



Designation: D5427 – 09

Standard Practice for Accelerated Aging of Inflatable Restraint Fabrics¹

This standard is issued under the fixed designation D5427; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

1. Scope

1.1 This practice describes the procedures for the accelerated aging of inflatable restraint fabrics when required as a preparatory step for other test methods.

1.1.1 In Section 7, this practice lists four methods for conducting accelerated aging that are of concern to the design and manufacture of inflatable restraints. They are as follows:

Description	Section
Cycle aging (Option “A” or “B”)	8.4
Heat aging (Option “A” or “B”)	8.4.3.1
Humidity aging (Option “A” or “B”)	8.7
Ozone aging	8.8

1.2 This practice may be used in conjunction with other ASTM test methods when subsequent tests of physical properties are required of aged fabric specimens.

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

1.4 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.

1.5 *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

D123 Terminology Relating to Textiles

D1776 Practice for Conditioning and Testing 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.

Current edition approved Jan. 15, 2009. Published February 2009. Originally approved in 1993. Last previous edition approved in 2008 as D5427 – 08. DOI: 10.1520/D5427-09.

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.

E145 Specification for Gravity-Convection and Forced-Ventilation Ovens

2.2 *Military Standard:*

MIL-STD-810E Environmental Testing and Engineering Guidelines³

3. Terminology

3.1 For all terminology relating to D13.20, Inflatable restraints, refer to Terminology E145.

3.1.1 The following terms are relevant to this standard: accelerated ageing, environmental conditions, inflatable restraint, standard atmosphere for testing textiles

3.2 For all other terms related to textiles, see Terminology D123.

4. Summary of Practice

4.1 After conditioning in the standard atmosphere for testing textiles, test specimens are subjected to accelerated aging for heat, humidity, ozone, or cycling.

4.2 Aged specimens are then reconditioned in the standard atmosphere for testing textiles for subsequent testing of the physical properties of inflatable restraint fabrics.

5. Significance and Use

5.1 For inflatable restraints, practices for conducting accelerated aging are designed to determine the aggravated effects on a fabric from exposures to heat, humidity, or ozone, or a combination thereof. These environmental conditions may also be cycled in combination. The four accelerated aging procedures of concern to the design and manufacture of inflatable restraints are referred to as cycle aging, heat aging, humidity aging, and ozone aging.

5.2 The environmental conditions described in this practice are designed to allow restraints so that reliable comparisons may be made between different fabrics and different laboratories.

5.3 In order to achieve precise and reliable physical property comparisons of different fabrics, it is necessary to control

³ Available from the Defense Printing Office, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5093.