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Standard Guide for Structural Sealant Glazing¹

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1. Scope

1.1 Structural sealant glazing, hereinafter referred to as SSG, is an application where a sealant not only can function as a barrier against the passage of air and water through a building envelope, but also primarily provides structural support and attachment of glazing or other components to a window, curtain wall, or other framing system.

1.2 This guide provides information useful to design professionals, manufacturers, contractors, and others for the design and installation of a SSG system. This information is applicable only to this glazing method when used for a building wall that is not more than 15° from vertical; however, limited information is included concerning a sloped SSG application.

1.3 Only a silicone chemically curing sealant specifically formulated, tested, and marketed for structural sealant glazing is acceptable for a SSG system application.

1.4 The committee with jurisdiction for this standard is not aware of any comparable standard published by other organizations.

1.5 The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered standard. SI units in this guide are in conformance with IEEE/ASTM SI 10.

1.6 *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.*

1.7 *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

- B117 Practice for Operating Salt Spray (Fog) Apparatus
- C99 Test Method for Modulus of Rupture of Dimension Stone
- C119 Terminology Relating to Dimension Stone
- C162 Terminology of Glass and Glass Products
- C503 Specification for Marble Dimension Stone
- C509 Specification for Elastomeric Cellular Preformed Gasket and Sealing Material
- C510 Test Method for Staining and Color Change of Single- or Multicomponent Joint Sealants
- C568 Specification for Limestone Dimension Stone
- C615 Specification for Granite Dimension Stone
- C717 Terminology of Building Seals and Sealants
- C719 Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)
- C794 Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
- C864 Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers
- C880 Test Method for Flexural Strength of Dimension Stone
- C920 Specification for Elastomeric Joint Sealants
- C1036 Specification for Flat Glass
- C1048 Specification for Heat-Strengthened and Fully Tempered Flat Glass
- C1087 Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems
- C1115 Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories
- C1135 Test Method for Determining Tensile Adhesion Properties of Structural Sealants
- C1172 Specification for Laminated Architectural Flat Glass
- C1184 Specification for Structural Silicone Sealants
- C1193 Guide for Use of Joint Sealants

¹ This guide 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.

- C1201** Test Method for Structural Performance of Exterior Dimension Stone Cladding Systems by Uniform Static Air Pressure Difference
- 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
- C1265** Test Method for Determining the Tensile Properties of an Insulating Glass Edge Seal for Structural Glazing Applications
- C1294** Test Method for Compatibility of Insulating Glass Edge Sealants with Liquid-Applied Glazing Materials
- 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
- C1392** Guide for Evaluating Failure of Structural Sealant Glazing
- C1394** Guide for In-Situ Structural Silicone Glazing Evaluation
- C1472** Guide for Calculating Movement and Other Effects When Establishing Sealant Joint Width
- C1487** Guide for Remedying Structural Silicone Glazing
- C1521** Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints
- C1564** Guide for Use of Silicone Sealants for Protective Glazing Systems
- D1566** Terminology Relating to Rubber
- D2203** Test Method for Staining from Sealants
- D4541** Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
- E283** Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
- E330** Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
- E331** Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
- E547** Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference
- E631** Terminology of Building Constructions
- E783** Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors
- E1105** Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference
- E1233** Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Cyclic Air Pressure Differential
- E1300** Practice for Determining Load Resistance of Glass in Buildings
- E1424** Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure and Temperature Differences Across the Specimen
- E1425** Practice for Determining the Acoustical Performance of Windows, Doors, Skylight, and Glazed Wall Systems
- E1825** Guide for Evaluation of Building Exterior Enclosure Materials, Products, and Systems
- E1886** Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials
- E1996** Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes
- E2128** Guide for Evaluating Water Leakage of Building Walls
- E2203** Specification for Dense Thermoplastic Elastomers Used for Compression Seals, Gaskets, Setting Blocks, Spacers and Accessories
- E2099** Practice for Specification and Evaluation of Pre-Construction Laboratory Mockups of Exterior Wall Systems
- E2431** Practice for Determining the Resistance of Single Glazed Annealed Architectural Flat Glass to Thermal Loadings
- G15** Terminology Relating to Corrosion and Corrosion Testing (Withdrawn 2010)³
- 2.2 *IEEE/ASTM Standard*:²
- IEEE/ASTM SI 10** Standard for Use of the International System of Units (SI): The Modern Metric System
- 2.3 *Aluminum Association Manual*:
- Aluminum Design Manual**⁴
- 2.4 *ANSI/ASCE Standard*:
- ANSI/ASCE 7**, Minimum Design Loads for Buildings and Other Structures⁵
- 2.5 *AAMA Standards*:
- 501.1** Standard Test Method for Metal Curtain Walls for Water Penetration Using Dynamic Pressure⁶
- 501.2** Field Check of Metal Curtain Walls for Water Leakage⁶
- TIR-A11–1996** Maximum Allowable Deflection of Framing Systems for Building Cladding Components at Design Wind Loads⁶
- 2.6 *ANSI Standard*:
- Z97.1** Safety Performance Specifications and Methods of Test for Glazing Materials Used in Buildings⁵
- 2.7 *CPSC Standard*:
- 16 CFR 1201** Standard on Architectural Glazing Materials⁷

³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from the Aluminum Association, 900 19th St., N.W. Washington, DC 20006.

⁵ Available from American National Standards Institute, 25 W. 43rd St., 4th Floor, New York, NY 10036.

⁶ Available from the Architectural Aluminum Manufacturers Association (AAMA).

⁷ Available from the Consumer Product Safety Commission (CPSC), Washington, D.C. 20207.