Designation: F1315 – 17

Standard Test Method for Density of a Sheet Gasket Material[1]

This standard is issued under the fixed designation F1315; 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 test method covers a procedure for determining the density of a gasket material.

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

2. Referenced Documents

2.1 *ASTM Standards:*[2]

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

F104 Classification System for Nonmetallic Gasket Materials

3. Summary of Test Method

3.1 A die-cut specimen is conditioned. Thickness, weight, and area are measured, and the density is calculated and reported.

4. Significance and Use

4.1 Density is an important property of a gasket material, since it has an inverse relationship to the void volume of the material. Density is often used in a specification, since relationships to sealability, compressibility, creep relaxation, and tensile strength can be found for a given gasket grade.

4.2 Density is a measurement of the mass to the volume ratio and therefore easily determined with a weight scale and thickness measuring device. This test method requires from 1 h to two days of sample conditioning, which is necessary to achieve a high level of precision, but which detracts from its usefulness as a production test method. Where it must be modified for manufacturing control, it is recommended that thickness and weight measurement methods be adhered to strictly.

5. Interferences

5.1 Moisture adds to the weight of most gasket specimens, and may cause the material to swell. Proper conditioning of the specimen should control moisture as a variable.

6. Apparatus

6.1 *Thickness*—A thickness measurement device actuated by a dead weight load as specified in Table 1. The presser foot shall be 6.40 ± 0.13 mm (0.252 ± 0.005 in.) in diameter. The device shall be capable of reading within 1 % of the thickness being measured. The anvil shall have a diameter not less than that of the presser foot.

6.2 *Weight*—An analytical balance accurate to ±1 % of the specimen weight.

7. Specimen Conditioning

7.1 Specimen shall be conditioned in accordance with their classification as specified in Classification System F104 prior to testing.

8. Test Specimen

8.1 Three specimens are to be measured.

8.2 Specimen size and shape is left to the discretion of the tester. In no case, however, should the area of the specimen be less than 25 cm^2 (4 $in.^2$). The area of the specimen shall be measured accurate to ±1 %. For this reason a die cut specimen is required.

9. Procedure

9.1 Remove the specimens one at a time from the conditioning chamber if not in a properly conditioned room, and weigh on the analytical balance, recording the weight.

9.2 Measure area of specimen.

9.3 Measure the thickness of the specimen using the proper size presser foot and dead weight as specified in Table 1. The

[1] This test method is under the jurisdiction of ASTM Committee F03 on Gaskets and is the direct responsibility of Subcommittee F03.20 on Mechanical Test Methods.

Current edition approved Feb. 1, 2017. Published February 2017. Originally approved in 1990. Last previous edition approved in 2014 as F1315 – 00 (2014). DOI: 10.1520/F1315-17.

[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.