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Standard Test Methods for Visually Inspecting and Grading Fabrics[1]

This standard is issued under the fixed designation D 5430; 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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:* [2]

D 123 Terminology Relating to Textiles

~~D2905Practice for Statements on Number of Specimens for Textiles~~

D 3990~~Definition of Terms Relating to Fabric Defects~~

~~D4849Terminology Relating to Yarns and Fibers~~ Terminology Relating to Fabric Defects

D 4850 Terminology Relating to Fabric

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.

3. Terminology

~~3.1*Definitions:*~~

~~3.1.1For definition of textile terms used in this test method: critical defect; defect, in inspection and grading; grade; inspection; major defect; minor defect, refer to Terminology D4850 .~~

~~3.1.2For definitions of other textile terms used in this test method, refer to Terminologies D123 and D3990.~~

3.1 For all terminology relating to D13.59, Fabric Test Methods, General, , refer to Terminology D 4850.

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 D 3990.

3.3 For all other terms related to textiles, refer to Terminology D 123

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 D 5430 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.

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[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, WS 53203.

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 ere 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 having a correlated color temperature of 4100 to 4500 K 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 D 2903 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*:

Defect Length				
Greater Than		Up to and Including		Assigned
SI Units	English Units	SI Units	English Units	Points
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