



Standard Practice for Rubber—Measurement of Dimensions¹

This standard is issued under the fixed designation D 3767; 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.

1. Scope

1.1 This practice is intended for use in determining the geometrical dimensions of rubber products and specimens for physical tests. This practice describes procedures for determining length, width, thickness, diameter, and circumference. This practice does not cover sampling of materials or products, or locations where a sample is to be taken.

1.2 The values stated in either acceptable metric units or in other units shall be regarded separately as a standard. The values stated in each system may not be exact equivalents; therefore, each system must be used independently of the other, without combining values in any other way.

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 or regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

D 1415 Test Method for Rubber Property—International Hardness

D 3183 Practice for Rubber—Preparation of Pieces for Test Purposes From Products

3. Summary of Practice

3.1 Specific procedures are outlined depending upon size, texture, and shape of the test specimens undergoing measurement.

3.1.1 Procedure A encompasses linear dimensions up to 30 mm using a flat-footed micrometer on flat sheets and test specimens.

3.1.2 Procedure A1 encompasses thickness dimensions up to 30 mm using a micrometer with contact members that are domed surfaces. This procedure is employed on irregularly shaped test specimens and compression set test specimens.

3.1.3 Procedure A2 encompasses thickness measurements of flexible cellular test specimens up to 30 mm using a micrometer with large area flat contact members.

3.1.4 Procedure B encompasses linear dimensions between 30 and 100 mm using a vernier caliper.

3.1.5 Procedure C encompasses linear dimensions above 100 mm using a tape or linear scale.

3.1.6 Procedure D encompasses thickness measurements on soft thin materials using a microscope.

3.1.7 Procedure E encompasses circumference measurements by cone.

4. Significance and Use

4.1 Dimensional measurements specified in this practice are made for one of the following purposes: (1) to determine conformance with specification requirements regarding geometrical properties of whole units, such as the size of rubber gloves, or the diameter and circumference of rubber hose, (2) to determine conformance with specification requirements regarding particular functional parts of units, such as the thickness of the soles of boots, or (3) to determine geometrical values that are necessary in the calculation of test results for physical properties for which requirements are specified, such as the thickness of a test specimen for tensile strength. The method to be used shall be as specified in the detail specification or appropriate test method.

4.2 Pressure applied by measuring instruments has a significant effect on the observed thickness of soft flexible materials, and it is therefore necessary to specify the pressure imposed by the foot of the instrument on the test piece for accurate comparative measurements of such materials.

5. Test Specimens

5.1 Test specimens shall consist of a product, in whole or in part, for which the geometric dimensions are sought, as described in a detail specification or test method. Material, as

¹ This practice is under the jurisdiction of ASTM Committee D11 on Rubber and is the direct responsibility of Subcommittee D11.10 on Physical Testing.

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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.