This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

Designation: D8015 – 15 (Reapproved 2019)

Standard Test Method for Dimensional Changes of Elastomer and Rubber Materials Due to Exposure to Gaseous Hydrocarbon Environments[1]

This standard is issued under the fixed designation D8015; 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 standard gives the testing procedure to determine the change in dimensions of specimens of rubber or elastomeric materials, or both, resulting from exposure to gaseous hydrocarbon environments. The size of the specimens is such to facilitate preparation from as molded component configurations such as gaskets and seals. Where agreed to by both parties molded specimens may be used. Dimensional measurements are made prior to and after conditioning in a formulated test gas.

1.2 The values stated in SI units are to be regarded as standard. The values given 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D1418 Practice for Rubber and Rubber Latices—Nomenclature

D1566 Terminology Relating to Rubber

3. Terminology

3.1 *Definitions*—For definitions of technical terms pertaining to rubber used in this specification, see Terminology D1566.

3.2 *Definitions*—The nomenclature and abbreviations used for natural and synthetic rubbers are in accordance with Practice D1418.

3.3 *Abbreviations:*

3.3.1 Abbreviations used in the description of natural gas composition:

3.3.2 *mmscf*—million standard cubic foot

3.3.3 *ppm*—parts per million

3.3.4 *ppmv*—parts per million volume

3.3.5 *scf*—standard cubic foot

4. Summary of Test Method

4.1 The dimensions for specimens prepared from elastomer or rubber samples are measured and specimens conditioned in various gaseous environments for a given length of time. At the end of this time the specimens are again measured and the change in dimension recorded.

5. Significance and Use

5.1 The information provided by this test method is useful for manufacturing quality control, technical service, and research purposes; and is required by various material specifications.

5.2 This method is suitable for all elastomer or rubber materials.

6. Apparatus

6.1 A device to measure the required dimensions to an accuracy of 0.0025 mm (0.0001 in.) shall be used. This may include a thermal mechanical analyzer, dilatometer, or constant coordinate measuring machine (CMM).

6.2 A cutting die capable of preparing cube shaped test specimens with edge dimensions of 4.5 ± 0.4 mm (0.177 ± 0.016 in.) shall be used. A typical die and cutting sequence are illustrated in Fig. 1. Where agreed to between parties, specimens may be molded.

[1] This test method is under the jurisdiction of ASTM Committee D11 on Rubber and Rubber-like Materials and is the direct responsibility of Subcommittee D11.15 on Degradation Tests.

Current edition approved Nov. 1, 2019. Published December 2019. Originally approved in 2015. Last previous edition approved in 2015 as D8015 – 15. DOI: 10.1520/D8015-15R19.

[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.

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