



Designation: D5807 – 08

Standard Practice for Evaluating the Overpressurization Characteristics of Inflatable Restraint Cushions¹

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1. Scope

1.1 This practice covers the procedures and conditions used to evaluate the physical performance of inflatable restraint cushions during and after overpressurization testing at elevated pressures capable of causing cushion bursting using air pressurization equipment.

1.2 The physical performance characteristics that may be obtained in conjunction with this practice are internal cushion pressures determined by instrumentation and material integrity, determined by visual inspection.

1.3 This practice is applicable to all inflatable restraint cushions.

1.4 Procedures and apparatus other than those stated in this practice may be used by agreement between purchaser and supplier with the specific deviations from this practice 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. See Section 8 for specific hazard information.*

2. Referenced Documents

2.1 *ASTM Standards:*²

[D123 Terminology Relating to Textiles](#)

[D6799 Terminology Relating to Inflatable Restraints](#)

¹ This practice is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.20 on Inflatable Restraints.

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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. Terminology

3.1 *Definitions:*

3.2 For all terminology relating to D13.20, Inflatable Restraints, refer to Terminology [D6799](#).

3.2.1 The following terms are relevant to this standard: cushion, cushion overpressurization, deployment, inflatable restraint, module, standard atmosphere for testing textiles.

3.3 For all other terms related to textiles, see Terminology [D123](#).

4. Summary of Practice

4.1 Inflatable restraint cushions are tested under laboratory conditions to evaluate cushion integrity when exposed to internal cushion pressures greater than deployment pressures. If cushion rupture occurs, the rupture pressure, time to rupture, and mode of rupture are recorded.

4.2 Inflatable restraint cushions are mounted into a test stand that allows for inflations under conditions that exceed deployment pressures. Instrumentation within the test stand charts inflation pressures versus time and may allow for photographic review of the overpressurization sequence.

4.3 Cushion overpressurization results are reviewed for pressure and time relationships, and post-inflation material analysis.

5. Significance and Use

5.1 This practice is intended to be a general guideline for repetitive testing, safe conduct of tests, and accurate data collection for inflatable restraints. Cushion overpressurization testing may be used for design and production validation, for manufacturing process control, for lot acceptance, or for a combination thereof.

5.2 This practice constitutes the conditions, apparatus, and procedures by which inflatable restraints are commonly tested for cushion overpressurization. It is intended to be used as a guideline in establishing a cushion specification or equivalent document. The practices in the specification may deviate from the practices described herein when (based on experience) considerations of equipment, cushion design, or other factors dictate otherwise.