



Designation: D 5426 – 07a

Standard Practices for Visual Inspection and Grading of Fabrics Used for Inflatable Restraints¹

This standard is issued under the fixed designation D 5426; 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 These practices cover procedures for the inspection and grading of coated and uncoated woven fabrics, and for the inspection and culling of cut parts made of such fabrics, all of which are used in the manufacture of inflatable restraint cushions.

1.2 For ease of reference, the scope, summary of practice, significance and use, apparatus, sampling, procedure, and report sections are listed separately for each inspection practice.

Inspection Practice	Section
Fabric Rolls	7
Cut Pieces	8

1.3 These practices can be used to distinguish those fabric imperfections that may adversely affect inflatable restraint cushion fabrication or performance from those imperfections that will not.

1.4 Only major imperfections are considered in the grading systems of these practices.

1.5 Procedures and apparatus other than those stated in these practices may be used by agreement of the purchaser and supplier with the specific deviations from these practices acknowledged in the report.

1.6 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.7 *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.*

¹ These practices are under the jurisdiction of ASTM Committee D13 on Textiles and are the direct responsibility of Subcommittee D13.20 on Inflatable Restraints.

Current edition approved July 1, 2007. Published July 2007. Originally approved in 1993. Last previous edition approved in 2007 as D 5426 – 07.

2. Referenced Documents

2.1 *ASTM Standards:*²

D 123 Terminology Relating to Textiles

D 3990 Terminology Relating to Fabric Defects

2.2 *ASTM Adjuncts:*³

Reference Photographs of Imperfections

3. Terminology

3.1 *Definitions*—For definitions of textile terms used in these practices, refer to Terminologies D 123 and D 3990.

3.2 For definitions of imperfections in inflatable restraints, additionally refer to Tables 1-5 of these practices.

4. Summary of Practices

4.1 Rolls of finished or coated fabric are examined for major imperfections as the fabric traverses an inspection station. They are graded on the basis of a unit area.

4.2 Cut pieces are inspected individually for major imperfections. Cut pieces containing major imperfections are culled from use for later review.

5. Significance and Use

5.1 These practices are suitable for incorporation in a specification. Any reference to material or cushion specification in these practices shall mean any similar agreement between the purchaser and supplier relating to the inspection and acceptance of fabric intended for inflatable restraint use.

5.2 These practices constitute the terminology, conditions, equipment, and procedures by which rolls of inflatable restraint fabrics or cut parts are inspected and graded.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service ast.service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Set of reference photographs are available from ASTM International Headquarters. Order Adjunct No. ADJD5426.

TABLE 1 Coating Non-Uniformity

Imperfection	Definition	Limits		
		Maximum Size	Minimum Separation	Maximum Frequency ^A
Soft contamination	the presence of non-coating material within or on the coating layer, such material visibly appearing to be of small size, smooth in surface texture, and of a thickness that does not protrude significantly above the surface of the coating layer. Examples are dirt, smudge, lint, human hair, yarn filaments, and flies and similarly small insects.	15 mm diameter		2 none within the line where two OPW inflatable layers interface
Hard contamination	the presence of non-coating material within or on the coating layer, such material visibly appearing to be of small size, smooth in surface texture, and of a thickness that protrudes significantly above the surface of the coating layer. Examples are metal filings, glass, plastic, or wood splinters.	none		
Missing coating	portions of the coated layer containing exposed base fabric or scrape marks in the coated layer	15 mm diameter		2 none within the line where two OPW inflatable layers interface none allowed
Coating transfer	the presence of coating material on the uncoated side, covering one or more yarns			
Bleedthrough	the presence of coating material on the uncoated side, between two yarns without covering either yarn	35-mm length	500 mm	2
Coating slub	an irregularly shaped lump of coating material on the surface of the coated layer resembling a yarn slub	15 mm diameter		2 per 400 cm ²
Spit mark	an essentially round spot of coating material on the surface of the coated layer	15 mm diameter		2 per 400 cm ²
Heavy coating streak	a narrow area of fabric, generally in the shape of a line oriented in the warp direction of the fabric, in which the coating layer is visibly at a higher rate of coverage than the surrounding material.			
Light coating streak	a narrow area of light coating, generally in the shape of a line oriented in the warp direction of the fabric.	5 mm wide		1
Light coating (except light coating streak)	a localized amorphous area of fabric in which the coating layer is visibly at a lower rate than the surrounding material.	50 × 100 mm		1

^APer linear m (yd), cut piece, or unit of area indicated.

TABLE 2 Yarn Non-Uniformity

Imperfection	Definition	Limits		
		Maximum Size	Minimum Separation	Maximum Frequency ^A
Foreign matter	an extraneous interwoven fragment whose size, color, or texture indicates that it is not of the same material as the fibers in the base fabric			none allowed
Loop	a continuous yarn that curls back on itself and protrudes from the surface of the fabric (synonym: <i>kink</i> , <i>snag</i>)			none allowed
Air splice	the thicker portion of a yarn resulting from entanglement of the filaments at the ends of two multifilament yarns to create a continuous yarn			2 per 400 cm ²
Blips	any short, irregularly shaped or textured portion of an individual multifilament yarn that has been woven into the fabric, including slough offs, stripbacks, fuzz balls, snarls, and slubs	35-mm by 2 -mm length		2
Short knot tail	a small knob of yarn and associated tails where two yarns are tied together by interlocking loops for the purpose of maintaining yarn continuity	3-mm diameter	500 mm	2
Broken filament	an individual filament, separated from a multifilament yarn bundle, that lies on the surface of the fabric			no limit

^APer linear m (yd) cut piece, or unit of area indicated.

5.3 A specification incorporating these practices may deviate from them to account for considerations of fabric property, material handling equipment, or inflatable restraint cushion design, or a combination thereof. Whenever such deviations from standard occur, they are recorded in the report.

5.4 These practices acknowledge that, in the normal course of production, acceptable rolls of fabric will be produced

containing imperfections; subsequently, pieces will be cut from the rolls and those pieces that contain major imperfections restricted in **Tables 1-5** will be culled at that time.

5.5 The accuracy in the results from visually inspecting fabric using these practices is affected by the ability of the inspector to detect, identify, and evaluate the severity of an imperfection in a moving fabric or in a cut part. Such ability