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Designation: D 1752 – 84 (Reapproved 1996)^{e1}



Designation: D 1752 – 04

Standard Specification for Preformed Sponge Rubber and Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction¹

This standard is issued under the fixed designation D 1752; 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.

^{e1} ~~NOTE—Keywords were added editorially in September 1996.~~

¹ This specification is under the jurisdiction of ASTM Committee ~~D-4~~ D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.34 on Preformed Joint Fillers, Sealers, and Sealing Systems.

Current edition approved ~~March~~ Jan. 1, 1984; 2004. Published ~~March 1984~~; February 2004. Originally published as ~~D 1752 – 60~~; approved in 1960. Last previous edition ~~D 1752 – 67 (1978)~~; approved in 1996 as D 1752–84(1996)^{e1}.

1. Scope

1.1 This specification covers preformed expansion joint fillers of the following ~~three~~ four types for use in concrete, brick, or stone construction.

1.1.1 *Type I*—Sponge rubber.

1.1.2 *Type II*—Cork.

1.1.3 *Type III*—Self-expanding cork.

1.1.4 *Type IV*—Recycled PVC.

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

NOTE 1—Attention is called to Specification ~~D 1751~~; D 994 and to Specification ~~D 994~~; D 1751.

2. Referenced Documents

2.1 *ASTM Standards*:²

~~D 545 Methods of Testing~~ 545 Test Methods for Preformed Expansion Joint Fillers for Concrete Construction (Nonextruding and Resilient Types)

D 994 Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type)

D 1751 Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

3. Ordering Information

3.1 Products conforming to this specification are manufactured in sheet form to a range of thicknesses: ~~namely~~ 1/4 in., 3/8 in., 1/2 in., 3/4 in., and 1 in. Sheet sizes may be 3 or 4 ft in width and lengths of 3, 5, 6, 10, or 12 ft. Purchaser must specify sheet sizes when ordering (excluding Type IV—Recycled PVC).

3.2 Joint filler in strip form is cut from the sheets as manufactured. When ordering joint filler strips the purchaser must specify thickness, widths, and length; strip widths are available from 2 in. (50 mm) in increments of 1/2 in. (13 mm).

3.3 Type IV joint filler is available in strip form, cut from the sheets as manufactured, and available in a range of thicknesses: 1/4 in., 3/8 in., 1/2 in., or 3/4 in. When ordering joint filler strips, the purchaser must specify thickness, widths, and length; strip widths are available from 2 in. (50 mm) in increments of 1/2 in. (13 mm).

4. Materials

4.1 *Sponge Rubber*— The joint filler shall consist of preformed strips of a durable, elastic sponge rubber compound, using synthetic rubber or natural rubber as a base and containing no reclaim rubber or factice. Unless otherwise specified, the sponge rubber shall have a cement gray color to blend with concrete in appearance.

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*, Vol 04.03, volume information, refer to the standard's Document Summary page on the ASTM website.

4.2 *Cork and Self-Expanding Cork*—The joint filler shall consist of preformed strips that have been formed from clean granulated cork particles securely bound together by a synthetic resin of an insoluble nature.

4.3 *Recycled PVC*—The joint filler shall consist of preformed strips that have been extruded using scrap PVC material and using either no binder or a synthetic resin of an insoluble nature to securely bind it together.

NOTE 2—Unless otherwise specified, the recycled PVC should have a cement gray color to blend with concrete in appearance.

4.4 Preformed strips of expansion joint fillers shall be of such character as not to be deformed or broken by ordinary handling when exposed to atmospheric conditions. Pieces of the joint filler which have been damaged shall be rejected.

5. Requirements

5.1 *Test Specimen*—The sample to be tested shall be cut from the sheet, as manufactured, and shall be representative of the sheet stock.

5.2 *Recovery*—The test specimen shall be compressed to 50 % of its thickness before test. The load shall be released immediately after application. At the end of 10 min after release of application of the load, the specimen shall have recovered to at least 90 % of its thickness before test.

5.2.1 In case of failure to comply with the above requirements, the test specimen shall be given three applications of a load sufficient to compress the material to 50 % of its thickness before test. The load shall be released immediately after each application. At the end of 1 h after the third application, the specimen shall have recovered to at least 90 % of its thickness before test.

5.3 *Compression*—The load required to compress the test specimen to 50 % of its thickness before test shall be not less than 50 nor greater than 1500 psi (0.34 to 10.35 MPa).

5.4 *Extrusion*—The test specimen shall be compressed to 50 % of its thickness before test with three of the edges restrained. The amount of extrusion of the free edge shall not exceed 0.25 in. (6.4 mm).

5.5 *Expansion*—In the case of self-expanding cork (Type III) expansion joint filler only, the test specimen after being immersed in boiling water for 1 h, shall have a final thickness not less than 140 % of the thickness before test. Discoloration of the water shall not be considered an indication of failure.

5.6 *Boiling in Hydrochloric Acid*—In the case of cork and self-expanding cork (Types II and III) expansion joint fillers only, the test specimen shall show no evidence of serious disintegration. Discoloration, or a small amount of swelling, shall not be considered as failure. The test specimens shall be examined immediately after the end of the boiling period and shall be rejected for any of the following evidences of disintegration: (1) particles of cork dislodged during the boiling period, (2) specimen lacks resiliency, is very friable, and easily broken to pieces, or (3) surface of specimen appears porous and particles of cork are easily dislodged by rubbing with fingers. Particles of cork dislodged from edges cut during preparation of the specimen should not be considered as constituting failure under this requirement.

5.7 *Density*—In the case of sponge rubber (Type I) expansion joint filler only, the density of the air dry filler shall not be less than 30 lb/ft³ (480 kg/m³).

NOTE 3—In the case of recycled PVC (Type IV) expansion joint filler only, the density of the dry unit weight test should not be less than 50 lb/ft³.

6. Dimensions and Permissible Variations

6.1 The preformed strips shall conform to the dimensions specified or shown on the plans. Strips of the joint filler which do not conform to the specified dimensions, within the permissible variations of + $\frac{1}{16}$ in. (1.6 mm) in thickness, $\pm\frac{1}{8}$ in. (3.2 mm) in depth, and $\pm\frac{1}{4}$ in. (6.4 mm) in length shall be rejected.

7. Sampling

7.1 *Size and Number of Samples*—Each sample shall consist of sufficient material to provide at least five test specimens measuring 4½ by 4½ in. (114 by 114 mm). One representative sample, approximately 2 ft², shall be selected from each shipment of 1000 ft² or fraction thereof.

7.2 For self-expanding cork joint filler, a minimum of five 4½ by 4½ in. (114 by 114 mm) square specimens properly banded and plastic wrapped at the point of manufacture shall be submitted for testing.

7.3 Samples shall be packaged for safe transportation to the testing agency in such a manner that there will be no danger of distortion or breakage.

8. Test Methods

8.1 Determine the properties prescribed in this specification in accordance with Test Methods D 545.

9. Rejection and Retest

9.1 Material that fails to conform to the requirements of this specification may be rejected. Rejection should be reported to the manufacturer or supplier promptly and in writing. In case of dissatisfaction with the results of the test, the manufacturer or supplier may request retesting.

10. Packaging

10.1 Preformed expansion joint filler in sheets or strips should be stored and transported on pallets or suitable flat surface to

prevent breakage and permanent deformation due to weather conditions.

10.2 Self-expanding cork filler shall be wrapped in waterproof paper, sealed in a manner that will prevent the entrance of moisture, and packaged in sizes convenient for handling on the job.

11. Keywords

11.1 construction; cork; expansion; joint; paving; preformed; PVC; recycled; rubber; sponge; structural

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