



Standard Test Method for Low-Temperature Flexibility of Preformed Tape Sealants¹

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^{ε1} NOTE—An editorial change was made in 8.1.1 in June 2001.

1. Scope

1.1 This test method covers a laboratory procedure for testing the low-temperature flexibility of preformed tape sealants.

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

E 145 Specification for Gravity-Convection and Forced-Ventilation Ovens³

3. Terminology

3.1 *Definitions*—The definitions of the following terms used in this test method are found in Terminology C 717: preformed tape sealant, sealant.

4. Summary of Test Method

4.1 The preformed tape sealant to be tested is applied to an aluminum panel. The assembly is heat aged, then placed in the freezer where the panel is quickly bent over a mandrel. The specimen is examined for cracking and loss of adhesion.

5. Significance and Use

5.1 Preformed tape sealants are tacky, deformable solids that are used under compression between two substrates in a variety of sealing applications. This procedure is not intended to simulate an actual use condition, but it will give some indication of the flexibility and adhesion of a tape at low

temperature. It can serve to differentiate between flexible tapes that can take some movement and those that tend to harden or embrittle on aging and crack or lose adhesion when flexed at low temperature. It will also aid in identifying sealants that have poor flexibility because they are overextended and contain a low level of binder as well as those sealants having binders that will embrittle at low temperature.

6. Apparatus

6.1 *Freezer Unit*, capable of maintaining a temperature of $-23 \pm 2^{\circ}\text{C}$ ($-10 \pm 3.6^{\circ}\text{F}$).

6.2 *Aluminum Panel* (unpolished), approximately 0.635 mm (0.025 in.) thick, 76 mm (3 in.) wide, and 152 mm (6 in.) long.

6.3 *Steel Mandrel*, 25.4 mm (1 in.) in diameter, with supporting holder or rack.

6.4 *Vented Air Circulating Oven*, that complies with Specification E 145 and is capable of maintaining a temperature of $70 \pm 2^{\circ}\text{C}$ ($158 \pm 3.6^{\circ}\text{F}$).

7. Sampling

7.1 Samples to be tested shall be taken from a fresh roll of tape sealant after first removing and discarding approximately the first 0.61 m (2 ft) of the roll.

8. Test Specimen

8.1 Prepare the test specimen as follows:

8.1.1 Clean the 76-mm by 152-mm (3-in by 6-in.) aluminum panel with methyl ethyl ketone or similar solvent.

8.1.2 Place a 102-mm (4-in.) length of tape in the center of the panel with its length paralleling that of the panel, leaving the release paper in place on the preformed tape sealant.

8.1.3 Apply light finger pressure to ensure intimate contact of the preformed tape sealant with the panel.

8.1.4 Remove the release paper from the test specimen.

9. Conditioning

9.1 Place the specimen in a horizontal position in a forced-draft oven and condition for 14 days at $70 \pm 2^{\circ}\text{C}$ ($158 \pm 3.6^{\circ}\text{F}$).

9.2 Remove the test specimen from the oven and immediately place it in a horizontal position in a freezer unit maintained at $-23 \pm 2^{\circ}\text{C}$ ($-10 \pm 3.6^{\circ}\text{F}$) for 4 h.

¹ This test method is under the jurisdiction of ASTM Committee C24 on Building Seals and Sealants and is the direct responsibility of Subcommittee C24.20 on General Sealant Standards.

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

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