Designation: C 718 – 93

Standard Test Method for Ultraviolet (UV)-Cold Box Exposure of One-Part, Elastomeric, Solvent-Release Type Sealants[1]

This standard is issued under the fixed designation C 718; 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 test method provides an accelerated procedure for predicting the effects of ultraviolet (UV) exposure and cold box cycling on one-part, elastomeric, solvent-release sealing compounds, when used in channel glazing and sealing applications.

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

1.3 *This standard does not purport to address all of the safety problems, 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 Sealants[2]

3. Terminology

3.1 *Definitions*ùRefer to Terminology C 717 for definitions of the following terms used in this test method: compound; elastomeric; sealant; solvent-release sealant.

4. Summary of Test Method

4.1 The test compound is carefully placed in aluminum channels and all edges of the compound are struck clean. After room temperature conditioning, specimens are subjected to ten cycles of alternating exposure to UV at elevated temperature and conditioning at low temperature after which they are examined for deleterious effects.

5. Significance and Use

5.1 The accelerated aging test is not intended to predict the exact number of years of service life, nor the exact type of failures likely to be encountered when the compound under test is in actual use. However, the effects of this cycling procedure will assist in judging the probable quality and overall performance of the compound.

6. Apparatus and Materials

6.1 *Ultraviolet Sun Lamps*, two, on adjustable holders.[3] New sun lamps shall be lighted 24 h before using in test. Maximum life of lamps is 500 h.

6.2 *Reflective Aluminum Cabinet or Shield*, having one open side. The shield shall be approximately 18 in. (460 mm) high by 24 in. (600 mm) wide by 36 in. (900 mm) long, opened at the top and lined on the inside with aluminum foil.

6.3 *Aluminum Channels*, for each compound to be tested, three 6 in. (152 mm) long by ¾ in. (19 mm) wide by ⅜ in. (9 mm) deep, inside dimensions.

6.4 *Freezer Chest or Cold Box*, at a controlled temperature of − 10 ± 5°F (−23 ± 3°C).

6.5 *Steel Spatula*, with thin knife edge.

6.6 *Masking Tape*.

6.7 *Methyl-Ethyl-Ketone*, *Ethylene Dichloride*, or similar solvent.

7. Sampling

7.1 Take the test specimens from a previously unopened container as received from the sealant manufacturer.

8. Test Specimens

8.1 Prepare three test specimens for each compound to be tested as follows:

8.1.1 Clean the aluminum channels with solvent, allow them to dry, then seal the open ends of the channels with masking tape.

8.1.2 Fill the channels with sealant, avoiding bubbles and air pockets, and strike off level with the spatula.

9. Conditioning

9.1 Condition the specimens for 48 h at 73.4 ± 3.6°F (23 ± 2°C) and 50 ± 5 % relative humidity before testing.

10. Procedure

10.1 Mount the sun lamps side-by-side in the center of the reflective shield. Adjust the height of the sun lamps so that the temperature at the surface of the test channel will be 140 ± 5°F (60 ± 3°C). Normally, the sun lamps should be approximately

[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 C24.18 on Solvent Release Sealants.

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

[3] General Electric sun lamps, Model RS-1, have been found satisfactory for this purpose.

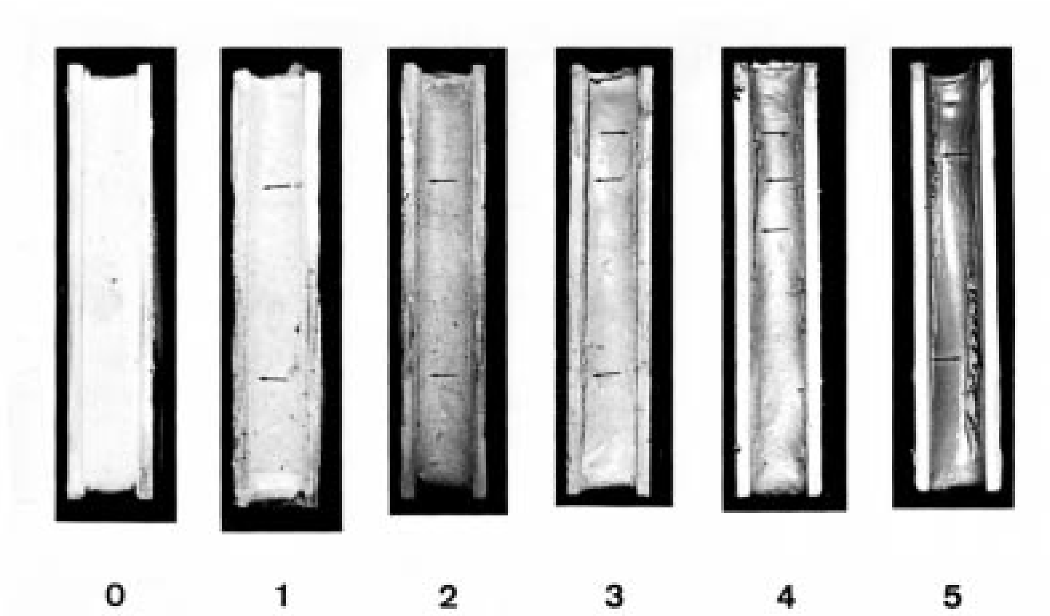

FIG. 1 Edge Cracking

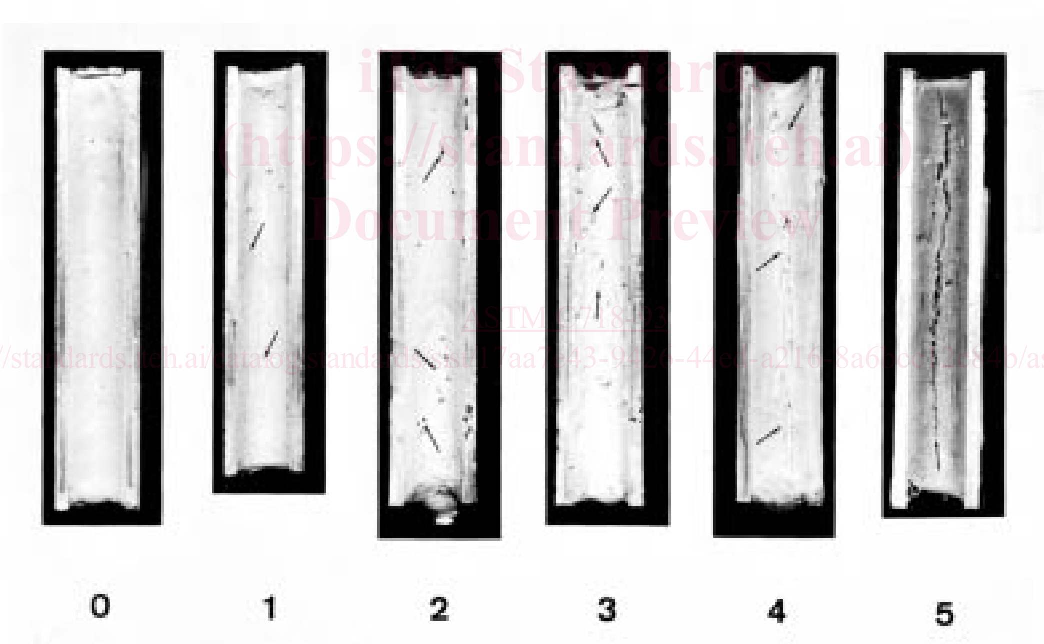

FIG. 2 Center Cracking

12 to 18 in. (300 to 460 mm) from the samples to accomplish this.

10.2 Place the test channels directly under the sun lamps for a period of 8 h. At the end of this time, remove them and immediately place them in a freezer held at − 10 ± 5°F (−23 ± 3°C) for 16 h.

10.3 Repeat the exposure cycle specified in 10.2 ten times. Allow the samples to remain in the freezer at − 10 ± 5°F (−23 ± 3°C) over each weekend or nonworking period.

10.4 At the conclusion of 10 cycles, condition the specimens at 73.4 ± 3.6°F (23 ± 2°C) and 50 ± 5 % relative humidity for 2 h.

10.5 Inspect the samples for cracking, adhesive failure, and color change.

NOTE 1—Additional cycles may be tested as specified.

11. Report

11.1 Using the photographic reference standards, Figs. 1-3 as guidelines, examine each channel and determine and report an average rating for edge cracking, center cracking, and adhesive failure. Ratings range from 0, no damage after exposure, to 5, severe damage after exposure.

11.2 Note and report any color or shade change of the sealant after exposure.