



Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics—Diaphragm Bursting Strength Tester Method¹

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1. Scope

1.1 This test method describes the measurement of the resistance of textile fabrics to bursting using the hydraulic diaphragm bursting tester. This test method is generally applicable to a wide variety of textile products.

1.2 This test method may also be applicable for stretch woven and woven industrial fabrics such as inflatable restraints.

1.3 The values stated in S. I. Units are to be regarded as the standard.

NOTE 1—For the measurement of the bursting strength by means of a ball burst mechanism, refer to Test Method D 3787.

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 123 Terminology Relating to Textiles²

D 5034 Test Methods for Breaking Load and Elongation of Textile Fabrics²

D 1776 Practice for Conditioning Textiles for Testing²

D 3787 Test Method for Bursting Strength of Knitted Textiles—Constant-Rate-of-Traverse (CRT) Ball Burst Test³

2.2 Other Standard:

TAPPI T 403, OM.91 Bursting Strength of Paper⁴

3. Terminology

3.1 Definitions:

3.1.1 *bursting strength, n*—the distending force, which is applied at right angles to the plane of the fabric, under specified

conditions, which will result in the rupture of a textile.

3.1.2 *knitted fabric, n*—a structure produced by interlooping one or more ends of yarn or comparable material.

3.1.3 *nonwoven fabric, n*—a textile structure produced by bonding or interlocking of fibers, or both, accomplished by mechanical, chemical, thermal or solvent means and combinations thereof.

3.1.3.1 *Discussion*—The term does not include paper or fabrics that are woven, knitted or tufted.

3.1.4 *woven fabric, n*—a structure produced when at least two sets of strands are interlaced, usually at right angles to each other according to a predetermined pattern of interlacing, and such that at least one set is parallel to the axis along the lengthwise direction of the fabric.

3.1.5 *stretch woven fabric, n*—a woven fabric which is capable of at least 20 % stretch in either warp or filling direction, or both, under loads and conditions encountered in use and of almost complete recovery on removal of the load.

3.2 For definitions of other textile terms used in this test method, refer to Terminology D 123.

4. Summary of Test Method

4.1 A is clamped over an expandable diaphragm. The diaphragm is expanded by fluid pressure to the point of specimen rupture. The difference between the total pressure required to rupture the specimen and the pressure required to inflate the diaphragm is reported as the bursting strength.

5. Significance and Use

5.1 This method for the determination of diaphragm bursting strength of knitted, nonwoven and woven fabrics is being used by the textile industry for the evaluation of a wide variety of end uses.

5.2 In cases where test results obtained using the procedures in Test Method D 3786 have not been correlated with actual performance, Test Method D 3786 is considered satisfactory for acceptance testing of commercial shipments of textile fabrics for bursting strength since the method has been used extensively in the trade for acceptance testing. In cases where disagreement arising from differences in values reported by the purchaser and the supplier when using Test Method D 3786 for acceptance testing, the statistical bias, if any, between the laboratory of the purchaser and the laboratory of the supplier

¹ This test method is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.59 on Fabric Test Methods. General.

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² Annual Book of ASTM Standards, Vol 07.01.

³ Annual Book of ASTM Standards, Vol 07.02.

⁴ Available from Technical Association of the Pulp and Paper Industry, 1 Dunwoody Park, Atlanta, GA 30341.