



Standard Test Method for Effects of Laboratory Accelerated Weathering on Elastomeric Joint Sealants¹

This standard is issued under the fixed designation C793; 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.

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

1. Scope

1.1 This test method covers a laboratory procedure for determining the effects of accelerated weathering on cured-in-place elastomeric joint sealants (single- and multicomponent) for use in building construction.

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

1.3 The committee with jurisdiction over this standard is not aware of any comparable standards published by other ASTM committees or other organizations.

1.4 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*²

C717 Terminology of Building Seals and Sealants

C1442 Practice for Conducting Tests on Sealants Using Artificial Weathering Apparatus

G151 Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources

3. Terminology

3.1 *Definitions*—See Terminology C717 for applicable definitions of the following terms: cure, elastomeric, joint, sealant, and substrate.

4. Summary of Test Method

4.1 Three sealant specimens are spread on aluminum plates and exposed in one of the laboratory accelerated weathering

chambers specified in Section 6 and operated in accordance with specifications in Section 8 and Practice C1442.

4.2 Following this treatment the specimens are exposed for 24 h in a freezer maintained at $-26 \pm 2^\circ\text{C}$ ($-15 \pm 4^\circ\text{F}$).

4.3 At the end of the cold exposure, the specimens are bent over a mandrel within 1 s at the specified temperature.

5. Significance and Use

5.1 It is known that solar radiation contributes to the degradation of sealants in exterior building joints. The use of a laboratory accelerated weathering machine with actinic radiation, moisture and heat appears to be a feasible means to give indications of early degradation by the appearance of sealant cracking. However, simulated weather factors in combination with extension may produce more severe degradation than weather factors only. Therefore, the effect of the weathering test is made more sensitive by the addition of the bending of the specimen at cold temperature.

6. Apparatus

6.1 *Exposure Apparatus*—The exposure apparatus shall be one of the three types of laboratory accelerated weathering devices described in Practice C1442 that use either xenon arc, fluorescent UV, or open flame carbon arc radiation. Consult Practice C1442, Section 7 for the differences in test parameters among the devices. Because of differences in test conditions, test results may differ with the type of device used. The choice of device shall be by mutual agreement among the interested parties.

6.2 *Freezer or Cold Box*, having a temperature controlled at $-26 \pm 2^\circ\text{C}$ ($-15 \pm 4^\circ\text{F}$).

6.3 *Rectangular Brass Frame*, with inside dimensions 130 by 40 by 3 mm (5 by 1½ by ⅛ in.).

6.4 *Aluminum Plates*, three, each 152 by 80 by 0.3 mm (6 by 3 by 0.01 in.).

6.5 *Steel Mandrel*, 12.7 mm (½ in.) in diameter and about 102 mm (4 in.) long.

6.6 *Thin-Bladed Knife*.

¹ This test method is under the jurisdiction of ASTM Committee C24 on Building Seals and Sealants and is the direct responsibility of Subcommittee C24.40 on Weathering.

Current edition approved June 1, 2010. Published July 2010. Originally approved in 1975. Last previous edition approved in 2005 as C793 – 05. DOI: 10.1520/C0793-05R10.

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.