



## Standard Practice for Laboratories Engaged in Testing of Building Sealants<sup>1</sup>

This standard is issued under the fixed designation C 1021; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This practice describes the qualifications, including minimum requirements for personnel and equipment, duties, responsibilities, and services of independent commercial materials testing laboratories engaged in the testing of caulking and sealants used in building construction.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.3 The subcommittee with jurisdiction of this standard is not aware of any similar or equivalent ISO standard.

### 2. Referenced Documents

#### 2.1 ASTM Standards:<sup>2</sup>

- C 510 Test Method for Staining and Color Change of Single- or Multicomponent Joint Sealants
- C 603 Test Method for Extrusion Rate and Application Life of Elastomeric Sealants
- C 639 Test Method for Rheological (Flow) Properties of Elastomeric Sealants
- C 661 Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer
- C 679 Test Method for Tack-Free Time of Elastomeric Sealants
- C 681 Test Method for Volatility of Oil- and Resin-Based, Knife-Grade, Channel Glazing Compounds
- C 711 Test Method for Low-Temperature Flexibility and

Tenacity of One-Part, Elastomeric, Solvent-Release Type Sealants

- C 712 Test Method for Bubbling of One-Part, Elastomeric, Solvent-Release Type Sealants
- C 717 Terminology of Building Seals and Sealants
- C 719 Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)
- C 731 Test Method for Extrudability, After Package Aging, of Latex Sealants
- C 732 Test Method for Aging Effects of Artificial Weathering on Latex Sealants
- C 734 Test Method for Low-Temperature Flexibility of Latex Sealants After Artificial Weathering
- C 736 Test Method for Extension-Recovery and Adhesion of Latex Sealants
- C 792 Test Method for Effects of Heat Aging on Weight Loss, Cracking, and Chalking of Elastomeric Sealants
- C 793 Test Method for Effects of Laboratory Accelerated Weathering on Elastomeric Joint Sealants
- C 794 Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
- C 834 Specification for Latex Sealants
- C 910 Test Method for Bond and Cohesion of One-Part Elastomeric Solvent Release-Type Sealants
- C 920 Specification for Elastomeric Joint Sealants
- C 961 Test Method for Lap Shear Strength of Sealants
- C 1087 Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems
- C 1135 Test Method for Determining Tensile Adhesion Properties of Structural Sealants
- C 1183 Test Method for Extrusion Rate of Elastomeric Sealants
- C 1184 Specification for Structural Silicone Sealants
- C 1216 Test Method for Adhesion and Cohesion of One-Part Elastomeric Solvent Release Sealants
- C 1241 Test Method for Volume Shrinkage of Latex Sealants During Cure

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee C24 on Building Seals and Sealants and is the direct responsibility of Subcommittee C24.10 on Specifications, Guides and Practices.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

- C 1246** Test Method for Effects of Heat Aging on Weight Loss, Cracking, and Chalking of Elastomeric Sealants After Cure
- C 1247** Test Method for Durability of Sealants Exposed to Continuous Immersion in Liquids
- C 1248** Test Method for Staining of Porous Substrate by Joint Sealants
- C 1257** Test Method for Accelerated Weathering of Solvent-Release-Type Sealants
- C 1265** Test Method for Determining the Tensile Properties of an Insulating Glass Edge Seal for Structural Glazing Applications
- C 1294** Test Method for Compatibility of Insulating Glass Edge Sealants with Liquid-Applied Glazing Materials
- C 1311** Specification for Solvent Release Sealants
- C 1367** Test Method for Dead Load Resistance of a Sealant in Elevated Temperatures
- C 1382** Test Method for Determining Tensile Adhesion Properties of Sealants When Used in Exterior Insulation and Finish Systems (EIFS) Joints
- C 1442** Practice for Conducting Tests on Sealants Using Artificial Weathering Apparatus
- C 1501** Test Method for Color Stability of Building Construction Sealants as Determined by Laboratory Accelerated Weathering Procedures
- C 1519** Practice for Evaluating Durability of Building Construction Sealants by Laboratory Accelerated Weathering Procedures
- C 1589** Practice for Outdoor Weathering of Construction Seals and Sealants
- C 1635** Test Method to Evaluate Adhesion/Cohesion Properties of a Sealant at Fixed Extension
- D 2202** Test Method for Slump of Sealants
- D 2203** Test Method for Staining from Sealants
- D 2377** Test Method for Tack-Free Time of Caulking Compounds and Sealants
- D 2452** Test Method for Extrudability of Oil- and Resin-Base Caulking Compounds
- D 2453** Test Method for Shrinkage and Tenacity of Oil- and Resin-Base Caulking Compounds
- E 1301** Guide for Proficiency Testing by Interlaboratory Comparisons
- E 1323** Guide for Evaluating Laboratory Measurement Practices and the Statistical Analysis of the Resulting Data
- E 1580** Guide for Surveillance of Accredited Laboratories

### 3. Terminology

3.1 *Definitions*—Refer to Terminology **C 717** for definitions of the following terms used in this practice: caulking, sealant.

3.1.1 *authority*—the person (organization) authorizing the testing.

3.1.2 *technician*—an employee of the testing laboratory assigned to perform the actual operations of testing.

3.1.3 *testing laboratory*—a qualified organization authorized to test building sealants for compliance with specified standards.

### 4. Significance and Use

4.1 *Importance of Prequalification*—For required accuracy of test results and reliability of certification, it is essential that testing laboratories be prequalified. This practice establishes those qualifications.

#### 4.2 *Contractual Relationships*:

4.2.1 Although testing laboratories may be qualified in accordance with this practice, it is important for the contracting authority to consider the relationship of the testing laboratory with other interested parties before engaging the laboratory to perform the testing. The other interested parties in the project usually consist of the manufacturer of the material to be tested, the contractor (bidder), the owner of the project (user and contracting authority), and the architect who serves as the owner's agent in preparing the contract documents.

4.2.2 Many sealant manufacturers have their own qualified testing facilities that are used to conduct research and maintain quality control of their products. Generally, the companies that have such facilities are willing to certify as to the performance standards with which their products comply. The contracting authority should determine if there are conflicting interests in such a relationship. The contracting authority may prefer that the product testing to ascertain conformance with specific performance standards and the reporting of such testing be performed by a qualified but independent testing laboratory. The contract documents should make this requirement known so that bidders can bid accordingly.

4.2.3 The testing of each caulking and sealant for each and every project can be costly. On a small building project, the cost of testing, if required, may be more than the cost of the sealant materials. On a large project, on the other hand, the cost of testing a sealant with accompanying certification by a qualified independent testing laboratory may be small in comparison to the sealant materials and commensurate with the assurances desired by the contracting authority.

#### 4.3 *Requirements in Contract Documents*:

4.3.1 In addition to specifying the performance standards that the caulking and sealants to be used on a project shall be in compliance with, state that proof of compliance shall be in the form of certification by a testing laboratory meeting the requirements of this practice.

4.3.2 If the contracting authority desires that the testing and certification be by an independent testing laboratory this additional requirement should be included with the requirements stated in **4.3.1**.

### 5. Laboratory Responsibilities and Duties

5.1 The responsibility of the testing laboratory shall be:

5.1.1 To ensure the performance of tests for which it is adequately equipped and staffed, and

5.1.2 That the laboratory's employees perform only tests for which they are qualified.

5.2 The following duties are those usually performed by the testing laboratory:

5.2.1 Obtain representative samples of those materials authorized to be tested and evaluated, including complete identification thereof, such as, batch number, lot number, date of manufacture, color, and any other pertinent information.

5.2.2 Ascertain that there is protection, handling, and storing of the samples to assure that they remain representative of the material being used at the time of sampling.

5.2.3 Ascertain that the samples are identified with the respective portions of the work in which the material represented was, or will be, used.

5.2.4 Perform all testing operations in accordance with the designated standards.

5.2.5 Promptly call to the attention of the contracting authority any irregularity or deficiency noted when testing the sealant.

5.2.6 Submit promptly to the contracting authority formal reports of tests which indicate compliance or noncompliance with the specifications. The reports shall be complete and factual, citing the methods used in obtaining samples, tests performed, specified values for the measured characteristics, and related pertinent data. The laboratory shall be prepared to substantiate the reports to the fullest extent.

5.3 The testing laboratory shall have its laboratory procedures and equipment inspected at intervals of no more than 3 years by a qualified evaluator as evidence of the laboratory's competence to perform the required tests.<sup>3</sup>

## 6. Laboratory Management and Supervision

6.1 The testing services of the laboratory shall be under the direction of a person charged with managerial responsibility and having demonstrated competence through educational background or professional experience, or both.

<sup>3</sup>The U.S. Department of Commerce, National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP) serves as the evaluator. The NVLAP can be contacted at the National Institute of Standards and Technology, Building 820, Room 2, Gaithersburg, MD 20899.

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6.2 A supervising laboratory technician shall be able to demonstrate ability to perform or direct the tests, or both, normally required in accordance with ASTM or other governing procedure.

## 7. Testing Services

7.1 Sealant testing services will normally include several or all of the sampling and testing of caulking and sealant materials, curing, and laboratory testing of specimens described in 8.1.1. and 8.1.2.

## 8. Testing Equipment

8.1 *Laboratory Equipment*—The testing laboratory shall be equipped to test for compliance with the ASTM and other standards the laboratory indicates it can test. Methods, specifications, and practices typically being tested are as follows:

8.1.1 *ASTM Standards*:

8.1.1.1 Test Methods **C 510, C 603, C 639, C 661, C 679, C 681, C 711, C 712, C 719, C 731, C 732, C 734, C 736, C 792, C 793, C 794, C 910, C 1087, C 1183, C 1216, C 1241, C 1246, C 1247, C 1248, C 1257, C 1265, C 1294, C 1367, C 1382, C 1501, C 1635, D 2202, D 2203, D 2377, D 2452, and D 2453.**

8.1.1.2 Specifications **C 834, C 920, C 961, C 1135, C 1184, and C 1311.**

8.1.1.3 Guide **E 1301, E 1323, and E 1580.**

8.1.1.4 Practices **C 1442, C 1519, and C 1589.**

8.1.2 *Other Standards*—Test procedures and specifications for building sealants under the jurisdiction of federal, state, and international organizations.

## 9. Keywords

9.1 certification; independent; testing laboratory