



Standard Test Method for Water Absorption of Cellular Elastomeric Gaskets and Sealing Materials¹

This standard is issued under the fixed designation C 1083; 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 covers those cellular elastomeric compounds that are manufactured in preformed shapes such as gaskets, and that are used as compression seals for glazing purposes and as sealing materials in other applications in building construction.

1.2 *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.*

1.3 The values stated in SI units are to be regarded as the standard. The values given in parentheses are provided for information purposes only.

2. Referenced Documents

2.1 ASTM Standards:

C 717 Terminology of Building Seals and Sealants²

D 3182 Practice for Rubber—Materials, Equipment, and Procedures for Mixing Standard Compounds and Preparing Standard Vulcanized Sheets³

3. Terminology

3.1 Definitions—Refer to Terminology C 717 for the following terms used in this test method: cell, compound, compression gasket, elastomer, elastomeric, gasket, glazing, seal, and sealing material.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *cellular elastomer, n—in building construction*, a cured elastomeric material containing cells or small voids.

4. Significance and Use

4.1 This test method will quantify the water absorption characteristics of cellular elastomeric gaskets and sealing materials. It is a test that enables the specifier to exercise engineering judgment in the selection of materials.

5. Apparatus

5.1 *Vessel*, of potable water of dimensions appropriate to permit proper submergence of the specimens as described in Section 9.

5.2 *Stand and Clamps*, to hold specimens.

5.3 *Balance*, triple-beam, accurate to 0.01 g.

5.4 *Paper*, lint-free blotting.

6. Comparison to Other Standards

6.1 The ASTM Committee with jurisdiction over this standard¹ is not aware of any comparable standards published by other organizations.

7. Sampling and Test Specimens

7.1 Sampling:

7.1.1 When possible, the manufactured product or a suitable section thereof shall be used for the test. Representative samples of the lot being examined shall be selected at random.

7.1.2 When the manufactured product does not lend itself to testing or to the taking of test specimens because of complicated shape, small size, metal or fabric inserts, or other reasons, standard test strips shall be prepared. The standard specimens for testing shall be as specified in 7.2.2.

7.1.3 The manufacturer shall, upon the request of the purchaser at the time of ordering, furnish sufficient test specimens prepared in accordance with Practice D 3182.

7.2 Test Specimens:

7.2.1 The test specimen shall be 460 mm (18 in.) long.

7.2.2 Test specimens that are to be prepared as described by 7.1.2 shall be 460 mm (18 in.) long, 13 mm (½ in.) thick, and 25 mm (1 in.) wide.

7.2.3 All test specimens shall be made from the same compound and shall have the same apparent density and state of cure as the product they represent.

7.2.4 This test method requires ten test specimens.

8. Conditioning

8.1 Condition all test specimens at $21.1 \pm 1.1^\circ\text{C}$ ($70 \pm 2^\circ\text{F}$) for at least 24 h prior to testing.

9. Procedure

9.1 Identify each test specimen and individually weigh and record the information.

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 C24.73 on Compression Seal and Lock-Strip Gaskets.

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

³ *Annual Book of ASTM Standards*, Vol 09.01.

9.2 Secure the test specimens in a vertical position using stands and clamps. Clamp at both ends of each specimen so that the specimens are bent in a U-shape.

9.3 Submerge only the center 406 mm (16 in.) of the test specimens with the bottom of the loop 152 mm (6 in.) below the water line, and the cut ends of the specimen out of the water.

9.4 Test specimens shall be submerged in potable water at $23.9 \pm 1.1^{\circ}\text{C}$ ($75 \pm 2^{\circ}\text{F}$) for a period of 24 h.

9.5 Remove the test specimens from the water and blot with lint-free paper before weighing. The blotting should be done with as little pressure as possible so that only the surface water is removed from the specimen.

9.6 Weigh each test specimen and record the values.

10. Report

10.1 Report the following information:

10.1.1 Identification of each test specimen.

10.1.2 Average weight of test specimens before testing.

10.1.3 Average weight of test specimens after testing.

10.1.4 Average weight of water absorbed by the test specimens.

10.1.5 Variation, if any, from the specified test procedure.

11. Precision and Bias ⁴

11.1 The precision and bias calculations for this test method are based on the results of four laboratories testing six materials.

11.2 The between-laboratory accuracy of this test method in the determination of water absorption (based on an average over four laboratories) is 0.78 for the six test materials evaluated. This means that if the absolute value of the difference between two values is greater than 0.78, then 95 % of the time this represents a statistical difference.

11.3 Limited information is available on the precision of this test method. Only one sample of each material has been tested in four laboratories using this test method. Past experience has shown that the within-laboratory precision of this test method is expected to be less than the between-laboratory accuracy.

12. Keywords

12.1 absorption; cellular; elastomeric; gaskets; glazing; sealing materials; water

⁴ Supporting data are available from ASTM Headquarters. Request RR: C24 – 1083.

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