NIST Handbook 150-6

NVLAP Carpet and Carpet Cushion

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NVLAP AND THE NVLAP LOGO

Contents

Foreword

The NIST Handbook 150 publication series sets forth the procedures, requirements, and guidance for the accreditation of testing and calibration laboratories by the National Voluntary Laboratory Accreditation Program (NVLAP). The series is comprised of the following publications:

- NIST Handbook 150, *NVLAP Procedures and General Requirements*, which contains the general procedures and requirements under which NVLAP operates as an unbiased third-party accreditation body; and

- NIST Handbook 150-xx program-specific handbooks, which supplement NIST Handbook 150 by providing additional requirements, guidance, and interpretive information applicable to specific NVLAP laboratory accreditation programs (LAPs).

The program-specific handbooks are not stand-alone documents, but rather are companion documents to NIST Handbook 150 and the referenced ISO/IEC 17025 requirements. They tailor the general criteria found referenced in NIST Handbook 150 and ISO/IEC 17025 to the specific tests, calibrations, or types of tests or calibrations covered by a LAP.

NIST Handbook 150-6, *NVLAP Carpet and Carpet Cushion*, presents the technical requirements and guidance for the accreditation of laboratories under the NVLAP Carpet and Carpet Cushion LAP. The 2020 edition incorporates changes resulting from the release of the 2017 edition of ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories,* as well as editorial improvements. The 2020 edition of NIST Handbook 150-6 supersedes and replaces the 2006 edition.

The handbook was revised with the participation of technical experts in the field of carpet and carpet cushion testing. The following main changes have been made to this handbook with respect to the previous edition:

- the numbering has been updated to reflect that used by ISO/IEC 17025:2017, *General requirements for the competence of testing and calibration laboratories* (hereafter referred to as ISO/IEC 17025);

- all references to applicable international guides and standards have been updated;

- redundant requirements for specific equipment, certifications, records, etc., found in the various standards for test methods used in the program were removed.

This handbook is also available on the NVLAP website.

Questions or comments concerning this handbook should be submitted to NVLAP, National Institute of Standards and Technology, 100 Bureau Drive, Stop 2140, Gaithersburg, MD, 20899-2140; phone: 301-975-4016; fax: 301-926-2884; e-mail: nvlap@nist.gov.

Introduction

In 1981 NVLAP established the Carpet Testing Program for accrediting laboratories that test carpet and attached carpet cushion products. This program was developed in response to a request from the U.S. Department of Housing and Urban Development (HUD). Its purpose was to assist HUD in assessing the suitability of carpet and attached carpet cushion products for use in housing programs including single, multifamily, elderly, and care-type dwellings. HUD Use of Materials Bulletin No. 44 (UM 44), *Building Products Standards and Certification Program for Carpet*, includes the minimum requirements and standard test methods used for determining the acceptability of carpet and attached carpet cushion products for HUD housing. One of the provisions of UM 44 is that a sample of the carpet or attached carpet cushion product, intended for use in HUD housing, be tested in a NVLAP-accredited laboratory to determine that its properties comply with the minimum requirements of UM 44.

In 1993 HUD issued Use of Materials Bulletin No. 72 (UM 72), *Building Products Standards and Certification Program for Carpet Cushion*, which includes minimum requirements and test methods for separate (not attached) carpet cushion products. Similar to UM 44, a provision of UM 72 is that separate carpet cushion samples be tested in a NVLAP-accredited laboratory to determine that their properties are in accordance with the minimum requirements of UM 72.

In response to HUD's issuance of UM 72, the NVLAP Carpet Testing program was expanded to include requirements for testing separate carpet cushions. The expanded NVLAP program was renamed the Carpet and Carpet Cushion (CCC) Program in 1994. The technical requirements of the CCC program given in this handbook are consistent with the provisions of HUD UM 44 and UM 72. HUD was kept well-informed of the development of the program expansion.

The flooring industry has changed over time. Laboratories have a need to test products other than carpet or carpet cushion. NVLAP has decided to allow testing on other materials if the same equipment, general expertise, and exact or very similar methods are utilized.

1 General information

1.1 Scope

1.1.1 NIST Handbook 150-6 specifies the technical requirements and provides guidance for the accreditation of laboratories under the NVLAP Carpet and Carpet Cushion Laboratory Accreditation Program (CCC Program). It supplements NVLAP procedures by tailoring the general criteria found in ISO/IEC 17025 to specific tests and types of tests covered by the CCC Program.

1.1.2 ISO/IEC 17025, NIST Handbook 150, this handbook, and test methods indicated on the (proposed) scope of accreditation constitute the collective body of requirements that must be met by a laboratory seeking NVLAP accreditation for the CCC Program.

1.1.3 This handbook is intended for information and use by accredited CCC laboratories, assessors conducting onsite assessments, laboratories seeking accreditation, other laboratory accreditation systems, users of laboratory services, and others needing information on the requirements for accreditation under the CCC Program.

1.2 Organization of handbook

The numbering and titles of clauses 4 through 8 of this handbook mirrors those of ISO/IEC 17025. The primary subclauses in clauses 4 through 8 (e.g., 4.1, 4.2, etc.) are also numbered and titled to correspond with those of ISO/IEC 17025, even when there are no additional requirements.

1.3 Program description

1.3.1 The NVLAP program for Carpet and Carpet Cushion provides for laboratory accreditation to ensure that standard test procedures for performance properties including physical, mechanical, and surface flammability characteristics are followed in testing carpets and carpet cushions. The CCC program accredits laboratories that use standard test methods from ASTM International (ASTM), American Association of Textile Chemists and Colorists (AATCC), Federal Specifications (Fed. Spec.), Code of Federal Regulations (CFR), Carpet and Rug Institute (CRI), the International Organization for Standardization (ISO), and other recognized test methods.

1.3.2 A listing of the test methods included in the program is given in the test methods and calibration parameter listing available on the NVLAP website. The list is grouped by the program "product testing," then by "carpet and carpet cushion." Once at the carpet and carpet cushion program level, the tests are grouped by:

- carpet;
- carpet cushion;
- carpet and carpet cushion;
- tests applicable to fabrics, flooring, and floor coverings; and
- fire tests.

1.3.3 A laboratory may seek accreditation to all the selected methods offered in the CCC Program or a subset of its choice. A laboratory may request test methods to be added to the program. Test method

additions will be handled in accordance with NVLAP procedures in NIST Handbook 150 for adding to or modifying an established LAP (see NIST Handbook 150, clause 2).

1.4 References

The following documents are referenced in this handbook. The latest edition of the referenced document (including any amendments) shall apply within one year of publication or within another time limit specified by regulations or other requirement documents.

— NIST Handbook 150, *NVLAP Procedures and General Requirements*

— *ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories*

— ASTM D123, *Standard Terminology Relating to Textiles*

— HUD UM 44, Department of Housing and Urban Development Use of Materials Bulletin No. 44, *HUD Building Product Standards and Certification Program for Carpet*

— HUD UM 72, Department of Housing and Urban Development Use of Materials Bulletin No. 72, *HUD Building Product Standards and Certification Program for Carpet Cushion*

1.5 Terms and definitions

For the purposes of this handbook, the terms and definitions given in NIST Handbook 150 and ASTM D123 apply.

1.6 Program documentation

1.6.1 General

Assessors use NVLAP checklists and test method review summary forms to ensure assessment consistency. Checklists assist assessors in documenting compliance with the NVLAP requirements found in ISO/IEC 17025, NIST Handbook 150, this handbook, and the specific test methods for which accreditation is requested. Checklists and test method review summary forms are part of the Onsite Assessment Report (see NIST Handbook 150).

1.6.2 NVLAP General Criteria Checklist

All NVLAP programs use the NVLAP General Criteria Checklist (ISO/IEC 17025) (formerly called the NIST Handbook 150 Checklist), which contains the requirements published in ISO/IEC 17025 and NIST Handbook 150. The checklist items are numbered to correspond to clauses 4 through 8 of ISO/IEC 17025 and annexes A, B, and E of NIST Handbook 150.

1.6.3 NIST Handbook 150-6 Checklist

The NIST Handbook 150-6 Checklist (also referred to as the CCC Program-Specific Checklist) addresses the requirements specific to carpet and carpet cushion testing given in NIST Handbook 150-6. The checklist items are numbered to correspond to clauses 4 through 8 of ISO/IEC 17025. The current version of the Handbook 150-6 Checklist is available from the NVLAP website at https://www.nist.gov/nvlap.

1.6.4 Test Method Review Summary

Because of the large number of relevant standards and test methods in the CCC LAP, the assessor uses the Test Method Review Summary to review the laboratory's compliance to the test methods. The review of the test methods by the assessor ranges from observing tests to having laboratory staff describe the test procedures. The assessor notes on the Test Method Review Summary form the depth into which each part of the test method was reviewed (observed test, examined apparatus, walked/talked through test, listened to description of procedures).

1.6.5 NVLAP lab bulletins

NVLAP lab bulletins are issued to laboratories and assessors, when needed, to clarify program-specific requirements and to provide information about the most current program additions and changes. Lab bulletins providing additions or changes to the current program will supersede the requirements of the current published handbook until the additions or changes are published in a revision of the handbook. Lab bulletins are posted on the program-specific handbooks page of the NVLAP website.

2 LAP establishment, development and implementation

This clause contains no information additional to that provided in NIST Handbook 150, clause 2.

3 Accreditation process

3.1 General

An overview of the laboratory accreditation process is provided in NIST Handbook 150, clause 3, and includes information pertaining to application for accreditation; onsite assessment; proficiency testing; accreditation decision; granting accreditation; renewal of accreditation; changes to scope of accreditation; monitoring visits; and suspension, denial, revocation, and voluntary termination of accreditation.

3.2 Management system review

3.2.1 Prior to applying to NVLAP for accreditation, a laboratory shall have a fully implemented management system.

3.2.2 Prior to the onsite assessment, the assigned NVLAP assessor will review all relevant management system documentation against NVLAP requirements, including the requirements of ISO/IEC 17025, this handbook and NIST Handbook 150. During this review, the assessor may request additional management system documents and/or records, which will be returned upon request.

3.3 Onsite assessment

3.3.1 General information

3.3.1.1 The purpose of the onsite assessment is to determine the laboratory's compliance with ISO/IEC 17025, NIST Handbook 150, this handbook, and its own management system and to assess the capability and competence of the testing activities for which accreditation is being requested.

3.3.1.2 Testing performed at locations other than the primary facility covered under the accreditation will be reviewed on a case-by-case basis to determine the extent of onsite review necessary at the other locations.

3.3.1.3 Prior to the onsite assessment, the NVLAP assessor will provide a preliminary agenda. The laboratory may not be granted accreditation or renewal if not prepared to conduct test demonstrations, does not have equipment in good working order, and is not ready for examination according to the requirements identified in ISO/IEC 17025, this handbook, and NIST Handbook 150.

3.3.1.4 The laboratory shall make available all supporting technical information. All relevant documentation shall be provided to NVLAP and its assessor(s) in English.

3.3.1.5 In addition to the checklists to help assure the completeness, objectivity, and uniformity of the onsite assessment, the assessor uses the NVLAP Test Method Review Summary form to review the capability of laboratory personnel to perform testing for which accreditation is sought. The test method review ranges from observing tests to having laboratory staff describe the test procedures. The assessor notes the depth to which each part of the test method was reviewed and records the results of the review.

3.3.2 Typical onsite assessment

The NVLAP assessor performs the following activities during a typical onsite assessment:

a) Conducts an opening meeting with the laboratory to explain the purpose of the onsite visit and to discuss the schedule for the day(s). At the discretion of the laboratory manager, other staff may attend the meeting.

b) Reviews laboratory documentation not provided for review prior to the assessment, including management system records, equipment and maintenance records, record-keeping procedures, testing procedures, laboratory test records and reports, personnel competency records, personnel training plans and records, and safeguards for the protection of sensitive and proprietary information.

   At least one laboratory staff member shall be available to answer questions; however, the assessor may request to review the documents and records alone.

c) Physically examines equipment and facilities, observes the demonstration of selected procedures by the appropriate personnel assigned to conduct the tests, and interviews those personnel. The demonstrations requested may be selective or all-inclusive and shall include use of sample test devices, preparation of test devices, establishment of test conditions, and setup/use of major equipment. The assessor will also review the test data and examine the hardware/software for functionality and appropriateness.

d) Completes an Onsite Assessment Report, which contains the NVLAP Onsite Assessment Signature Sheet with Narrative Summary, NVLAP General Criteria Checklist (ISO/IEC 17025:2017), NIST

Handbook 150-6 Checklist, and the Test Method Review Summary. The assessor will also enter any nonconformities and/or comments into the NVLAP interactive website (NIWS).

e) Conducts a closing meeting with the laboratory to explain the findings of the visit. At the closing meeting, the report shall be signed by the assessor and the laboratory's authorized representative to acknowledge the discussion of the outcome of the onsite assessment. The authorized representative's signature does not indicate agreement, merely receipt, and challenges may be made through NVLAP. The process for resolving nonconformities identified during the onsite is documented in NIST Handbook 150.

3.4 Proficiency testing

3.4.1 NIST Handbook 150 defines proficiency testing and describes how it is included in the accreditation process.

3.4.2 Section 7.7.2 of ISO/IEC 17025:2017 requires a laboratory "monitor its performance by comparison with results of other laboratories, where available and appropriate." NVLAP is not aware of any widely available interlaboratory comparison for carpet testing. Laboratories may choose to organize interlaboratory comparisons among themselves, but NVLAP does not require participation in interlaboratory comparison in the CCC program. If an appropriate interlaboratory comparison becomes available, NVLAP may require participation and will notify all laboratories of requirements.

3.4.3 Unsatisfactory performance or failure to participate in any prescribed proficiency testing, may result in suspension of laboratory accreditation for those test methods in question.

4 General Requirements

4.1 Impartiality

There are no requirements additional to those set forth in ISO/IEC 17025.

4.2 Confidentiality

There are no requirements additional to those set forth in ISO/IEC 17025.

5 Structural Requirements

The quality management system documentation shall include:

a) the types of carpet and carpet cushion products that the laboratory can test for each test method for which accreditation is sought;

b) the range (e.g., size, shape, density, and property level) of test specimens that a laboratory can test for each test method.

6 Resource Requirements

6.1 General

There are no requirements additional to those set forth in ISO/IEC 17025.

6.2 Personnel

6.2.1 The laboratory's technical director, however named, shall be experienced in carpet and carpet cushion testing and shall have the technical competence and the supervisory capability to direct the work of professionals and technicians in carpet and carpet cushion testing.

6.2.2 For each staff member, the staff member's immediate supervisor, or a designee appointed by the laboratory director, shall conduct annually an assessment and an observation of performance. These annual performance reviews shall be documented, dated, signed by the supervisor and the employee, retained in the personnel file, and be available for review by the assessor.

6.3 Facilities and environmental conditions

There are no requirements additional to those set forth in ISO/IEC 17025.

6.4 Equipment

There are no requirements additional to those set forth in ISO/IEC 17025.

6.5 Metrological traceability

There are no requirements additional to those set forth in ISO/IEC 17025.

6.6 Externally provided products and services

There are no requirements additional to those set forth in ISO/IEC 17025.

7 Process Requirements

7.1 Review of requests, tenders and contracts

There are no requirements additional to those set forth in ISO/IEC 17025.

7.2 Selection, verification and validation of methods

7.2.1 If a customer, for whatever reason (e.g., regulatory requirement), requires accreditation to previous versions of a test method, then the laboratory shall document that requirement and shall have readily available the required version of the test method.

7.2.2 When a test method references another test method, guide, practice, or specification, the laboratory shall have readily available the referenced documents, where relevant.

7.2.3 The HUD certification program for carpets and carpet cushion is defined by HUD regulations, which include reference to a specific date of issuance of the test methods. If a test standard is revised, HUD can only include the revised method in its certification program by changing its regulations. Until that occurs, HUD will continue to require that the participating laboratories be accredited to the version listed in its certification program. In such cases, in accordance with its procedures, NVLAP will offer accreditation to the revised version of the standard to any laboratory that requests it. For laboratories in the HUD certification program, NVLAP will continue to accredit them to the version listed in the HUD certification program if it is technically sound to do so.

7.2.4 A laboratory may be accredited to perform standard test methods in their entirety or to perform only specific sections in the test method. Accreditation restrictions to specific sections of the test method shall be stated on the laboratory's scope of accreditation.

7.3 Sampling

There are no requirements additional to those set forth in ISO/IEC 17025.

7.4 Handling of test or calibration items

There are no requirements additional to those set forth in ISO/IEC 17025.

7.5 Technical records

Technical records shall be kept for a period of at least three years following the issuance of a test report, unless a longer period is required by the customer, regulation, or the laboratory's own procedures.

7.6 Evaluation of measurement uncertainty

There are no requirements additional to those set forth in ISO/IEC 17025.

7.7 Ensuring the validity of results

The laboratory shall participate in any prescribed proficiency testing (PT) (See section 3.4). Any prescribed PT will be identified on the carpet and carpet cushion program page on the NVLAP website.

7.8 Reporting of results

There are no requirements additional to those set forth in ISO/IEC 17025.

7.9 Complaints

There are no requirements additional to those set forth in ISO/IEC 17025.

7.10 Nonconforming work

There are no requirements additional to those set forth in ISO/IEC 17025.

7.11 Control of data and information management

There are no requirements additional to those set forth in ISO/IEC 17025.

8 Management system requirements

8.1 Options

There are no requirements additional to those set forth in ISO/IEC 17025.

8.2 Management system documentation

There are no requirements additional to those set forth in ISO/IEC 17025.

8.3 Control of management system documents

There are no requirements additional to those set forth in ISO/IEC 17025.

8.4 Control of records

The minimum retention time for all records pertaining to the laboratory's accreditation in the CCC program shall be 3 years.

8.5 Actions to address risks and opportunities

There are no requirements additional to those set forth in ISO/IEC 17025.

8.6 Improvement

There are no requirements additional to those set forth in ISO/IEC 17025.

8.7 Corrective actions

There are no requirements additional to those set forth in ISO/IEC 17025.

8.8 Internal audits

An applicant laboratory shall conduct at least one complete internal audit prior to the first onsite assessment. The records will be reviewed by the NVLAP assessor before or during the onsite assessment visit.

8.9 Management reviews

An applicant laboratory shall conduct at least one complete management review prior to the first onsite assessment. The records will be reviewed by the NVLAP assessor before or during the onsite assessment visit.