



Standard Test Methods for Preformed Expansion Joint Fillers for Concrete Construction (Nonextruding and Resilient Types)¹

This standard is issued under the fixed designation D545; 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 U.S. Department of Defense.

1. Scope

1.1 These test methods cover the physical properties associated with preformed expansion joint fillers. The test methods include:

Property	Section
Expansion in Boiling Water	7.1
Recovery and Compression	7.2
Extrusion	7.3
Boiling in Hydrochloric Acid	7.4
Asphalt Content	7.5
Water Absorption	7.6
Density	7.7

NOTE 1—Specific test methods are applicable only to certain types of joint fillers, as stated herein.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

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 consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

- D1037 Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials
- E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods
- E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

¹ These methods are under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and are the direct responsibility of Subcommittee D04.34 on Preformed Joint Fillers, Sealers and Sealing Systems.

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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.

3. Significance and Use

3.1 The compression resistance perpendicular to the faces, the resistance to the extrusion during compression, and the ability to recover after release of the load are indicative of a joint filler's ability to fill continuously a concrete expansion joint and thereby prevent damage that might otherwise occur during thermal expansion. The asphalt content is a measure of the fiber-type joint filler's durability and life expectancy. In the case of cork-type fillers, the resistance to water absorption and resistance to boiling hydrochloric acid are relative measures of durability and life expectancy.

4. Apparatus

4.1 *Balance*, for weighing joint fillers capable of weighing test specimens within 0.01 g.

4.2 *Mechanical Convection Oven*, capable of maintaining $220 \pm 5.0^\circ\text{F}$ ($104 \pm 3^\circ\text{C}$).

4.3 *Desiccator*, of sufficient size to accommodate the test specimens.

4.4 *Vernier Caliper*, for measuring length and width of specimens with accuracy within ± 0.01 in. (0.25 mm).

4.5 *Dial Micrometer*, or other measuring device, graduated to read in 0.001-in. (0.02-mm) units.

4.6 *Extrusion Mold*—Three-sided steel mold to confine lateral movement of specimens under compression to one side only. Interior dimensions shall be 4 by 4 in. (102 by 102 mm) with permissible variations in length and width of ± 0.015 in. (0.38 mm). Mold sides shall be of such height as to extend at least 0.5 in. (13 mm) above the test specimens. A typical mold can be made from a steel base $\frac{1}{2}$ by 4 by 4 ± 0.015 in. (13 by 102 by 102 ± 0.3 mm) and three bolted steel side plates $\frac{1}{4}$ in. (6.35 mm) thick, extending approximately $1\frac{1}{2}$ in. (38 mm) above the base plate, thus forming a three-sided open-top box.

4.7 *Template*—One steel template 4 by 4 in. (102 by 102 mm), machined from $\frac{1}{2}$ -in. (6.4-mm) steel plate to fit the extrusion mold. The template shall fit the mold within -0.005 in. (0.13 mm) in length and width.