



Designation: D5430 – 13 (Reapproved 2017)

Standard Test Methods for Visually Inspecting and Grading Fabrics¹

This standard is issued under the fixed designation D5430; 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 test methods describe a procedure to establish a numerical designation for grading of fabrics from a visual inspection.

1.2 These test methods may be used for the delivery and acceptance of fabrics with requirements mutually agreed upon by the purchaser and the supplier.

1.3 *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, health and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

[D123 Terminology Relating to Textiles](#)

[D3990 Terminology Relating to Fabric Defects](#)

[D4850 Terminology Relating to Fabrics and Fabric Test Methods](#)

2.2 *ANSI Standards:*³

[ANSI/ASQC Standard A1-1978 Definitions, Symbols, Formulas, and Tables for Control Charts](#)

[ANSI/ASQC Standard Z1.4-1981 Sampling Procedures and Tables for Inspection by Attributes.](#)

¹ These test methods are under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.59 on Fabric Test Methods, General.

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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 American Society for Quality Control, 310 W. Wisconsin Ave., Milwaukee, WI 53203.

3. Terminology

3.1 For all terminology relating to D13.59, Fabric Test Methods, General, refer to Terminology [D4850](#).

3.1.1 The following terms are relevant to this standard: critical defect, defect, *in inspection and grading*, grade, inspection, major defect, minor defect.

3.2 For all terminology related to Fabric Defects, refer to Terminology [D3990](#).

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

4. Summary of Test Method

4.1 Rolls or bolts of fabric are visually inspected and individually graded at an examination station using an agreed upon point system.

4.2 Fabric is normally inspected and graded on one side only. Certain types of end use fabrics may be inspected and graded on both sides as agreed upon between the purchaser and supplier.

5. Significance and Use

5.1 Test Method D5430 is considered satisfactory for acceptance testing a commercial shipments since the method has been used extensively in the trade for grading of fabric and fabric acceptance determination.

5.2 The penalty points obtained in grading the same rolls or bolts of fabric may vary considerably when using each of the three options listed herein. For this reason, the same point assignment option should be used in cases of disagreement arising from differences of values reported by the purchaser and the supplier.

5.3 If there are differences of practical significance between reported test results for two laboratories (or more), comparative test should be performed to determine if there is a statistical bias between them, using competent statistical assistance. As a minimum, ensure the test samples to be used are as homogeneous as possible, are drawn from the material from which the disparate test results were obtained, and are randomly assigned in equal numbers to each laboratory for testing. The test results from the two laboratories should be compared using a statistical test for unpaired data, at a probability level chosen prior to the testing series. If a bias is found, either its cause

must be found and corrected, or future test results for that material must be adjusted in consideration of the known bias.

6. Apparatus

6.1 A suitable fabric inspection machine providing a flat viewing area and an interruptible speed controlled fabric rewind. Examination and grading are usually done with overhead direct lighting. The inspection machine may be equipped with the option of back lighting (transmitted) light providing the choice by prior agreement depending on the fabric end use. The overhead direct lighting source shall be mounted parallel to the viewing surface so as to illuminate with direct perpendicular impinging light rays. The surface illumination level shall be a minimum of 1075 lux (100 foot candles).

6.2 The lighting source should be cool white preheat rapid start fluorescent lamps with white reflectors and without baffles or glues, or by agreement between the purchaser and supplier.

7. Sampling

7.1 With shipments which total 1000 m or yd or less, inspect and grade the total number of rolls or bolts.

7.2 For shipments exceeding 1000 m or yd, select samples as agreed upon by the purchaser and supplier. In the absence of such a specification, a reliable statistical sampling plan such as Practice D2903 or MIL-STD 105E may be used.

8. Conditioning

8.1 No conditioning is required.

9. Defects and Tolerances

9.1 The purchaser and the supplier shall agree on a list of defects to be used in grading fabric. See 2.1 and 2.2 and Refs. 1-7 for publications of various lists of fabric defects which may be used.

9.1.1 The fabric defects listed shall be classified as either a critical defect, major defect, or minor defect.

9.2 Where applicable, the purchaser and the supplier may agree upon the location, maximum size of a fabric characteristic and frequency of occurrence that shall not be counted as a defect.

9.3 The point count permissible frequency of any defect type may be further qualified by agreement of the purchaser and the supplier.

9.4 Defects not visible on the face of the fabric shall not be counted unless agreement to the contrary has been made between the purchaser and the supplier.

9.5 Each individual roll or bolt in 7.1 or 7.2 shall be rejected if inspection and grading results in a total number of defect points exceeding the maximum acceptable level mutually agreed upon by the purchaser and supplier.

9.6 The total shipment shall be rejected if the sample inspected exceeds the maximum acceptable defect level mutually agreed upon by the purchaser and supplier.

10. Procedure

10.1 Pass the fabric longitudinally through the inspection area at a visual inspection speed, agreed upon between the purchaser and supplier.

10.2 Visually inspect and grade from a viewing distance of one metre or yard while the fabric is in motion. Fabric may be stopped to grade when necessary to affirm marginal defects and defects may be flagged.

10.3 Inspect and grade the total length of each roll or bolt sampled.

10.4 Detect and assign points to defects observed as agreed upon in 9.1 – 9.4 using options A (10.6), B (10.7), or C (10.8).

10.5 Assign points to the defects based upon their length within the plane of the fabric according to one of the following options of assigning points, as agreed upon between the purchaser and the supplier.

10.6 Point Assignment Option A:

Greater Than		Defect Length Up to and Including		Assigned Points
SI Units	English Units	SI Units	English Units	
0 mm	0 in.	75 mm	3 in.	1
75 mm	3 in.	150 mm	6 in.	2
150 mm	6 in.	230 mm	9 in.	3
230 mm	9 in.			4

10.6.1 Assign no more than a total of 4 points to any one linear metre or yard of fabric, regardless of the number or size of the detected individual defects.

10.6.2 Assign 4 points to each consecutive linear metre or yard in which a continuous running defect exceeds 230 millimetres or 9 inches.

10.6.3 Assign 4 points to each linear metre or yard of fabric where the useable width is less than the minimum specified.

10.6.4 Assign 4 points to each seam or other full width defect or seam if applicable.

10.7 Point Assignment Option B:

Greater Than		Defect Length Up to and Including		Assigned Points
SI Units	English Units	SI Units	English Units	
0 mm	0 in.	230 mm	9 in.	1
230 mm	9 in.	460 mm	18 in.	2
460 mm	18 in.	690 mm	27 in.	3
690 mm	27 in.	920 mm	36 in.	4
920 mm	36 in.	1150 mm	45 in.	5
1150 mm	45 in.	1380 mm	54 in.	6
1380 mm	54 in.	1610 mm	63 in.	7

NOTE 1—For every additional 230 mm or 9 in., add one to the assigned points for the previous increment.

10.7.1 Assign demerit points for defects in increments of 230 mm or 9 in. or parts thereof.

10.7.2 Determine the maximum number of points per linear metre or yard by dividing the fabric width by 230 mm or 9 in. as applicable in mm or in.

10.7.2.1 Examples Per Linear Metre:

- 1220 mm fabric width/230 mm = 5 points
- 1530 mm fabric width/230 mm = 7 points

10.7.2.2 Examples Per Linear Yard:

- 48 in. fabric width/9 in. = 6 points:
- 60 in. fabric width/9 in. = 7 points