



Designation: C920 – 11

## Standard Specification for Elastomeric Joint Sealants<sup>1</sup>

This standard is issued under the fixed designation C920; 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 reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

*This standard has been approved for use by agencies of the Department of Defense.*

### 1. Scope

1.1 This ASTM specification covers the properties of a cured single- or multicomponent cold-applied elastomeric joint sealant for sealing, caulking, or glazing operations on buildings, plazas, and decks for vehicular or pedestrian use, and types of construction other than highway and airfield pavements and bridges.

1.2 A sealant meeting the requirements of this specification shall be designated by the manufacturer to be one or more of the types, classes, grades, and uses defined in Section 7.

1.3 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.4 This standard is similar, but not identical, to ISO 11600.

### 2. Referenced Documents

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

- C510 Test Method for Staining and Color Change of Single- or Multicomponent Joint Sealants
- C639 Test Method for Rheological (Flow) Properties of Elastomeric Sealants
- C661 Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer
- C679 Test Method for Tack-Free Time of Elastomeric Sealants
- C717 Terminology of Building Seals and Sealants
- C719 Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)
- C793 Test Method for Effects of Laboratory Accelerated Weathering on Elastomeric Joint Sealants

<sup>1</sup> This specification 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, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

- C794 Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
- C1183 Test Method for Extrusion Rate of Elastomeric Sealants
- C1193 Guide for Use of Joint Sealants
- C1246 Test Method for Effects of Heat Aging on Weight Loss, Cracking, and Chalking of Elastomeric Sealants After Cure
- C1247 Test Method for Durability of Sealants Exposed to Continuous Immersion in Liquids
- C1442 Practice for Conducting Tests on Sealants Using Artificial Weathering Apparatus

### 3. Terminology

3.1 *Definitions*—Refer to Terminology C717 for definitions of the following terms used in this specification: adhesive failure, caulking, chemically curing sealant, cohesive failure, cure, cured, elastomeric, glazing, joint, primer, seal, sealant.

### 4. Classification of Sealants

4.1 A sealant qualifying under this specification shall be classified as to type, grade, class, and use as follows:

- 4.1.1 *Type S*—A single-component sealant.
- 4.1.2 *Type M*—A multicomponent sealant.
- 4.1.3 *Grade P*—A pourable or selfleveling sealant that has sufficient flow to form a smooth, level surface when applied in a horizontal joint at 4.4°C (40°F).
- 4.1.4 *Grade NS*—A nonsag or gunnable sealant that permits application in joints on vertical surfaces without sagging or slumping when applied at temperatures between 4.4 and 50°C (40 and 122°F).
- 4.1.5 *Class 100/50*—A sealant that when tested for adhesion and cohesion under cyclic movement (8.8) shall withstand an increase of at least 100 % and a decrease of at least 50 % of the joint width as measured at the time of application, and, in addition, meet all the requirements of this specification.
- 4.1.6 *Class 50*—A sealant that when tested for adhesion and cohesion under cyclic movement (8.8) shall withstand an increase and decrease of at least 50 % of the joint width as measured at the time of application, and, in addition, meet all the requirements of this specification.
- 4.1.7 *Class 35*—A sealant that when tested for adhesion and cohesion under cyclic movement (8.8) shall withstand an

increase and decrease of at least 35 % of the joint width as measured at the time of application, and, in addition, meet all the requirements of this specification.

4.1.8 *Class 25*—A sealant that when tested for adhesion and cohesion under cyclic movement (8.8) shall withstand an increase and decrease of at least 25 % of the joint width as measured at the time of application, and, in addition, meet all the requirements of this specification.

4.1.9 *Class 12½* —A sealant that when tested for adhesion and cohesion under cyclic movement (8.8) shall withstand an increase and decrease of at least 12½ % of the joint width as measured at the time of application, and, in addition, meet all the requirements of this specification.

4.1.10 *Use T<sub>1</sub>*—A sealant designed for use in joints in pedestrian and vehicular traffic areas such as walkways, plazas, decks and parking garages where a higher modulus, firmer sealant is desired.

4.1.11 *Use T<sub>2</sub>*—A sealant designed for use in joints in pedestrian and vehicular traffic areas such as walkways, plazas, decks and parking garages where a more lower modulus, softer sealant is desired.

NOTE 1—Hardness alone does not correlate with joint performance. The joints in pedestrian and vehicular traffic areas such as walkways, plazas, decks, and parking garages require appropriate design considerations including material selection, total joint design, manufacturer involvement and field testing.

4.1.12 *Use NT*—A sealant designed for use in joints in nontraffic areas.

4.1.13 *Use I*—A sealant designed for use in joints which are submerged continuously in a liquid.

4.1.14 *Use M*—A sealant that meets the requirements of this specification when tested on mortar specimens in accordance with 9.9 and 9.10.

4.1.15 *Use G*—A sealant that meets the requirements of this specification when tested on glass specimens in accordance with 9.9-9.11.

4.1.16 *Use A*—A sealant that meets this specification when tested on aluminum specimens in accordance with 9.9 and 9.10.

4.1.17 *Use O*—A sealant that meets this specification when tested on substrates other than the standard substrates in accordance with 9.9 and 9.10.

## 5. Materials and Manufacture

5.1 A single-component sealant shall be a uniform mixture of a consistency suitable for immediate application by hand or pressure caulking gun or by hand tool. The sealant when completely cured shall form an elastomeric solid capable of maintaining a seal.

5.2 A multicomponent chemically curing sealant shall be furnished in two or more components. The resulting mixture shall be uniform and of a consistency suitable for immediate application by hand or pressure caulking gun, or by hand tool. The sealant when completely cured shall form an elastomeric solid capable of maintaining a seal.

## 6. General Requirements

### 6.1 Stability:

6.1.1 A single-component sealant, when stored in the original unopened container at temperatures of not more than 27°C (80°F) shall be capable of meeting the requirements of this specification for at least 6 months after date of delivery.

6.1.2 A multicomponent sealant, when stored in the original unopened container at temperatures of not more than 27°C (80°F) shall be capable of meeting the requirements of this specification for at least 6 months after date of delivery.

6.2 *Color*—The color of the sealant, after curing 14 days in a laboratory controlled at 23 ± 2°C (73.4 ± 3.6°F) and 50 ± 5 % relative humidity, shall be that color which has been agreed upon between the purchaser and the supplier.

6.3 The sealant shall be intended for use only on clean, dry surfaces. Where a primer is recommended by a manufacturer for a specific surface, all tests on that surface shall include the primer.

NOTE 2—The proper use of primers (or surface conditioners) in connection with the application of sealants is described in detail in Guide C1193. This guide also describes proper methods for joint design, back-up materials, surface preparation, tooling of sealant, and other important procedures in sealant application in buildings.

6.4 The same conditions of time, temperature, and humidity shall be used for cure of test specimens for Test Methods C661, C719, C794, and C1247.

## 7. Significance and Use

7.1 This specification covers several classifications of sealants as described in Section 4 for various applications. It should be recognized by the purchaser or design professional that not all sealants meeting this specification are suitable for all applications and all substrates. It is essential, therefore, that the applicable type, grade, class, and use be specified so that the proper classification of sealant is provided for the intended use. Test methods relate to special standard specimen substrates of mortar, glass, and aluminum. If tests are required using substrates in addition to or other than the standard, they should be so specified for testing.

## 8. Physical Requirements

### 8.1 Rheological Properties:

8.1.1 Grade P (pourable or selfleveling) sealant shall have flow characteristics such that when tested in accordance with Test Method C639 it shall exhibit a smooth, level surface. (Refer to Types I and III in the test.)

8.1.2 Grade NS (nonsag) or gunnable sealant shall have flow characteristics such that when tested in accordance with Test Method C639 it does not sag more than 4.8 mm (¾ in.) in vertical displacement. Also the sealant shall show no deformation in horizontal displacement. (Refer to Types II and IV in the test.)

### 8.2 Extrusion Rate:

8.2.1 Type S (single component), Grade P (pourable or selfleveling) sealant shall have an extrusion rate of not less than 10mL/min when tested in accordance with Test Method C1183, Procedure A.