



Standard Test Method for Sealability of Sheet, Composite, and Solid Form-in-Place Gasket Materials¹

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1. Scope

1.1 This test method covers a means of evaluating the sealing properties of sheet, composite, and solid form-in-place gasket materials (see Classification **F104** or **F868**) at room temperature, and may be used for fluid (gas or liquid) leak rate measurements. It utilizes relatively short hold times and is not intended to predict long-term performance in application.

1.2 This test method is suitable for evaluating the sealing characteristics of a gasket material under different press loads by measuring the leakage rate. This test method may be used as an acceptance test when the producer and user have agreed to specific test conditions for the following parameters: (1) test medium, (2) internal pressure of the medium, (3) press load on the gasket specimen, and (4) the surface finish of the platens.

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

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 to determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

D2000 Classification System for Rubber Products in Automotive Applications

F104 Classification System for Nonmetallic Gasket Materials

F868 Classification for Laminated Composite Gasket Materials

2.2 ANSI Standard:³

B57.1 Compressed Gas Cylinder Valve Outlet and Inlet Connections

3. Terminology

3.1 Definitions:

3.1.1 *press load*—the load applied by the hydraulic press to the test assembly divided by the gasket area. The press load is not compensated for as the internal pressure is increased, so the gasket stress is reduced for the test conditions.

3.1.2 *solid form-in-place gasket*—a solid length of gasketing material generally in a ribbon or rope form that can be laid out on the platen surface and overlapped at the ends to form a continuous sealing surface.

4. Summary of Test Method

4.1 This test method utilizes a test specimen compressed in increasing stages between the surfaces of two flat steel platens. After the specified press load is applied, fluid (typically nitrogen) is introduced into the center of the annular gasket compressed between platens, and a pressure of 4 MPa (580 psi) is applied. The fluid leak rate is measured. The fluid pressure is relieved and the press load is increased to the next level. The fluid pressure is reapplied and the leak rate measured again. The cycle is repeated 5 times until a final press load of 32 MPa (4640 psi) is achieved. Other press loads, internal pressures, pressurizing fluids, and number of cycles can be used as agreed upon between the producer and the user. All variations from the standard requirements must be reported with the test results.

4.1.1 The fluid leak rate is measured by mass flow meters located downstream from the gasket test fixture. Other means of leak measurement also may be used and would depend upon the test fluid, the leak rate, and the accuracy required as agreed upon between the producer and the user.

4.2 This test method uses flat platens on which an external load is applied to produce a compressive force on the gasket test specimen. The uncompensated load applied is the press load.

¹ This test method is under the jurisdiction of ASTM Committee **F03** on Gaskets and is the direct responsibility of Subcommittee **F03.10** on Composite Gaskets.

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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.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.