



## 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 (ε) 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:

- C 510 Test Method for Staining and Color Change of Single- or Multicomponent Joint Sealants<sup>2</sup>
- C 570 Specification for Oil- and Resin-Base Caulking Compound for Building Construction<sup>2</sup>
- C 603 Test Method for Extrusion Rate and Application Life of Elastomeric Sealants<sup>2</sup>
- C 639 Test Method for Rheological (Flow) Properties of Elastomeric Sealants<sup>2</sup>
- C 661 Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer<sup>2</sup>
- C 669 Specification for Glazing Compounds for Back Bedding and Face Glazing of Metal Sash<sup>2</sup>
- C 679 Test Method for Tack-Free Time of Elastomeric Sealants<sup>2</sup>
- C 681 Test Method for Volatility of Oil- and Resin-Based, Knife-Grade, Channel Glazing Compounds<sup>2</sup>
- C 711 Test Method for Low-Temperature Flexibility and Tenacity of One-Part, Elastomeric, Solvent-Release Type Sealants<sup>2</sup>
- C 712 Test Method for Bubbling of One-Part, Elastomeric, Solvent-Release Type Sealants<sup>2</sup>

- C 713 Test Method for Slump of an Oil-Base Knife-Grade Channel Glazing Compound<sup>2</sup>
- C 717 Terminology of Building Seals and Sealants<sup>2</sup>
- C 718 Test Method for Ultraviolet (UV)-Cold Box Exposure of One-Part, Elastomeric, Solvent-Release Type Sealants<sup>2</sup>
- C 719 Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)<sup>2</sup>
- C 731 Test Method for Extrudability, After Package Aging, of Latex Sealants<sup>2</sup>
- C 732 Test Method for Aging Effects of Artificial Weathering on Latex Sealants<sup>2</sup>
- C 733 Test Method for Volume Shrinkage of Latex Sealants<sup>2</sup>
- C 734 Test Method for Low-Temperature Flexibility of Latex Sealants After Artificial Weathering<sup>2</sup>
- C 736 Test Method for Extension-Recovery and Adhesion of Latex Sealants<sup>2</sup>
- C 741 Test Method for Accelerated Aging of Wood Sash Face Glazing Compound<sup>2</sup>
- C 742 Test Method for Degree of Set for Wood Sash Glazing Compound<sup>2</sup>
- C 792 Test Method for Effects of Heat Aging on Weight Loss, Cracking, and Chalking of Elastomeric Sealants<sup>2</sup>
- C 793 Test Method for Effects of Accelerated Weathering on Elastomeric Joint Sealants<sup>2</sup>
- C 794 Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants<sup>2</sup>
- C 834 Specification for Latex Sealants<sup>2</sup>
- C 910 Test Method for Bond and Cohesion of One-Part Elastomeric Solvent Release-Type Sealants<sup>2</sup>
- C 920 Specification for Elastomeric Joint Sealants<sup>2</sup>
- C 1085 Specification for Butyl Rubber Based Solvent-Release Sealants<sup>2</sup>
- C 1183 Test Method for Extrusion Rate of Elastomeric Sealants<sup>2</sup>
- C 1216 Test Method for Adhesion and Cohesion of One-Part Elastomeric Solvent Release Sealants<sup>2</sup>
- C 1241 Test Method for Volume Shrinkage of Latex Sealants During Cure<sup>2</sup>

<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> Annual Book of ASTM Standards, Vol 04.07.

- C 1246 Test Method for Effects of Heat Aging on Weight Loss, Cracking, and Chalking of Elastomeric Sealants After Cure<sup>2</sup>
- C 1247 Test Method for Durability of Sealants Exposed to Continuous Immersion in Liquids<sup>2</sup>
- C 1248 Test Method for Staining of Porous Substrate by Joint Sealants<sup>2</sup>
- C 1257 Test Method for Accelerated Weathering of Solvent-Release-Type Sealants<sup>2</sup>
- C 1294 Test Method for Compatibility of Insulating Glass Edge Sealants with Liquid-Applied Glazing Materials<sup>2</sup>
- C 1311 Specification for Solvent Release Sealants<sup>2</sup>
- D 2202 Test Method for Slump of Sealants<sup>2</sup>
- D 2203 Test Method for Staining from Sealants<sup>2</sup>
- D 2249 Test Method for Predicting the Effect of Weathering on Face Glazing and Bedding Compounds on Metal Sash<sup>2</sup>
- D 2376 Test Method for Slump of Face Glazing and Bedding Compounds on Metal Sash<sup>2</sup>
- D 2377 Test Method for Tack-Free Time of Caulking Compounds and Sealants<sup>2</sup>
- D 2450 Test Method for Bond of Oil- and Resin-Base Caulking Compounds<sup>2</sup>
- D 2451 Test Method for Degree of Set for Glazing Compounds on Metal Sash<sup>2</sup>
- D 2452 Test Method for Extrudability of Oil- and Resin-Base Caulking Compounds<sup>2</sup>
- D 2453 Test Method for Shrinkage and Tenacity of Oil- and Resin-Base Caulking Compounds<sup>2</sup>
- E 548 Guide for General Criteria Used for Evaluating Laboratory Competence<sup>3</sup>

### 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

<sup>3</sup> Annual Book of ASTM Standards, Vol 14.02.

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>4</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.

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 covered 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 a practice 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 713, C 718, C 719, C 731, C 732, C 733, C 734, C 736, C 741, C 742, C 792, C 793, C 794, C 910, C 1183, C 1216, C 1241, C 1246, C 1247, C 1248, C 1257, C 1294, D 2202, D 2203, D 2249, D 2376, D 2377, D 2450, D 2451, D 2452, and D 2453.

8.1.1.2 Specifications C 570, C 669, C 834, C 920, C1085, C1311.

8.1.1.3 Guide E 548.

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

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<sup>4</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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