



Designation: D 5427 – 02

## Standard Practice for Accelerated Aging of Inflatable Restraint Fabrics<sup>1</sup>

This standard is issued under the fixed designation D 5427; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 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	8.4
Heat aging	8.5
Humidity aging	8.6
Ozone aging	8.7

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:

- D 123 Terminology Relating To Textiles<sup>2</sup>
- D 1776 Practice for Conditioning Textiles for Testing<sup>2</sup>
- D 6799 Terminology Relating to Inflatable Restraints<sup>3</sup>
- E 145 Specification for Gravity-Convection and Forced-Ventilation Ovens<sup>4</sup>

#### 2.2 Military Standard:

MIL-STD-810E Environmental Testing and Engineering Guidelines<sup>5</sup>

### 3. Terminology

#### 3.1 Definitions:

3.1.1 For definitions of other terms used in this standard, refer to Terminology D 123 and Terminology D 6799.

### 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 accurately the humidity, temperature, ozone, and cycling conditions to which the fabric is subjected.

5.4 Fabric specimens are configured in accordance with the requirements of test methods to be conducted on the specimens subsequent to accelerated aging.

5.5 Unless otherwise specified by agreement between the purchaser and the supplier, this practice shall constitute the conditions, procedures, and equipment by which inflatable restraint fabrics are conditioned and aged. It is intended to be used as a guideline in establishing a written material specification. The specification or agreement of the purchaser and the

<sup>1</sup> 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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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 07.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 07.02.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 14.02.

<sup>5</sup> Available from the Defense Printing Office, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5093.