



Designation: C 793 – 91 (Reapproved 1997)^{e1}

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

This standard is issued under the fixed designation C 793; 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.

^{e1} NOTE—Keywords were revised editorially in June 1997.

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 *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:*

C 717 Terminology of Building Seals and Sealants²

G 23 Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials³

3. Terminology

3.1 *Definitions*—See Terminology C 717 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 to 250 h of ultraviolet radiation with intermittent water spray in a standard accelerated weathering machine. Following this treatment the specimens are exposed for 24 h in a freezer maintained at $-26 \pm 2^\circ\text{C}$ ($-15 \pm 3.6^\circ\text{F}$). At the end of the cold exposure the specimens are bent over a mandrel within 1 s at the specified temperature.

¹ This test method is under the jurisdiction of ASTM Committee C-24 on Building Seals and Sealants and is the direct responsibility of Subcommittee C24.32 on Chemically Curing Sealants.

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² *Annual Book of ASTM Standards*, Vol 04.07.

³ *Annual Book of ASTM Standards*, Vol 14.02.

5. Significance and Use

5.1 It is known that ultraviolet radiation contributes to the degradation of sealants in exterior building joints. The use of a laboratory accelerated weathering machine with ultraviolet radiation and intermittent water spray appears to be a feasible means to give indications of early degradation by the appearance of sealant cracking. However, other factors such as UV exposure in combination with extension may produce more severe degradation than UV alone. The effect of the test is made more sensitive by the addition of the bending of the specimen at cold temperature.

6. Apparatus

6.1 *Exposure Apparatus*—An accelerated weathering machine, twin-enclosed carbon arc with 102-18 light/water spray cycle (102 min of light followed by 18 min of light and deionized water). It shall conform to Type D of Practice G 23.

NOTE 1—There are several other weathering machines described in Practice G 23 available for use, and these may or may not give different results from the one described under Type D. Instruments that have a means of humidification should operate without the humidifier.

6.2 *Freezer or Cold Box*, having a temperature controlled at $-26 \pm 2^\circ\text{C}$ ($-15 \pm 3.6^\circ\text{F}$).

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*.

6.7 *Straightedge*, metal or plastic, about 152 mm (6 in.) long.

6.8 *Spatula*, steel, about 152 mm (6 in.) long.

7. Standard Test Conditions

7.1 Unless otherwise specified by those authorizing the test, standard conditions of temperature and relative humidity shall be $23 \pm 2^\circ\text{C}$ ($73.4 \pm 3.6^\circ\text{F}$) and $50 \pm 5\%$, respectively.