



Standard Test Methods for Sealability of Gasket Materials¹

This standard is issued under the fixed designation F37; 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 These test methods provide a means of evaluating the sealing properties of sheet and solid form-in-place gasket materials at room temperature. Test Method A is restricted to liquid leakage measurements, whereas Test Method B may be used for both liquid and gas leakage measurements.

1.2 These test methods are suitable for evaluating the sealing characteristics of a gasket material under different compressive flange loads. The test method may be used as an acceptance test when the producer and user have agreed to specific test conditions for the following parameters: test medium, internal pressure on medium, and flange load on gasket specimens.

1.3 These test methods use a small-diameter narrow-width gasket as the test specimen under relatively low gasket loads and relatively low pressures. Test Method F2378 is another sealability test method that uses a larger gasket specimen and higher internal pressures and flange loads.

1.4 The values stated in SI units are to be regarded as the standard. The values in parentheses are for information only.

1.5 *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.* (For specific hazard or warning statements, or both, see 5.2.11, Section 6, 6.3, 8.2.4, 11.3.2, and 11.4.2.)

2. Referenced Documents

2.1 ASTM Standards:²

D471 Test Method for Rubber Property—Effect of Liquids

¹ These test methods are under the jurisdiction of ASTM Committee F03 on Gaskets and are the direct responsibility of Subcommittee F03.10 on Composite Gaskets.

Current edition approved May 1, 2013. Published May 2013. Originally approved in 1962. Last previous edition approved in 2006 as F37 – 06. DOI: 10.1520/F0037-06R13.

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.

D2000 Classification System for Rubber Products in Automotive Applications

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

F38 Test Methods for Creep Relaxation of a Gasket Material

F104 Classification System for Nonmetallic Gasket Materials

F2378 Test Method for Sealability of Sheet, Composite, and Solid Form-in-Place Gasket Materials

2.2 ANSI Standard:³

B57.1 Compressed Gas Cylinder Valve Outlet and Inlet Connections

2.3 ASTM Adjuncts:

Leakage Test Fixtures⁴

3. Summary of Test Methods

3.1 Both test methods utilize a test specimen compressed between the surfaces of two smooth steel flange faces. After the specified flange load is applied, the test medium is introduced into the center of the annular gasket compressed between the flanges and the specified pressure is applied to the medium. For liquid sealability tests (Test Methods A and B), Reference Fuel A (see Test Method D471, Motor Fuel Section of Annex) is recommended and the leakage rate is measured by a change in the level of a sight-glass located in the line upstream from the gasket testing fixture. Nitrogen is the recommended gas for the gas sealability test (Test Method B) and the leakage rate is measured by a change in the level of a water manometer located in the line upstream from the gasket testing fixture.

3.1.1 Test Method A uses a test fixture (Fig. 1) by which an external load is transferred into the fixture to produce a compressive force on the gasket specimen.

3.1.2 Test Method B uses a test fixture (Fig. 2 and Fig. 3) in which the flanges are held within a four-bolt cage that permits loading the flanges at various force levels. The flange load is measured by a transducer held within the cage.

³ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

⁴ Available from ASTM International Headquarters. Order Adjunct No. ADJF0037. Original adjunct produced in 1962.