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Standard Guide for Use of Joint Sealants¹

This standard is issued under the fixed designation C1193; 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 guide describes the use of a cold liquid-applied sealant for joint sealing applications. Including joints on buildings and related adjacent areas, such as plazas, decks, and pavements for vehicular or pedestrian use, and types of construction other than highways and airfield pavements and bridges. Information in this guide is primarily applicable to a single and multi-component, cold liquid-applied joint sealant and secondarily to a precured sealant when used with a properly prepared joint opening and substrate surfaces.

1.2 An elastomeric or non-elastomeric sealant described by this guide should meet the requirements of Specification **C834**, **C920**, or **C1311**.

1.3 This guide does not provide information or guidelines for the use of a sealant in a structural sealant glazing application. Guide **C1401** should be consulted for this information. Additionally, it also does not provide information or guidelines for the use of a sealant in an insulating glass unit edge seal used in a structural sealant glazing application. Guide **C1249** should be consulted for this information.

1.4 Practice **C919** should be consulted for information and guidelines for the use of a sealant in an application where an acoustic joint seal is required.

1.5 This guide also does not provide information relative to the numerous types of sealant that are available nor specific generic sealant properties, such as hardness, tack-free time, or curing process, among others.

1.6 The values stated in SI units are to be regarded as the standard. The values given in parenthesis are provided for information only.

1.7 The Committee with jurisdiction for this standard is not aware of any comparable standards published by other organizations.

1.8 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.

1.9 The committee with jurisdiction over this standard is not aware of any comparable standards published by other organizations.

1.10 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

- C510** Test Method for Staining and Color Change of Single- or Multicomponent Joint Sealants
- C603** Test Method for Extrusion Rate and Application Life of Elastomeric Sealants
- C661** Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer
- C711** Test Method for Low-Temperature Flexibility and Tenacity of One-Part, Elastomeric, Solvent-Release Type Sealants
- C717** Terminology of Building Seals and Sealants
- C719** Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)
- C731** Test Method for Extrudability, After Package Aging, of Latex Sealants
- C732** Test Method for Aging Effects of Artificial Weathering on Latex Sealants
- C734** Test Method for Low-Temperature Flexibility of Latex Sealants After Artificial Weathering
- C792** Test Method for Effects of Heat Aging on Weight Loss, Cracking, and Chalking of Elastomeric Sealants
- C793** Test Method for Effects of Laboratory Accelerated Weathering on Elastomeric Joint Sealants

¹ This standard 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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² 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
C834 Specification for Latex Sealants
C919 Practice for Use of Sealants in Acoustical Applications
C920 Specification for Elastomeric Joint Sealants
C1083 Test Method for Water Absorption of Cellular Elastomeric Gaskets and Sealing Materials
C1087 Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems
C1135 Test Method for Determining Tensile Adhesion Properties of Structural Sealants
C1184 Specification for Structural Silicone Sealants
C1216 Test Method for Adhesion and Cohesion of One-Part Elastomeric Solvent Release Sealants
C1241 Test Method for Volume Shrinkage of Latex Sealants During Cure
C1247 Test Method for Durability of Sealants Exposed to Continuous Immersion in Liquids
C1248 Test Method for Staining of Porous Substrate by Joint Sealants
C1249 Guide for Secondary Seal for Sealed Insulating Glass Units for Structural Sealant Glazing Applications
C1253 Test Method for Determining the Outgassing Potential of Sealant Backing
C1257 Test Method for Accelerated Weathering of Solvent-Release-Type Sealants
C1265 Test Method for Determining the Tensile Properties of an Insulating Glass Edge Seal for Structural Glazing Applications
C1311 Specification for Solvent Release Sealants
C1330 Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants
C1369 Specification for Secondary Edge Sealants for Structurally Glazed Insulating Glass Units
C1382 Test Method for Determining Tensile Adhesion Properties of Sealants When Used in Exterior Insulation and Finish Systems (EIFS) Joints
C1401 Guide for Structural Sealant Glazing
C1442 Practice for Conducting Tests on Sealants Using Artificial Weathering Apparatus
C1472 Guide for Calculating Movement and Other Effects When Establishing Sealant Joint Width
C1481 Guide for Use of Joint Sealants with Exterior Insulation and Finish Systems (EIFS)
C1519 Test Method for Evaluating Durability of Building Construction Sealants by Laboratory Accelerated Weathering Procedures
C1521 Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints
C1681 Test Method for Evaluating the Tear Resistance of a Sealant Under Constant Strain
D412 Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension
D624 Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
D2203 Test Method for Staining from Sealants

D2453 Test Method for Shrinkage and Tenacity of Oil- and Resin-Base Caulking Compounds
E2114 Terminology for Sustainability

3. Terminology

3.1 Definitions—Refer to Terminology **C717** for definitions of the following terms used in this guide: adhesive failure, bicellular sealant backing, blooming, bond-breaker, bridge sealant joint, butt sealant joint, cell, cellular material, chalk, chalking, chemically curing sealant, closed cell, closed cell material, closed cell sealant backing, cohesive failure, compatibility, compatible materials, compound, control joint, creep, cure, cured, dirt pick-up, durability, durability limit, elastomeric, elongation, expansion joint, fillet sealant joint, gasket, hydrostatic pressure, isolation joint, fluid migration, joint filler, laitance, latex sealant, modulus, non-sag sealant, open cell, open cell material, open cell outgassing, premature deterioration, primer, reversion, rundown, seal, sealant, sealant backing, self-leveling sealant, service life, shelf-life, shrinkage, silicone sealant, skin, solvent release sealant, structural sealant, substrate, tooling, tooling time, weathertight, working life (pot life).

3.2 Definitions of Terms Specific to This Standard:

3.2.1 precured sealant, n—a preformed, factory cured, elastomeric material.

4. Significance and Use

4.1 This guide provides information and guidelines for consideration by the designer or applicator of a joint seal. It explains the properties and functions of various materials, such as sealant, sealant backing, and primer, among others; and, procedures such as, substrate cleaning and priming, and installation of the components of a sealed joint. It presents guidelines for the use and application of the various materials, design of a sealant joint for a specific application, and environmental conditions and effects that are known to detrimentally affect a sealant joint. The information and guidelines are also useful for those that supply accessories to the sealant industry and for those that install sealants and accessory materials associated with sealant use.

4.2 In addition to the design and installation data in this guide, consult the sealant manufacturer about applications for its products and their proper use and installation. Considering the range of properties of commercially available sealants, the variety of joint designs possible, and the many conditions of use, the information contained herein is general in nature.

4.3 It should be realized that a sealant and sealant joint are expected to have a design life during which they remain functional. However, a sealant and sealant joint will also have a service life. The intent is for service life to meet or exceed design life. There are many factors that can affect service life including type of sealant polymer, sealant formulation, compatibility with adjacent materials, installation techniques or deficiencies, sealant joint design (or lack thereof), proper maintenance (or lack thereof), and environmental exposure, among others. The designer of a joint seal should take the above into consideration when designing and specifying sealants for certain applications.