(s) shall also be listed in the initial or renewal application.

- i. If NFRC accredited laboratory contracts with an NFRC Certified Simulator, the contract shall clearly state the duration of the contract (either by project or by time) and affirm the independent status of the simulator as required by Section 3.1.2.B.
- ii. For the duration of the contract, the NFRC Certified Simulator shall sign reports as the individual performing the simulation as required by NFRC 701.03 Section 1.1.1.Q.

5.3 Licensing Agreement

The License Agreement is the principal document governing the relationship between NFRC and an NFRC accredited laboratory. The agreement also governs the use of NFRC's registered certification mark by an accredited laboratory and advertising of the laboratory's NFRC accreditation. The License Agreement does not become effective, and a laboratory shall not be authorized to issue reports or to advertise its NFRC participation until the agreement is signed by NFRC and a fully executed copy is delivered to the laboratory.

5.4 Application for Accreditation or Renewal of Accreditation

A testing or simulation laboratory seeking NFRC accreditation through the Accreditation Program may initiate the accreditation process or accreditation renewal process by filing an initial laboratory application with NFRC.

- A. The initial application form for simulation laboratories is NFRC 701.01, which can be found on the NFRC website.
- B. The initial application form for testing laboratories is NFRC 701.02, which can be found on the NFRC website.
- C. Application and accreditation fees are set forth in the most current NFRC 704. The initial application shall be completed in full and be accompanied by the required application fee.
- D. If there are any changes to the initial application content, the accredited laboratory shall update the appropriate sections and submit a revised application.

5.5 Initial Review for Accreditation

A testing or simulation laboratory seeking initial NFRC accreditation shall be evaluated by an NFRC Inspector.

5.5.1 Laboratories (Initial Review)

- A. Upon receipt by NFRC of an initial application and required application fees from a laboratory desiring accreditation to ANSI/NFRC 100, NFRC 102, ANSI/NFRC 200, NFRC 201, NFRC 202, NFRC 203, ANSI/NFRC 400, NFRC 500 and any other of the Rating Procedures for which the testing laboratory wishes to issue test reports for use in connection with the

Certification Program a laboratory accreditation competence evaluation and initial on-site visit shall be scheduled and conducted by the NFRC Inspector.

- i. The initial simulation laboratory inspection will be conducted in accordance with NFRC 701.08.
- ii. The initial testing laboratory inspection will be conducted in accordance with NFRC 701.09.

5.5.2 All Laboratories (Initial Review) Inspection Report

- A. Following the initial inspection the NFRC Inspector shall prepare the laboratory initial inspection report. Based on the inspection findings, the inspector shall provide the inspection report to the laboratory and APC within thirty (30) days of the inspection date. The laboratory shall provide responses to the action items to the NFRC Staff within thirty (30) days. The inspection report, the corresponding laboratory's responses, and recommendations by NFRC Staff will be submitted to the APC for accreditation approval.
- B. If there is a dispute of any of the recommended or required action items within the report by the laboratory, then the laboratory shall explain their reasoning for disputing the action item in their response. Then the NFRC Inspector shall submit the disputed item(s) to the APC for review to determine whether to concur with the laboratory's claims. A letter outlining the APC's ruling shall be submitted to the laboratory within fifteen (15) days after the APC finalizes its ruling.

5.6 Grant of Accreditation

If an applicant laboratory fulfills all accreditation requirements, the NFRC Inspector shall recommend to the APC, in the judgment of the NFRC Inspector, that a Certificate of Accreditation be issued to the applicant authorizing it to be an NFRC accredited laboratory and to provide either NFRC testing or simulation services or both, as the case may be, in accordance with this LAP. The APC shall make a final determination as to whether to issue a Certificate of Accreditation based upon the recommendation by the NFRC Inspector and such other information as it deems appropriate. The Certificate shall be valid for one year from the date of issuance unless terminated sooner by the laboratory or suspended or revoked by NFRC. A laboratory shall not conduct tests or simulations or issue reports, purporting to be NFRC reports upon which NFRC Product Certification Authorization may be based, until NFRC provides a copy of the License Agreement signed by NFRC and the laboratory and an NFRC Certificate of Accreditation via facsimile, mail, or email to the laboratory.

5.7 Denial of Accreditation

- A. No NFRC License Agreement shall be entered into and no Certificate of Accreditation shall be issued by NFRC until all specified deficiencies set forth in a Final Assessment Report have been corrected to the satisfaction of the APC. If the time period for correction of deficiencies has expired without correction of the specified deficiencies, the APC shall deny accreditation.
- B. If an applicant laboratory fails to fulfill any requirements for accreditation as determined by the APC, NFRC staff shall inform the applicant laboratory that accreditation is denied and specify the reasons for the determination. A denial of accreditation may be appealed in accordance with the procedures set forth in Section 8 hereof.

5.8 Certificates of Accreditation

All Certificates of Accreditation are the property of NFRC and shall become void and be returned within 5 business days to NFRC upon expiration of the one-year term of accreditation, in the absence of renewal of accreditation pursuant to Section 5.4 or termination or revocation of accreditation.

5.9 Renewal of Accreditation

In order to renew accreditation, an NFRC laboratory shall follow Section 5.4 hereof.

5.10 Post Accreditation Inspections

NFRC retains the right to conduct an on-site inspection in order to ensure that the testing or simulation laboratory continues to meet the NFRC requirements.

6. PERIODIC REVIEW AND PROFICIENCY TESTING FOR CERTIFICATION MAINTENANCE AND ACCREDITATION RENEWAL

The following requirements shall be fulfilled by a laboratory to obtain or retain accreditation and a simulator to retain certification.

6.1 Continued Laboratory Accreditation and Simulator Certification Workshop Requirements

6.1.1 Scope of the Workshops

The purpose of workshops is for NFRC to maintain the highest accuracy and quality of simulation and testing provided by NFRC accredited laboratories. These serve as the basis for NFRC energy performance rating values provided to consumers. The meeting

workshops, held up to three times per year, are mandatory to all IRC of testing laboratories and SIRC of simulation laboratories. Other workshops, held for the training of new software and/or significant changes and additions to existing software may be scheduled and are mandatory to all NFRC Certified Simulators.

The workshop(s) provide NFRC staff a means to disseminate new procedures, modeling rules, etc. to all parties to uniformly maintain repeatability of results.

Depending upon the material to be presented at the workshop(s), it may be a face-to-face meeting or in the form of an online presentation. This is at the discretion of the NFRC Staff and the APC.

6.1.2 Responsibility of NFRC

NFRC staff, 90 days before a scheduled face-to-face workshop, shall notify all NFRC accredited laboratories' IRCs of the workshop location. Online workshop(s) will be scheduled 3-6 weeks after each NFRC Membership Meeting.

- A. Staff shall discuss the findings of the ILC during the NFRC scheduled LAP workshop if applicable.
- B. Staff shall discuss all technical interpretations and updated procedure changes during the scheduled workshop.
- C. Staff shall discuss action items and other important laboratory related information that occurred during the Membership Meetings.
- D. NFRC staff shall report of all action items from the workshop to APC at the next scheduled APC conference call. The need to address action items shall be communicated by NFRC staff on behalf of the APC to appropriate NFRC committee chairs for necessary action and resolution. APC members shall be informed by the staff about the resolution of the action item. The APC chair shall inform the Board of any action item not resolved within six 6 months.
- E. NFRC staff shall maintain a history sheet of attendance and shall inform APC about any breach of requirements of attendance. Upon receipt of the report from the staff, APC shall issue a notification of suspension to the accredited laboratory.

6.1.3 Responsibility of NFRC Accredited Laboratory and Certified Simulator

- A. Meeting Workshops
 - i. Each NFRC Accredited Test Laboratory IRC and SIRC shall attend at least two of three regularly scheduled NFRC meeting workshops each year as a condition for continued accreditation. It is the responsibility of the SIRC of accredited simulation laboratories to ensure their certified simulators are kept abreast of the contents of the workshops as part of the continuing education or company training programs. This includes simulators on-staff or sub-contracted.
- B. Other Workshops
 - i. Other workshops are held to introduce and train certified simulators of new software, revisions/additions to existing software, or revisions to documents that are deemed significant by the APC or NFRC Board of Directors. Each NFRC Certified Simulator shall attend to maintain certification.
- C. If, for any reason deemed an emergency, attendance is less than those stipulated in Section 6.1.3.A and Section 6.1.3.B; the person shall request an excused absence by the APC. Upon approval by the APC of the emergency excused absence, the person may, at the discretion of the APC, continue as a SIRC or IRC or NFRC Certified Simulator. If the APC does not grant an excused absence, the person shall be immediately suspended as the IRC or SIRC or NFRC Certified Simulator until such time that the person satisfactorily meets the conditions stipulated by the APC. If this individual is the laboratory's only designated IRC or SIRC, the laboratory shall follow the provisions as stipulated in Section 7.1.2.B.i.
- D. In the event that the APC has determined that the material and/or information presented at the meeting workshop are necessary for continuation as an IRC or SIRC, the APC shall provide a course of action for the party to indicate competency. The course of action shall include the requirement of making up the session within a specified timeline to be determined by the APC.
- E. Failure of a laboratory to meet the workshop attendance requirement in Section 6.1.3.A and Section 6.1.3.B shall result in immediate and automatic suspension of the laboratory's accreditation with no action required by the APC. Accreditation shall be reinstated upon fulfillment of the requirement.

- F. Failure of a Certified Simulator, not designated as a SIRC or not affiliated with an accredited laboratory, to meet the attendance requirements in Section 6.1.3.B shall result in immediate and automatic suspension of the certification. The certified status shall be reinstated upon fulfillment of the requirement.
- G. Laboratories with multiple accredited locations shall have the IRC from each location follow Section 6.1.3.A and Section 6.1.3.B for NFRC workshop attendance.

6.2 Periodic Review

6.2.1 NFRC Right to Reports

NFRC reserves the right to obtain a copy of any report generated by an accredited laboratory for the purpose of submittal to an NFRC-licensed Certification and Inspection Agency (IA) for certification authorization (CA~~R~~), and if requested, shall be submitted to NFRC at the same time the report is sent to the IA.

6.2.2 All Laboratories

- A. Not less than once in two years following accreditation, but more often if deemed necessary by the APC, NFRC shall conduct a technical evaluation assessment ("Periodic Review") of each accredited laboratory. The NFRC Inspector, with the concurrence of the APC, will determine if an on-site inspection of the laboratory is necessary in connection with a Periodic Review. The laboratory Periodic Review assessment shall be conducted by the NFRC Inspector and shall be based on all of the requirements of the Accreditation Program. NFRC has the right to conduct an unannounced on-site inspection or a Periodic Review at any time if deemed necessary or appropriate by the APC. The NFRC Inspector shall not be an employee or contractor of, or have a similar relationship to, any NFRC accredited laboratory.
- B. Failure to submit to the Periodic Review or to an on-site inspection shall result in immediate issuance of a Notice of Suspension or the laboratory will be refused a renewal accreditation. A suspension may be appealed in accordance with the procedures set forth in Section 8.1. A suspension may be withdrawn by the NFRC Inspector, upon approval by the APC, upon submission to a Periodic Review and compliance with all program requirements.
- C. The two-year ~~on-site~~ inspection cycle shall be performed every other year based on the last periodic review.

6.2.3 Simulation Laboratories

- A. The Periodic Review shall consist of the following:
- i. Review of the laboratory's continuing compliance with the applicable conditions, criteria and obligations set forth in Section 3, Section 4, Section 5 and Section 6 hereof.
 - ii. Review of the computer simulation data files, for product lines submitted for NFRC product certification authorization and components submitted for approval, where applicable, or listed in the NFRC Certified Products Directory selected at random by the NFRC Inspector from files of the simulation laboratory, NFRC IAs, or a combination of such files and may include simulation data files for the same Product Line or component from both the simulation laboratory and any IA.
 - iii. Review of any of the following information, which the laboratory shall make available:
 - a) All NFRC approved simulation software files for each Product Line or component selected by the NFRC Inspector (a minimum of three Product Lines and components shall be evaluated)
 - b) A complete report submitted on behalf of the product line manufacturer to the IA for certification authorization
 - c) All product drawings for the Product Line or component
 - d) Any documentation provided by the manufacturer (e.g. spacer information, material conductivities, Low-E coating data, etc.)
 - e) Proper documentation of any assumptions and/or technical interpretations used in simulation
 - iv. Comparison of product or component computer simulation files for review by NFRC and comparison with manufacturers' as-built drawings on file with the laboratory.

- v. Evaluation of compliance with the following:
 - a) Independence criteria and procedure compliance (Section 3.1)
 - b) Technical competence (Section 3.2)
 - c) In-service education and training records (Section 6.5)
 - d) Simulation report format (NFRC 701.03)
 - e) Simulation equipment and operations manual (Section 1.5 of NFRC 701.08)
 - f) Quality control program (Section 1.6 of NFRC 701.08)
 - g) Record keeping practices (Section 1.7 of NFRC 701.08)

- B. A laboratory subject to a Periodic Review shall provide access to all information specified in Section 6.2.3, and failure to do so could result in issuance of a Notice of Suspension as set forth in Section 7.2.

- C. If the NFRC Inspector determines that a laboratory is not in compliance with any of the applicable provisions of Section 3, Section 4, Section 5 and Section 6 hereof and the APC concurs, the NFRC Inspector will notify the laboratory of specified deficiencies and will require that specified corrective action, set forth in the notification, be taken not later than 30 calendar days after the date of notification. Depending upon the severity of a non-compliance issue, the NFRC Inspector may request the APC to make a determination on the status of laboratory's accreditation within 5 business days of notification. The following protocol shall apply if results are deemed to be incorrect in a simulation report that has been submitted for certification authorization.
 - i. NFRC simulations and corresponding results shall be reviewed for compliance with modeling procedures as stipulated in ANSI/NFRC 100, ANSI/NFRC 200, NFRC 303, NFRC 304, NFRC 500, the NFRC Simulation Manual, Technical Interpretations and other referenced or required documents, when applicable. If the review determines that the results submitted for certification are incorrect due to modeling errors, the NFRC Inspector shall immediately notify the APC and the APC shall make the judgment if a notification of the

simulation deficiencies needs to be issued to the simulation laboratory IRC.

- ii. The NFRC Inspector shall cite the appropriate document(s) and section number(s) in reference to the noncompliant modeling techniques or requirements in the notification.
 - iii. Upon notification of the NFRC accredited Simulation Laboratory SIRC, the NFRC Inspector shall also notify the Independent Certification and Inspection Agency of the findings. If the APC deems necessary, the simulation report shall be immediately suspended until such time that an amended report reviewed and approved by the NFRC Inspector and is provided to the NFRC IA for review and approval.
 - iv. The NFRC Inspector shall instruct the simulation laboratory to perform simulations to correct the error(s) found, and upon completion of the re-simulation(s), the data files and information shall be reviewed by the NFRC Inspector for compliance, the simulation laboratory shall reissue an amended simulation report if applicable upon acceptance by the NFRC Inspector, and submit it to the NFRC IA.
 - v. It shall be the responsibility of the NFRC accredited Simulation Laboratory to notify the manufacturer of any revised rating results.
 - vi. Failure to adhere to the requirements of this section may result in immediate suspension of accreditation at the discretion of the APC.
- D. A simulation laboratory periodic inspection assessment in connection with a Periodic Review, whether for accreditation, renewal, or in connection with an unannounced inspection, the NFRC Inspector shall prepare the laboratory inspection report. Based on the inspection findings, the inspector shall provide the inspection report to the laboratory within thirty (30) days of the inspection date. The laboratory shall provide responses to the action items to the NFRC Staff within thirty (30) days. The inspection report, the corresponding laboratory's responses, and recommendations by NFRC Staff will be submitted to the APC for re-accreditation approval.

- E. If there is a dispute of any of the recommended or required action items within the initial report by the laboratory, the laboratory shall explain their reasoning for disputing the action item in their response. Then the NFRC Inspector shall submit the disputed item(s) to the APC for review to determine whether to concur with the laboratory's claims. A letter outlining the APC's ruling shall be submitted to the laboratory within fifteen (15) days after the APC finalizes its ruling.
- F. In the event that the specified deficiencies have not been remedied by the conclusion of the specified time period, in the judgment of the NFRC Inspector and with the approval by the APC, the APC shall immediately suspend the laboratory's accreditation by issuance of a Notice of Suspension.
- G. A technical evaluation report for an NFRC Certified Simulator employed by an NFRC Accredited Simulation Laboratory shall be prepared by the NFRC Inspector, and a draft copy provided to the simulation laboratory not later than 60 calendar days after receipt of the required materials.
- H. A suspension under this section may be appealed in accordance with the procedures set forth in Section 8.1 hereof. A suspension may be withdrawn by the APC, upon a determination by the APC that the specified deficiencies have been remedied.
- I. In the event of a suspension of accreditation under this section and in the further event that the laboratory does not take corrective action sufficient to permit the NFRC Inspector to determine that the deficiencies have been remedied within the 30 calendar days after the date of the Notice of Suspension, the APC shall issue a Notice of Revocation. The revocation may be appealed in accordance with the procedures set forth in Section 8.1 hereof.
- J. All costs, including but not limited to travel, lodging, and NFRC staff time connected to a re-inspection necessitated by a failure of the simulation laboratory to meet NFRC requirements in the initial inspection or subsequent periodic reviews, shall be borne by the laboratory and not by NFRC.
- K. See "Preparing for an Inspection as an NFRC Accredited Simulation Laboratory," attached to the Simulation Laboratory Accreditation Initial Application for more information about inspections.

6.2.4 Testing Laboratories (U-factor, Condensation Resistance, SHGC, VT, and Air Leakage)

- A. If the laboratory is accredited for any or all of the following: ANSI/NFRC 100, NFRC 102, NFRC 201, NFRC 202, NFRC 203, ANSI/NFRC 400 or NFRC 500 testing, the ~~on-site~~ periodic review shall be conducted for all procedures at the same inspection period.
- B. The Periodic Review shall consist of the following:
 - i. Review of the laboratory's continuing compliance with the applicable conditions, criteria and obligations set forth in Section 3, ~~Section 4~~, Section 5 and Section 6 hereof.
 - ii. Review of any of the following information, which the laboratory shall make available:
 - a) All NFRC approved test files for each Product Line or component selected by the NFRC Inspector (a minimum of three Product Lines and components shall be evaluated)
 - b) A complete report submitted on behalf of the product line manufacturer to the IA for certification authorization
 - c) All product drawings for the Product Line or component
 - d) Proper documentation of any technical interpretations used
 - iii. Evaluation of compliance with the following:
 - a) Independence criteria and procedure compliance (Section 3.1)
 - b) Technical competence (Section 3.2)
 - c) In-service education and training records (Section 6.5)
 - d) Test report format per test type (NFRC 701.03; NFRC 701.04; NFRC 701.05; NFRC 701.06; NFRC 701.07, and/or NFRC 701.10)
 - e) Testing equipment and operations manual (Section 1.5 of NFRC 701.09)

- f) Calibration records (Section 1.5 of NFRC 701.09)
- g) Calibration examination of an in-house CTS Panel (Section 1.5.2 of NFRC 701.09). This is not required for VT testing.
- h) Quality control program (Section 1.6 of NFRC 701.09)
- i) Record keeping practices (Section 1.7 of NFRC 701.09)
- j) Processing of specimen (Section ~~1.7.28~~ of NFRC 701.09)

C. The staff competence and equipment evaluation for testing laboratories requires that the applicant conduct the following: during an on-site inspection:

- i. One NFRC 102 test of a fenestration product specimen selected by the NFRC Inspector, during the inspection.
- ii. One NFRC 201 test of a fenestration product specimen or center-of-glass component selected by the NFRC Inspector.
- iii. One NFRC 202 test of a product specimen or center-of-glass component selected by the NFRC Inspector.
- iv. One NFRC 203 test of a TDD/HTDD.
- v. An in-house CTS Panel test shall be performed or reviewed for evaluation during the inspection.
- vi. An additional NFRC 102, NFRC 201, NFRC 202, and NFRC 203 test during the inspection of a CTS Panel, fenestration product, or center-of-glass component, shall be at the discretion of the NFRC Inspector. The maximum number of tests shall be three during any Periodic Review.
- vii. If the laboratory is accredited for ANSI/NFRC 400 air leakage testing, then either one ANSI/NFRC 400 test of a fenestration product shall be selected by the NFRC Inspector or a complete air calibration shall be conducted. A calibration shall be mandatory if the laboratory has not conducted a calibration within six months of the date of the on-site inspection.

D. The staff competence and equipment evaluation for testing laboratories may be performed virtually, at the discretion of NFRC, if the following conditions apply:

- i. The periodic review is not an initial review of the laboratory.
- ii. Technicians performing testing have four or more years experience performing the test procedure to be inspected; experience to be confirmed via current training records.
- iii. Photographs of the installation, on both the interior and exterior sides, where applicable, per the test procedures in 6.2.4.C above:
 - a) Clearly demonstrate product sealing employed; confirm perimeter tape sealing and product air sealing meets the testing procedure guidelines.
 - i. For NFRC 102 testing demonstrate the hot box to surround panel sealing technique for air leakage prevention; extraneous flanking losses
 - b) Temperature monitoring locations employed: product surface, surround panel, air grids and ambient air (including humidity sensors where applicable).
- iv. Product sample verification shall be accomplished by photographing each complete product cross-section (head, jamb, sill, rail, stile or mullion) in combination with a measuring scale (which shall be compared to manufacturer drawings) to confirm critical dimensions:
 - a) Wall thicknesses
 - b) Overall width and height
 - c) Glass thickness and gap (including spacer identification)
 - d) Thermal break material (debridge or other)
- v. The laboratory must make available all items from Section 6.2.4.B.
- vi. Operations and Quality Manuals shall only be

required if changes or updates have been authorized. Manual revision logs shall be maintained and made available upon request.

vii. A virtual competence and equipment evaluation for testing laboratories may not apply if the following have occurred or at the discretion of NFRC:

a) Major overhaul or upgrades that are sensitive to the results as mentioned below but not limited to:

i. Replacement of fan (array); both interior and exterior sides

ii. Data acquisition

iii. Meter box construction

b) Personnel changes who are directly responsible for testing; new employee hire.

c) An on-site inspection has not been performed in the last six years.

Newly accredited laboratories must have two on-site inspections before authorized for a virtual inspection.

d) Suspension and/or revocation of accreditation.

D-E. A test laboratory periodic inspection assessment in connection with a Periodic Review, whether for accreditation, renewal, or in connection with an unannounced inspection, the NFRC Inspector shall prepare the laboratory inspection report. Based on the inspection findings, the inspector shall provide the inspection report to the laboratory within thirty (30) days of the inspection date. The laboratory shall provide responses to the action items to the NFRC Staff within thirty (30) days. The inspection report, the corresponding laboratory's responses, and recommendations by NFRC Staff will be submitted to the APC for re-accreditation approval.

E-F. If there is a dispute of any of the recommended or required action items within the initial report by the laboratory, the laboratory shall explain their reasoning for disputing the action item in their response. Then the NFRC Inspector shall submit the disputed item(s) to the APC for review to determine whether to concur with the laboratory's claims. A letter outlining the APC's ruling shall be submitted to the laboratory within fifteen (15) days after the APC finalizes its ruling.

F.G. In the event that the specified deficiencies have not been remedied by the conclusion of the specified time period, in the judgment of the NFRC Inspector and with the approval by the APC, the APC shall immediately suspend the laboratory's accreditation by issuance of a Notice of Suspension.

G.H. If the NFRC Inspector determines that an accredited laboratory is not in compliance with any of the applicable provisions of Section 3, Section 4, Section 5 and Section 6, hereof and the APC concurs, the NFRC Inspector will notify the laboratory of specified deficiencies and require that corrective action outlined in the notification, be taken. Depending upon the severity of a non-compliance issue, the NFRC Inspector may request the NFRC APC to make a determination on the status of laboratory's accreditation within 5 business days of notification. Corrective action shall be taken not later than the last day of the applicable period specified below. The period will commence from the date the notification specifying the deficiencies are signed by the NFRC Inspector. No test reports or testing shall be performed until all corrective measures have been completed.

- i. For calibration and procedural deficiencies, the applicable period shall be no longer than 30 calendar days, but may be shorter in the discretion of the APC;
- ii. For minor test equipment deficiencies, the applicable period shall be no longer than 30 calendar days, but may be shorter in the discretion of the APC; and
- iii. For major test equipment deficiencies, the applicable period shall be no longer than 90 calendar days, but may be shorter with the discretion of the APC. The NFRC Inspector shall reevaluate the laboratory, which may, but need not, include a re-inspection, if deemed necessary by the APC, prior to issuance of a Notice of Suspension.

H.I. In the event that the specified deficiencies have not been remedied following the conclusion of the applicable time period in the judgment of the APC, the APC shall immediately suspend the laboratory's accreditation by issuance of a Notice of Suspension. A suspension may be appealed in accordance with the procedures set forth in Section 8.1 hereof. The APC upon a determination by the NFRC Inspector that the deficiencies have been remedied may withdraw a suspension.

I.J. In the event of a suspension of accreditation under this section and in the further event that the laboratory does not take corrective action sufficient to permit the NFRC Inspector to determine that the deficiencies have been cured no later than

30 calendar days after the date of the Notice of Suspension, the APC shall issue a Notice of Revocation. The revocation may be appealed in accordance with the procedures set forth in Section 8.1 hereof.

~~J.K.~~ All costs, including but not limited to travel, lodging, NFRC staff time, incurred in connection with a re-inspection necessitated by a failure of a testing laboratory to meet NFRC requirements in the initial inspection or subsequent periodic reviews shall be borne by the laboratory and not by NFRC.

~~K.L.~~ See "Preparing for an Inspection as an NFRC Accredited Testing Laboratory," attached to the Testing Laboratory Accreditation Initial Application, for more information about inspections.

6.3 Interlaboratory Comparison (ILC) Testing and Simulation

- A. Each accredited testing laboratory (thermal and air leakage) shall participate in an NFRC sponsored ILC physical testing evaluation not less than once in each year following accreditation. NFRC will select the fenestration product to be tested in an ILC evaluation. In situations where the NFRC has only one accredited laboratory to conduct an NFRC test method for validation and/or certification, then that laboratory shall be required to perform an annual proficiency test per Section 6.4 of this document.
- B. Each NFRC Certified Simulator shall participate in an NFRC sponsored ILC simulation evaluation not less than once in each year following certification. NFRC will select the fenestration product to be simulated in an ILC evaluation.
- C. NFRC staff shall provide to the APC, all participating individuals, and laboratories of the preliminary results of the ILC within 30 days of the ILC return deadline date or the date when the last ILC is received in the case of an approved extension(s).
- D. NFRC staff shall provide to the APC a draft of the ILC report within 6 months of the ILC return deadline date or the date of last received ILC results in the case of an approved extension(s). Upon the APC approval of the ILC report, NFRC Staff shall provide the report to all participating simulators and laboratories.
- E. Procedural and logistical requirements for NFRC sanctioned ILC shall be established by NFRC staff and approved by the APC, in its sole discretion prior to the issuance of the ILC.

6.4 Annual Proficiency Testing

- A. Annual proficiency testing shall be performed when there is only one laboratory accredited to conduct an NFRC test method.
- B. The product to be used for the annual proficiency testing shall be approved by the APC.
- C. The accredited laboratory shall obtain, or fabricate, and test a sample of the product approved by APC and generate a baseline test report of the results.
- D. The baseline test report shall be submitted to the NFRC to be filed for future comparison.
- E. It shall be the responsibility of the laboratory to safely store and maintain the product sample for annual testing. In the case the product sample becomes un-testable:
 - i. The laboratory shall notify the NFRC immediately;
 - ii. A new baseline product shall be approved by the APC; and
 - iii. The laboratory shall obtain, or fabricate, and test a sample of the new product to establish the new baseline test report for proficiency evaluation.
- F. The test results shall be reported and submitted to the NFRC. Upon receipt of the report, the results of past tests will be compared with the most recent and reviewed by the NFRC and APC.

6.5 Blind Competence Evaluation

- A. Blind competence evaluations shall be performed only when deemed necessary by the APC. NFRC will pay for the sample and the shipping of the sample.
- B. If the test or simulation results of the blind competence evaluation from a participating laboratory do not meet the criteria established by the APC, NFRC shall notify the laboratory, and the laboratory shall have 45 calendar days from the date of such notification to take appropriate corrective action so that it will meet NFRC standards upon a re-evaluation. The laboratory shall not issue any reports for Certification Program testing or simulation during that specified time period.
- C. If a laboratory for which corrective action is required completes the corrective action within the specified time period, the NFRC Inspector shall schedule a retesting or re-simulation of the blind competence evaluation based on the same rules of the initial test. At the discretion of the APC a supervised inspection may be necessary.

- D. If the laboratory meets the relevant criteria in the retest or re-simulation, the laboratory may continue testing and simulation under the provisions of the Certification Program.
- E. If a laboratory fails to take corrective action within the specified period, or fails to meet the specified tolerances in the retest or re-simulation, the APC shall suspend the laboratory's accreditation by issuance of a Notice of Suspension. A suspension may be appealed in accordance with the procedures set forth in Section 8.1 hereof. The APC, upon a determination by the NFRC Inspector that the deficiencies have been remedied, shall withdraw the suspension.
- F. If a suspended laboratory does not take the required corrective action within 45 calendar days after the issuance of the Notice of Suspension, the APC shall issue a Notice of Revocation. The revocation may be appealed in accordance with the procedures set forth in Section 8.1.
- G. All costs related to retesting, re-simulation, or re-inspection necessitated by failure of a laboratory to meet requirements in the first, or any subsequent blind competence test or evaluation, shall be borne by the laboratory and not by NFRC per NFRC 707.

6.6 Continuing Education

- A. A laboratory seeking accreditation shall have an in-service education program, as referenced in Sections i and ii (below), for training and education of staff who provide NFRC services, which covers all requirements of the Certification Program, the Accreditation Program, and NFRC technical procedures then in effect. The education program shall ensure that changes in, interpretations of, and updates to the Certification Program, the Accreditation Program, ANSI/NFRC 100, NFRC 101 and NFRC 102, ANSI/NFRC 200, NFRC 201, NFRC 202, NFRC 300, ANSI/NFRC 400, NFRC 500 and other applicable NFRC Procedures are conveyed promptly to laboratory staff.
 - i. A continuing education plan shall be submitted to NFRC in connection with the initial accreditation application process and any renewal application. The plan shall provide for regular in-house training programs; periodic review of individuals conducting tests or simulations by the IRC; and participation in regularly scheduled NFRC workshops (Section 6.1).
 - ii. Participation in ASTM and ASHRAE committees promulgating and refining thermal and other testing and simulation methods focusing on fenestration products (ASTM Committees C-16, E-6, E-44, and ASHRAE TC 4.5) is recommended but not mandatory.

- B. Each laboratory shall maintain a log of continuing education activities, which shall be made readily available to the NFRC Inspector.
- C. Compliance by a test or simulation laboratory with the education requirements of Section 6.5 shall be reviewed by the NFRC Inspector in connection with the Periodic Review (Section 6.2).

7. SUSPENSION AND REVOCATION OF ACCREDITATION

The basis for consideration of suspending or revocation shall be based solely on the judgment of the APC as determined by the evidence presented.

If an accredited laboratory is suspended, the laboratory shall not be permitted to issue reports until all corrective actions have been addressed and the suspension is withdrawn by the APC. A suspension shall result in having the suspended laboratory removed from the list of approved laboratories until reinstated.

If a laboratory's license is revoked, the laboratory license agreement shall be terminated and the laboratory shall not be permitted to participate as a laboratory in the NFRC program. The laboratory shall be permitted to reapply (Section 5) after one (1) calendar year based on the date of the revocation. A revocation shall result in having the revoked laboratory removed from the list of approved laboratory list.

7.1 Requirements of laboratory upon receipt of non-compliance notification

7.1.1 Inspections

- A. If the NFRC Inspector determines at any time during an inspection that a laboratory has failed to adhere to the requirements of the Section 3, Section 4, Section 5 and Section 6, supplemental documents, and in conjunction with any test or simulation report issued by the laboratory for use in connection with the Certification Program, the NFRC Inspector shall notify the laboratory of the specified deficiencies and shall require that specified corrective action set forth in the notification.

General Guidelines:

- i. The expected timeframe for a laboratory's reply with an action plan is 14 calendar days.
- ii. For calibration and procedural deficiencies, the applicable period shall be no longer than 30 calendar days, but may be shorter in the discretion of the APC.
- iii. For minor test equipment deficiencies, the applicable period shall be no longer than 60 calendar days, but may be shorter in the discretion of the APC.

- iv. For major test equipment deficiencies, the applicable period shall be no longer than 90 calendar days, but may be shorter in the discretion of the APC.
- B. If the NFRC Inspector determines at any time during an inspection that the final performance results are erroneous, further investigation in regards to repeated occurrences of the error is required by the inspector. The inspector will notify APC about the recommended action to be taken immediately. The APC may upon review suspend the laboratory.

7.1.2 LAP General Requirements

- A. Independence Requirements
- i. If at any time an accredited laboratory is not in compliance with independence criteria and / or procedures in accordance with Section 3.1, the APC shall notify the laboratory of specified deficiencies and shall require that specified corrective action, set forth in the notification, be taken not later than 30 calendar days after the date of such notification. If the specified corrective action is not taken within the required period, the APC, which may in its discretion, issue a Notice of Suspension set forth in Section 7.2. An extension may be requested from the APC. An application for extension shall be submitted in writing.
 - ii. If the specified corrective action is not take while under suspension within 30 calendar days after the date of the Notice of Suspension, a Notice of Revocation shall be issued by the APC set forth in Section 7.3.
- B. Technical Competence
- i. In the event an IRC or SIRC terminates employment with a laboratory, or has been suspended under the provisions of Section 3.2, the laboratory shall notify NFRC of the identity of the new IRC or SIRC. The lab shall fill this position within 30 calendar days of the termination of the employment of such person. Testing or simulation may continue throughout this 30-day period, however, no NFRC reports may be issued. All reports generated from data obtained during this time period shall be signed by the new IRC or SIRC. NFRC shall approve the competency to perform the NFRC procedures of this new person-in-responsible-charge before any NFRC test or simulation report can be

submitted as the basis for NFRC Product Certification Authorization.

- a) In the event that the laboratory fails to fill the vacated position of IRC or SIRC by replacing that person within the required thirty (30) calendar days as set forth in Section 7.1.2.B.i, the laboratory will be issued a Notice of Suspension set forth in Section 7.2.
- b) In the event that the laboratory fails to notify NFRC within the required 10 calendar days set forth in Section 3.2.1.A above that such IRC or SIRC has terminated employment the laboratory will be issued a Notice of Suspension as set forth in Section 7.2.

C. NFRC Certified Simulator

- i. In the event a certified simulator who fails to participate in an NFRC sponsored ILC simulation evaluation shall be suspended until such time that the person satisfactorily meets the conditions stipulated by the APC as stated in the Notice of Suspension.
- ii. Any certified simulator who fails to attend any mandatory workshop shall be suspended until such time that the person satisfactorily meets the conditions stipulated by the APC as stated in the Notice of Suspension.

NFRC Staff shall issue a Notice of Suspension as set forth in Section 7.2. In the event the suspended certified simulator is the only SIRC for an NFRC Accredited Laboratory, the laboratory must comply with Section 7.1.2.B. A copy of the Notice of Suspension will be sent to their NFRC Accredited laboratory and SIRC.

D. NFRC Test Laboratories

- i. In the event an NFRC Accredited Laboratory fails to participate in an NFRC-sponsored ILC test, or if applicable a laboratory fails to conduct an annual proficiency evaluation per Section 6.4, that laboratory shall be suspended until such time that the laboratory satisfactorily meets the conditions stipulated by the APC as stated in the Notice of Suspension. NFRC Staff shall issue a Notice of Suspension as set forth in Section 7.2.

E. NFRC Accreditation

- i. Fees: NFRC Staff shall issue a Notice of Suspension as set forth in Section 7.2 to laboratories which are delinquent in paying the accreditation and associated fees 30 calendar days after the date the initial payment due date. Upon such a suspension, the laboratory shall not be allowed to issue reports for a minimum of thirty (30) days. NFRC staff shall deliver a Notice of Suspension to reflect such a suspension. This suspension period does not extend the period of laboratory accreditation. If payment of said fees are not received in full by NFRC within 60 calendar days after the initial payment due date, the APC shall have the authority to revoke the laboratory's license agreement in accordance.
- ii. In the event that a laboratory is suspended more than one time in any twelve-month period, under Section 3, Section 4, Section 5 and Section 6, or under any provision of the License Agreement, a Notice of Revocation shall be issued by the APC set forth in Section 7.3. Such revocation shall commence on the date that the second Notice of Suspension would otherwise be issued and shall continue for a period of one year thereafter.

- F. The NFRC accreditation of the laboratory may be reinstated at such time that the issues for suspension have been satisfactorily resolved at the discretion of the APC. The suspended laboratory shall be removed from the list of NFRC accredited laboratories. The suspension may be appealed in accordance with the procedures set forth in Section 8.1 hereof.
- G. A Notice of Suspension may be withdrawn by the APC, upon making a determination, which may include a re-inspection, that the specified deficiencies have been remedied.
- H. In the event that the specified deficiencies are not corrected within the applicable period set forth in the Notice of Suspension, as set forth in Section 7.2, in the judgment of the APC, a Notice of Revocation shall be issued by the APC.
- I. A Notice of Revocation may be appealed in accordance with Section 8.1 hereof.
- J. All costs incurred by NFRC in connection with a re-inspection necessitated by a failure of the laboratory to meet the requirements of Section 3, Section 4, Section 5 and Section 6, shall be borne by the laboratory and not by NFRC.

7.2 Grounds for Suspension of Accreditation

- A. A laboratory's accreditation may be suspended by the APC pursuant to any of the express provisions of Section 3, Section 4, Section 5 and Section 6 of this Accreditation Program or any of the express provisions of the Laboratory License Agreement.
- B. Upon a determination by the APC that a laboratory has acted in such a manner as to impair the objectivity or integrity of the Accreditation Program or to harm the reputation of NFRC, including, but not limited to, submission of false information to NFRC, or omission to submit to NFRC any material information required to be submitted by the laboratory, in connection with obtaining or maintaining accreditation; knowingly or negligently issuing test reports that fail to meet all of the requirements of Section 3, Section 4, Section 5 and Section 6, supplemental documents, and in conjunction with any test or simulation report issued by the laboratory for use in connection with the Certification Program; or misrepresentation by the laboratory in advertising or promotional materials of its accreditation status in general or with respect to any service offered by the laboratory.
- C. The basis for consideration of suspending or revocation as described in the Laboratory License Agreement shall be based solely on the judgment of the APC as determined by the evidence presented.

7.3 Grounds for Revocation of Accreditation

A laboratory's accreditation shall be revoked by NFRC in any of the following circumstances:

- A. Pursuant to any of the express provisions of Section 3, Section 4, Section 5 and Section 6 of the Accreditation Program or any of the express provisions of the Laboratory License Agreement
- B. Upon expiration of a laboratory's right to appeal a suspension of accreditation pursuant to Section 8.1.
- C. Upon a determination by the APC that a laboratory has acted in such a manner as to impair the objectivity or integrity of the Accreditation Program or to harm the reputation of NFRC, including, but not limited to, submission of false information to NFRC, or omission to submit to NFRC any material information required to be submitted by the laboratory, in connection with obtaining or maintaining accreditation; knowingly or negligently issuing test reports that fail to meet all of the requirements of applicable Test Procedures or Simulation Procedures; or misrepresentation by the laboratory in advertising or promotional materials of its accreditation status in general or with respect to any service offered by the laboratory.

8. APPEALS PROCEDURES

8.1 Appeals Procedure after Denial, Suspension or Revocation of Accreditation

- A. In the event that NFRC accreditation has been denied pursuant to Section 5.6 or suspended pursuant to Section 3, Section 4, Section 5 and Section 6 or the Laboratory License Agreement, the laboratory shall have the right, for a period of forty-five (45) calendar days after the date of issuance of an NFRC Notice of Denial or Suspension, as the case may be, to appeal to the APC.
- B. In the event that a laboratory's accreditation is revoked following the expiration of the period to appeal a suspension, in the absence of an appeal having been taken, the laboratory shall have the right, at its election, for a period of forty-five (45) calendar days after the date of issuance of a Notice of Revocation, to appeal the revocation to the APC.
- C. In the event that a laboratory's accreditation is revoked by a decision of the APC, the laboratory shall have the right, at its election, for a period of forty-five (45) calendar days after the date of issuance of a Notice of Revocation, to appeal the revocation to the NFRC Board of Directors.

- D. An appeal, whether from a Notice of Denial, Notice of Suspension, or Notice of Revocation, shall be in writing and sent by certified mail or other method which provides evidence of delivery to the Chairperson of the APC or the Board of Directors, as the case may be, with a copy to the NFRC Inspector, and shall specify the basis for the appeal.
- E. The appellant laboratory may, at the time of noticing its appeal, request, in writing, a hearing by the APC in the case of an appeal from a denial or a suspension or a revocation based on a suspension from which an appeal was not taken, or by the Board of Directors, in the case of an appeal from a revocation ordered by the APC upon an appeal from a suspension. In such an event, the APC or the Board of Directors shall, not later than 7 calendar days after the filing of the notice of appeal, notify the appellant laboratory of the date of the hearing, which shall be held as expeditiously as possible, but not later than 30 calendar days after the receipt of the notice of appeal.
- F. Not later than 14 calendar days prior to the hearing, the NFRC Inspector shall file with the APC, or the APC shall file with the Board of Directors, as the case may be, with a copy to the appellant laboratory, all written information and electronic data on which the denial, suspension or revocation was based, and the appellant may file such evidence as the appellant believes will assist the APC or the Board of Directors in making its determination.
- G. At the hearing, NFRC shall present at least one witness, which shall be the NFRC Inspector and at least one member of the APC to sponsor the information described in Section 8.1.F and to explain the denial, suspension or revocation decision. The appellant laboratory may, but is not required to, be represented by counsel and to present evidence and witnesses on its behalf. Either party may cross-examine witnesses of the other party.
- H. Not later than 30 calendar days after the hearing, the APC or the Board of Directors, as the case may be, shall issue a written decision on behalf of NFRC. The decision shall be based solely on the record described in Section 8.1.F and Section 8.1.G. Except as otherwise permitted under the appeals procedures set forth in this section or under state law, the decision of the APC or the Board of Directors is final and binding.
- I. In any decision made by either the APC or the Board of Directors, any individual who has any financial, family or organizational affiliation with the appellant or with an entity or person, which operates in direct competition with the appellant, shall not participate in a determination of that body regarding the appellant laboratory.
- J. In the event that a laboratory elects to appeal any suspension or revocation of the laboratory's License Agreement and notwithstanding that the procedure for appeal is not otherwise

expressly set forth in this Section 8, such appeal shall be conducted in accordance with the provisions of this Section 8.1.

9. REFERENCED DOCUMENTS

1. ANSI/NFRC 100-2017: Procedure for Determining Fenestration Product U-factors.
2. NFRC 101-2017: Procedure for Determining Thermo-Physical Properties of Materials for Use in NFRC-Approved Software Programs.
3. NFRC 102-2017: Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems.
4. ANSI/NFRC 200-2017: Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.
5. NFRC 201-2017: Procedure for Interim Standard Test Method for Measuring the Solar Heat Gain Coefficient of Fenestration Systems Using Calorimetry Hot Box Methods.
6. NFRC 202-2017: Procedure for Determining Translucent Fenestration Product Visible Transmittance at Normal Incidence
7. NFRC 203-2017: Procedure for Determining Visible Transmittance of Tubular Daylighting Devices
8. NFRC 300-2017: Test Method for Determining Solar Optical Properties of Glazing Materials and Systems.
9. NFRC 301-2017: Standard Test Method for Emittance of Specular Surfaces Using Spectrometric Measurements.
10. NFRC 303-2017: Creating a Laminate in Optics for NFRC Certification
11. NFRC 304-2017: Creating an Applied Film Layer in Optics for NFRC Certification
12. ANSI/NFRC 400-2017: Procedure for Determining Fenestration Product Air Leakage
13. NFRC 500-2017: Procedure for Determining Fenestration Product Condensation Resistance Values.
14. NFRC 501-2017: User Guide to NFRC 500: Procedure for Determining Fenestration Product Condensation Resistance Rating Values.
15. NFRC 600-2017: Glossary and Terminology
16. NFRC 601-2017: NFRC Units and Measurement Policy
17. NFRC 700-2018⁹: Product Certification Program
18. NFRC 701.01-2018⁹: Simulation Laboratory Application
19. NFRC 701.02-2018⁹: Testing Laboratory Application
20. NFRC 701.03-2018⁹: Simulation Reporting Requirements

21. NFRC 701.04-2018⁹: NFRC 102 Thermal Test Reporting Requirements
22. NFRC 701.05-2018⁹: NFRC 201 Solar Calorimeter Test Reporting Requirements
23. NFRC 701.06-2018⁹: ANSI/NFRC 400 Air Leakage Test Reporting Requirements
24. NFRC 701.07-2018⁹: NFRC 500 Condensation Resistance Test Reporting Requirements
25. NFRC 701.08-2018⁹: Simulation Laboratory Accreditation Requirements
26. NFRC 701.09-2018⁹: Testing Laboratory Accreditation Requirements
27. NFRC 701.10-2018⁹: NFRC 202 and 203 Visible Transmittance Test Reporting
28. NFRC 702-2018⁹: Certification Agency Program
29. NFRC 703-2018⁹: Research Manual
30. NFRC 704-2018⁹: Fee Schedule
31. NFRC 705-2018⁹: Component Modeling Approach Product Certification Program
32. NFRC 706-2018⁹: IG Certification
33. NFRC 707-2018⁹: Compliance and Monitoring
34. NFRC 708-2018⁹: Calculation Entity Approval Program
35. NFRC 713-2018⁹: Independent Verification Program