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DEPARTMENT OF DEFENSE

STANDARD PRACTICE

PROVISIONS FOR EVALUATING QUALITY OF CLOTH, WOOL, WORSTED AND WOOL BLENDS

AMSC N/A

FSC 8305

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FOREWORD

1. This standard is approved for use by all Departments and Agencies of the Department of Defense (DoD).

2. This standard provides a standardized procedure for evaluating the quality of woolen, worsted, and wool blended cloths.

3. Comments, suggestions or questions on this document should be addressed to: Attn: DLA Troop Support, 700 Robbins Avenue, Philadelphia, PA 19111-5096. Since contact information can change, you may want to verify the currency of this address information using Acquisition Streamlining and Standardization Information System (ASSIST) online database at https://assist.dla.mil.

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CONTENTS

PARAGRAPH	PAGE
FOREWORD	ii
1. SCOPE	1
1.1 Scope	1
1.2 Purpose	1
1.3 Classification	1
1.4 Applicability	1
2. APPLICABLE DOCUMENTS	1
2.1 General	1
2.2 Government documents	1
2.2.1 Specifications, standards, and handbooks	1
2.2.2 Other Government documents, drawings and publications	1
2.3 Non-Government publications	1
2.4 Order of precedence	2
3. DEFINITIONS	2
4. GENERAL REQUIREMENTS	3
4.1 General	3
5. DETAILED REQUIREMENTS	4
5.1 Yard-by-yard examination	4
TABLE I. Defects that score four (4) points	5
TABLE II. Maximum acceptable point values	5
5.2 Roll examination	5
5.2.1 Roll examination defects	6
TABLE III. Roll examination defects	6
5.3 Shade variation examination	6
5.4 Length examination	6
5.4.1 Individual roll yardage	6
5.5 Shade match and appearance examination	6
5.6 Defect marking (stringing of defects) examination	6
5.7 Inspection procedures	7
6. NOTES	7
6.1 Intended use	7
6.2 Acquisition requirements	7
6.3 Changes from previous issue	7
6.4 Subject term (key word) listing	7

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1. SCOPE

1.1 Scope. This standard covers inspection provision requirements for evaluating the quality of woolen and wool blend materials used on military uniforms.

1.2 Purpose. The purpose of this standard is to provide a standardized examination process for evaluating the quality of woolen, worsted and wool blended cloths which will serve as the basic materials for quality uniform items.

1.3 Classification. This standard is not intended to take the place of a particular inspection procedure aid which may be provided for inspectors to verify conformance with a particular specification. The quality requirements specified in the basic specification govern.

1.4 Applicability. This standard is applicable to contracts by reference in the appropriate specification.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4 and 5 of this standard. This section does not include documents cited in other sections of this standard or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4 and 5 of this standard, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. N/A

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

FEDERAL TRADE COMMISSION

Rules and Regulations Under the Textile Fiber Products Identification Act

(Copies of this document are available online at https://www.ftc.gov.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

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AMERICAN SOCIETY FOR QUALITY (ASQ)

ASQ/ANSI Z1.4 - Sampling Procedures and Tables for Inspection by Attributes

(Copies of this document are available online at https://www.asq.org.)

ASTM INTERNATIONAL

ASTM D3990 - Standard Terminology Relating to Fabric Defects
ASTM D5430 - Standard Test Methods for Visually Inspecting and Grading Fabrics

(Copies of these documents are available online at https://www.astm.org.)

Fabric Defect Replica Scales

(For information on obtaining copies of the Fabric Defect Replica Scales please contact U.S. Army Combat Capabilities Development Command (CCDC), Soldier Center, ATTN: FCDD-SCP-WC, 10 General Greene Avenue, Natick, MA 01760-5019.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. DEFINITIONS

3.1 Barre. Bands, streaks, or bars in the fabric characterized by texture, tension, color luster, or shrinkage differences.

3.2 Bowed or skewed filling. Cloth in which the filling yarn does not run at right angles to the warp.

3.3 Broken or missing yarn. A yarn partially or entirely missing.

3.4 Coarse or heavy yarn. A yarn larger in diameter than normally being used in the cloth.

3.5 Defective selvage. Selvage that is curled, folded, rolled, slack, tight, scalloped, wavy, beaded, loopy, cut, torn, missing, or raveled, or not adequately anchored to the edge of the cloth, preventing the unraveling of the edge.

3.6 Excess material. Extra yarn or waste which has been woven into the cloth or spun into the yarn, or extra length of yarn that has not completely been woven in the cloth.

3.7 Fine yarn. A yarn smaller than normally being used in the cloth.

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3.8 Finishing imperfections. Cloth which has not been uniformly sheared, does not have the same degree and character of the finish throughout, has tendering marks, or is streaked, blotched, spotted or otherwise marked.

3.9 Heavy or light place. A filling wise band or bar either across the full width of the cloth or a portion of it containing more or less that the normal number of picks, or containing picks larger or smaller diameter than normally being used in the cloth.

3.10 Hole. A place in the cloth where two or more contiguous yarns have been ruptured.

3.11 Knot. Self-descriptive.

3.12 Misweave. Any deviation from the specified weave pattern.

3.13 Mixed yarn. Yarn which differs from that normally being used is the cloth, such as wrong twist, wrong number of plies, wrong color, or mixed yarn lots.

3.14. Neppiness. A speckled condition of the cloth characterized by a number of definite fiber tangles (neps).

3.15. Open place. An open streak or crack which results in a clearly noticeable separation between the yarns.

3.16 Reed mark. A mark or line running warpwise in the cloth.

3.17 Slub. A thick place in the yarn.

3.18 Spot, stain or streak. An area in the cloth or on the surface of the cloth showing discoloration, foreign matter, or soil, excluding decating marks.

3.19 Uneven yarn. A yarn tighter or slacker than normal yarn in the body of the cloth.

3.20 Wavy cloth. Cloth that is of such a nature (baggy, ridgy, wavy, or contains crease) that it will not lie flat on a cutting table.

3.21 Weak spot. A place in the cloth where the surface has been damaged or has been abnormally weakened.

3.22 Uneven weaving. Irregular cloth characterized by conditions such as short elliptical or triangular distortions of one or more adjoining yarns, tight or slack places in the same yarn, crimped, rippled, wavy, pebbled, or cockled place in the cloth.

4. GENERAL REQUIREMENTS

4.1 General. This standard contains provisions for visual examination of defects in woolen fabrics. The demerit 4-point system shall be used for visually inspecting and grading fabrics. The ASTM D5430 - Standard Test Method for Visually Inspecting and Grading Fabrics shall

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be used to establish numerical designations for grading of fabrics from a visual inspection. This method includes the description of a suitable apparatus, suggested lighting conditions and proper procedure used to conduct the inspection.

5. DETAILED REQUIREMENTS

5.1 Yard-by-yard examination. Each roll in the sample shall be examined yard-by-yard on the face side or face and back as deemed necessary for defects. The defects are as defined in the Section 3 and in ASTM D3990. Only defects that are clearly noticeable at normal inspection distance (3 feet) shall be scored. The sample plan size shall be in accordance with the following:

Lot size (yards)	Sample size (rolls)
500 or less	8
501 to 3,200	13
3,201 to 35,000	20
35,001 and over	32

The defects are assigned demerit points in accordance with ASTM D5430, Option A, with the exceptions listed below:

a. The defects found shall be counted regardless of their proximity to each other, except where two (2) or more defects represent a single local condition of the fabrics, in which case only the more serious defect shall be counted.

b. Only coarse yarns that exceed twice or more the normal diameter shall be scored.

c. Mixed filling shall be scored only if attributed to shade bar resulting from wrong ply, wrong twist in the yarn or off shade yarn.

d. The defects specified in Table I shall be scored four (4) points for each yard in which they occur.

e. Additional relevant defects can be added.

The point computation shall be as follows:

$$\frac{\text{Total points scored in sample X 3600}}{\text{Width of cloth in inches X total yards inspected}} = \text{Points per 100 yd}^2$$

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TABLE I. Defects that score four (4) points.

Defect Description
Any hole, cut, tear or abrasion mark.
Edge ravels when pulled outward.
Uneven weaving throughout.
Broken or missing yarn.
Any spot, stain or streak more than 1-inch in combined directions.
Knots greater than Fabric Defect Replica Scale Level C (see 2.3).
Slubs greater than Fabric Defect Replica Scale Level D (see 2.3).
Area of poor dye penetration, streak or shade bar.
Width not as specified.
Objectionable odor.
Slack or tight selvages.
Any embedded foreign matter or uncleanness.
Edges rolled, folded, scalloped or corded, baggy, ridgy or wavy cloth.

Selvage defect shall be scored when the thickness of the selvage exceeds the thickness of the body of the cloth by an excessive amount or the edge of the cloth is not adequately anchored.

No linear yard defect (increments of 1-yard on the measuring device of the inspection machine) shall be scored more than four (4) points, however all defects shall be recorded. The lot shall be unacceptable if:

The point value per 100 square yards for the total yardage in the entire sample exceeds the applicable maximum acceptable point value (see Table II).

The point value per 100 square yards for the total yardage in any individual roll in the sample exceeds the applicable maximum acceptable point value (see Table II).

TABLE II. Maximum acceptable point values.

	Quality level	Maximum acceptable point values	
		Entire Sample	Individual rolls
Normal inspection	8	8 points per square yards	12 points per 100 square. yards
	10	10 points per square yards	15 points per 100 square. yards
	12	12 points per square yards	18 points per 100 square. yards
	15	15 points per square yards	23 points per 100 square. yards

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5.2 Roll examination.

5.2.1 Roll examination defects. During the yard-by-yard examination each roll in the sample shall be examined for defects listed below in Table III. The lot shall be unacceptable if two (2) or more of the following defects are present in the sample:

TABLE III. Roll examination defects.

Defect Description
Back or face stamping missing, incorrect or illegible from either or both ends, or bleed through occurring.
Back or face stamping on wrong side.
Not labeled or ticketed in accordance with the Rules and Regulations under the Textile Fiber Products Identification Act.
Edge of roll build-up, or softness of roll in body of cloth.

5.3 Shade variation examination. During the yard-by-yard examination, each roll in the sample shall be examined for shade variation. Any roll in the sample containing uneven shade or shade variation side to side, side to center, or end to end, shall be cause for rejection of entire lot represented by the sample.

5.4 Length examination. During the yard-by-yard examination, each roll in the sample shall be examined for length.

5.4.1 Individual roll yardage. Any length found to be more than 2-yards less than the length marked on the ticket shall be scored as a defect. The lot shall be unacceptable if two (2) or more rolls in the sample are defective in respect to length.

5.4.2 Total yardage in sample. The lot shall be unacceptable if the total of the actual length of the rolls in the sample is less than the total of the lengths marked on the roll tickets.

5.5 Shade match and appearance examination. The shade match and appearance examination shall be as specified in the contract or purchase order.

5.6 Defect marking (stringing of defects) examination. During the yard -by-yard examination, each roll in the sample shall be examined for defect marking. Any roll having more than two (2), three (3), or four (4) point fabric defects (red string) not strung, or more than five (5) fabric defect (red or white strings) not strung shall be classified as a defective roll. As an alternate to marking defects with a string sewn in the selvage, plastic markers may be utilized provided all other criteria are met, e.g. color, proximity to defect, use in selvage, etc.

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The lot shall be unacceptable if the sample contains more than the number of defective rolls or unstrung defects as indicated below:

Sample Size (rolls)	Maximum number of defective rolls	Maximum number of unstrung defects
8	0	12
13	1	19
20	2	30
32	3	48

5.7 Inspection procedures. Inspection procedures, except sampling plans, shall be as specified ASQ/ANSI Z1.4 – Sampling Procedures and Tables for Inspection of Attributes, except where otherwise indicated in the standard.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. To provide a standardized examination procedure for evaluating quality of woolen textile fabrics that are used on military dress clothing. These defects are typical defects in the manufacturing of these types of fabrics.

6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number, and date of this standard
b. The specific issue of individual documents referenced (see 2.3)

6.3 Subject term (key word) listing.

Defects
Examination
Terms
Textile

6.4 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issues, due to the extensiveness of the changes.

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Preparing activity:
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