Designation: D 5822 – 00

Standard Test Method for Determining Seam Strength in Inflatable Restraint Cushions[1]

This standard is issued under the fixed designation D 5822; 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 the measurement of the maximum sewn seam strength which can be achieved in woven fabrics when a force is applied perpendicular to the seam. The grab test procedure in Test Method D 1683, which is used to measure breaking force and elongation in sewn seams of woven fabrics, shall be used in conjunction with this test method for measuring seam strength. For evaluating sewing thread, refer to Test Method D 204.

1.2 This test method is restricted to sewn seams that are obtained from a previously sewn driver or passenger side cushion.

1.3 This test method is used when a resistance to a force, a breaking force, a minimum elongation, or a combination thereof are required to determine the sewn seam strength, seam slippage, or seam integrity of a particular fabric for inflatable restraint use.

1.4 Procedures and apparatus other than those stated in this standard may be used by agreement between purchaser and supplier with the specific deviations from the standard acknowledged in the report.

1.5 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other.

1.6 *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 Textiles[2]

D 204 Test Methods for Sewing Threads[2]

D 1683 Test Method for Failure in Sewn Seams of Woven Fabrics[3]

3. Terminology

3.1 *Definitions:*

3.1.1 *cushion, n—for inflatable restraints*, the inflatable fabric envelope portion of a module.

3.1.2 *inflatable restraint, n*—a vehicular safety device designed to cushion an occupant or equipment during collision; airbag.

3.1.3 *standard atmosphere for testing textiles, n*—an atmosphere for testing in which the air is maintained at a relative humidity of 65 ± 2 % and at a temperature of 21 ± 1°C (70 ± 2°F).

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

4. Summary of Test Method

4.1 Grab-type test specimens containing seams taken from inflatable restraint cushions at specified seam locations are destructively tested in a tensile testing machine under laboratory conditions to determine seam strength.

5. Significance and Use

5.1 Seam strength testing is used for design validation and for lot acceptance.

5.2 This test method constitutes the conditions, procedures, and equipment by which inflatable restraints are tested for seam strength. It is intended to be used as a guideline in establishing a written part specification or print. The specification or agreement of purchaser and supplier may deviate from the procedures described herein when (based on experience) considerations of equipment, cushion design, or other factors dictate otherwise.

6. Apparatus

6.1 *Tensile Testing Machine*, either a constant-rate-of-extension (CRE) or a constant-rate-of-traverse (CRT) type, that is designed for the tensile forces anticipated, that is operated at a rate of 300 ± 10 mm/min (12 ± 0.5 in./min), that has a force range selected such that the anticipated break occurs between 10 % and 90 % of full scale load, and that has jaws and grip faces as agreed upon by purchaser and supplier.

6.2 For inflatable restraints, all test equipment used in

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[2] *Annual Book of ASTM Standards*, Vol 07.01.

[3] Discontinued— See 1998 *Annual Book of ASTM Standards*, Vol 07.01.