



Standard Test Methods for Fluid Resistance of Gasket Materials¹

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This standard has been approved for use by agencies of the Department of Defense.

^{ε1} NOTE—Table 2 was corrected editorially in April 1999.

1. Scope

1.1 These test methods cover the determination of the effect on physical properties of nonmetallic gasketing materials after immersion in test fluids. The types of materials covered are Type 1, Type 2, Type 3, and Type 7 as described in Classification F 104. These test methods are not applicable to the testing of vulcanized rubber, a procedure that is described in Test Method D 471. It is designed for testing specimens cut from gasketing materials or from finished articles of commerce.

1.2 The values stated in SI units are to be regarded as the standard. The inch-pound units in parentheses are for information only.

1.3 Refer to the current Material Safety Data Sheet (MSDS) and any precautionary labeling provided by the supplier of any materials referred to in these test methods.

1.4 *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.*

2. Referenced Documents

2.1 ASTM Standards:

D 412 Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers—Tension²

D 471 Test Method for Rubber Property—Effect of Liquids²

F 36 Test Method for Compressibility and Recovery of Gasket Materials³

F 104 Classification System for Nonmetallic Gasket Materials³

F 147 Test Method for Flexibility of Non-Metallic Gasket Materials³

¹ These test methods are under the jurisdiction of ASTM Committee F-3 on Gaskets and are the direct responsibility of Subcommittee F03.40 on Chemical Test Methods.

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² Annual Book of ASTM Standards, Vol 09.01.

³ Annual Book of ASTM Standards, Vol 09.02.

F 152 Test Methods for Tension Testing of Nonmetallic Gasket Materials³

3. Summary of Test Methods

3.1 Appropriate test specimens are subjected to complete immersion in test fluids. After immersing the specimens in the various test fluids, the effect on physical properties is expressed as change in tensile strength, compressibility in softened condition, flexibility, volume change, and thickness and weight changes from the original condition.

4. Significance and Use

4.1 These test methods provide a standardized procedure to measure the effect of immersion in specified fluids under definite conditions of time and temperature. The results of these test methods are not intended to give any direct correlation with service conditions in view of the wide variations in temperature and special uses encountered in gasket applications. The specific test fluids and test conditions outlined were selected as typical for purposes of comparing different materials and can be used as a routine test when agreed upon between the purchaser and the manufacturer.

5. Apparatus

5.1 *Circulating-Hot-Air Ovens*, two, capable of maintaining $100 \pm 1^\circ\text{C}$ ($212 \pm 2^\circ\text{F}$) and $149 \pm 2^\circ\text{C}$ ($300 \pm 3.6^\circ\text{F}$), or aluminum block fitted for use with test tubes, or heating mantle, capable of maintaining $100 \pm 1^\circ\text{C}$ ($212 \pm 2^\circ\text{F}$).

5.2 *Desiccator*, containing anhydrous calcium chloride or silica gel.

5.3 *Analytical Balance*.

5.4 *Thickness Gage*, actuated by dead load weights, having dial graduations of 0.02 mm (0.001 in.) with anvil not less than presser foot diameter of 6.4 ± 0.127 mm (0.252 ± 0.005 in.). Dead weight loads are listed in Table 1.

5.5 *Cutting Dies*, appropriate for cutting steel, with sharp edges free from nicks or burrs, in the following sizes:

5.5.1 25.4 by 50.8 mm (1 by 2 in.),

5.5.2 28.6-mm (1.126-in.) diameter, 645.2-mm² (1-in.²) area circular die,