

MIL-C-10296J  
12 September 1986  
SUPERSEDING  
MIL-C-10296H  
14 March 1975

MILITARY SPECIFICATION

CLOTH, SATEEN, COTTON

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This document covers cotton sateen cloth.

1.2 Classification. The cloth shall be of one type in the following classes, as specified (see 6.2):

Class 1 - Dyed  
Class 2 - White

2. APPLICABLE DOCUMENTS

2.1 Government documents.

- \* 2.1.1 Documents. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to U.S. Army Natick Research, Development, and Engineering Center, Natick, MA 01760-5014, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 8305

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SPECIFICATIONS

FEDERAL

- V-T-276 - Thread, Cotton
- PPP-P-1134 - Packaging of Cotton and Cotton-Synthetic Fiber Blend Fabrics (Excluding Duck Fabrics)

STANDARDS

FEDERAL

- FED-STD-4 - Glossary of Fabric Imperfections
- FED-STD-191 - Textile Test Methods

(Copies of documents required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

2.1.2 Other Government documents. The following other Government documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues shall be those in effect on the date of the solicitation.

Rules and Regulations Under the Textile Fiber Products Identification Act

(Application for copies should be addressed to the Federal Trade Commission, Washington, DC 20580.)

\* 2.2 Other publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS shall be the issues of the nongovernment documents which are current on the date of the solicitation.

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS (AATCC)

Chromatic Transference Scale

(Application for copies should be addressed to the American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709-2215.)

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(Technical society and technical association documents are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

- \* 2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document shall take precedence. Nothing in this document, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

### 3. REQUIREMENTS

3.1 Standard sample. The cloth shall match the standard sample for shade and appearance and, unless otherwise indicated (see 3.3.4), shall be equal to or better than the standard sample with respect to all characteristics for which the standard sample is referenced (see 6.3).

#### 3.2 Material.

3.2.1 Yarn. The yarn shall be made from cotton that has been carded, drawn and spun into single yarns.

#### 3.3 Color.

3.3.1 Class 1. The color of the class 1 cloth shall be as specified (see 6.2) and shall match the standard sample. The use of dyes or substances containing elementary sulfur compounds capable of oxidation to sulfuric acid is prohibited. The dyes (see 6.4) shall be chosen and applied so that the dyed and finished cloth contains no more labile sulfur than that shown by the standard sample when tested as specified in 4.2.3. When a standard sample is not available, the dyed and finished cloth shall show not more than a slight trace of labile sulfur as defined in the test method when tested as specified in 4.2.3.

- \* 3.3.2 Class 2. The color of the class 2 cloth shall be bleached white to match the standard sample (see 6.3), and shall be produced by chemical bleaching using a peroxygen-type agent and a fluorescent optical brightener with a resulting peak emission in the blue violet. The hue of fluorescence shall be the same as that of the standard sample when tested as specified in 4.2.3.

3.3.3 Matching. The color and appearance of the dyed and finished cloth shall match the standard sample when viewed under filtered tungsten lamps that approximate artificial daylight and that have a correlated color temperature of  $7000 \pm 500\text{K}$ , with illumination of  $100 \pm 20$  foot candles. The color shall be a good match to the standard sample under incandescent lamplight at  $2300 \pm 100\text{K}$ .

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- \* 3.3.4 Colorfastness. The classes 1 and 2 finished cloth shall show fastness to laundering (after 3 cycles), perspiration, and light equal to or better than the standard sample or equal to or better than a rating of "good" when tested as specified in 4.2.3. The class 1 dyed and finished cloth shall show fastness to crocking equal to or better than the standard sample or shall have an AATCC Chromatic Transference Scale rating not lower than 3.5 when tested as specified in 4.2.3.
- \* 3.4 Physical requirements. The finished cloth shall conform to the requirements specified in table I when tested as specified in 4.2.3.

TABLE I. Physical requirements

Class	Weight per sq yd in ounces (maximum)	Yarns per inch (minimum)		Breaking strength in pounds (minimum)	
		<u>Warp</u>	<u>Filling</u>	<u>Warp</u>	<u>Filling</u>
1	9.0	85	48	115	100
2	9.0	85	48	100	90

3.4.1 Weave. The weave shall be 5 harness sateen. The filling effect side of the cloth shall be of the face side, and the weave shall be as shown on figure 1 when viewed from the face side.

- \* 3.4.2 Width. The width of the cloth shall be as specified (see 6.2) and shall be the minimum acceptable width inclusive of the selvage when fly-shuttle looms or shuttleless looms with tuck-in selvage are used. For all other shuttleless looms, the width measurement shall be made between the last warp thread on each side excluding the protruding fringe(s).

3.5 Finish. The class 1 cloth shall be singed, desized, and mercerized when tested as specified in 4.2.3. The class 2 cloth shall be bleached.

3.5.1 Nonfibrous materials. The starch and protein content, including chloroform-soluble and water-soluble material of the finished cloth, shall not exceed 3.0 percent when tested as specified in 4.2.3.

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3.6 pH. The pH value of the water extract of the finished cloth shall be no less than 5.0 or more than 8.5 when tested as specified in 4.2.3.

3.7 Marking. The filling effect side shall be identified by applying a stamping on that side with the word "FACE" at each end of the piece or roll.

\* 3.8 Dimensional stability. The cloth shall be preshrunk and shall not shrink or elongate more than 2.0 percent in the direction of either the warp or the filling when tested as specified in 4.2.3. The preshrinking process used shall not be identified by name or trademark, on either the cloth, the ticket, or package.

3.9 Seam efficiency. The cloth shall have a seam efficiency of not less than 80 percent when tested as specified in 4.2.3.

3.10 Length and put-up. Unless otherwise specified (see 6.2), the cloth shall be in one continuous piece of not less than 40 yards and shall be put up in rolls as specified in 5.1.

\* 3.11 Fiber identification. Each piece shall be labeled or ticketed for fiber content in accordance with the Rules and Regulations Under the Textile Fiber Products Identification Act.

3.12 Workmanship. The finished cloth shall conform to the quality of product established by this document. The demerit points per 100 square yards, when calculated as specified in section 4, shall not exceed the applicable established maximum point value.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this document where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

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\* 4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this document shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirement in the document shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.1.2 Certificates of compliance. When certificates of compliance are submitted, the Government reserves the right to inspect such items to determine the validity of the certification.

4.2 Quality conformance inspection.

4.2.1 Component and material inspection. In accordance with 4.1, components and materials shall be inspected in accordance with all the requirements of referenced documents unless otherwise excluded, amended, modified, or qualified in this document or applicable purchase document.

4.2.2 End item examination.

4.2.2.1 Yard-by-yard examination. Each piece or roll in the sample shall be examined on the face side only. When the total yardage in the piece or roll does not exceed 100 yards, the entire yardage in the piece or roll shall be examined. When the total yardage in the piece or roll exceeds 100 yards, only 100 yards shall be examined. All defects as defined in section 1 of FED-STD-4 that are clearly noticeable at normal inspection distance (approximately 3 feet) shall be scored and assigned demerit points as listed in 4.2.2.1.1, except that only those slubs and knots that exceed the limits shown on figure 1 of FED-STD-4 shall be scored. No linear yard shall be penalized more than 4 points. The sample size shall be 20 pieces or rolls selected from 20 containers. The lot shall be unacceptable if the points per 100 square yards of the total yardage examined exceeds 30 points. The lot shall be unacceptable if the points per 100 square yards of two or more individual pieces or rolls exceed 45 points. If one piece or roll exceeds 45 points per 100 square yards, a second sample of 20 pieces or rolls shall be examined only for individual piece or roll quality examination. The lot shall be unacceptable if one or more pieces or rolls in the second sample exceed 45 points per 100 square yards. Point computation for lot quality and individual piece or roll quality shall be as follows:

$$\frac{\text{Total points scored in sample} \times 3600}{\text{Contracted width of cloth (inches)} \times \text{total yards inspected}} = \text{Points per 100 square yards}$$

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4.2.2.1.1 Demerit points. Demerit points shall be assigned as follows:

For defects 3 inches or less in any dimension	- one point
For defects exceeding 3 inches, but not exceeding 9 inches in any dimension	- two points
For defects exceeding 6 inches, but not exceeding 9 inches in any dimension	- three points
For defects exceeding 9 inches in any dimension	- four points

The following defects, when present, shall be scored four points for each yard in which they occur:

Baggy, ridgy, or wavy cloth  
 Width less than specified  
 Poor dye penetration, mottled, streaky, or cloudy  
 Overall uncleanness  
 Excessive neppiness

4.2.2.2 Length examination. During the yard-by-yard examination, each piece or roll in the sample shall be examined for length. Any length found to be less than the minimum specified or more than two yards below the length marked on the ticket shall be considered a defect with respect to length. The lot shall be unacceptable if two or more pieces or rolls in the sample are defective in respect to length or if the total of the actual lengths of pieces or rolls in the sample is less than the total of the lengths marked on the tickets.

\* 4.2.2.3 Shade and appearance examination. During the yard-by-yard examination, each roll in the sample shall be examined for shade and appearance. If any one component color in any roll of the sample is off shade or does not have the same appearance as the standard sample, it shall be cause for rejection of the entire lot represented by the sample. During the yard-by-yard examination, each piece or roll in the sample shall be examined for defects listed below. The lot shall be unacceptable if two or more of the following defects are present in the sample:

Face stamping missing from either or both ends  
 Face stamping on wrong side  
 Preshrinkage process identified by name or trademark on cloth or ticket  
 Not labeled or ticketed in accordance with the Rules and Regulations Under the Textile Fiber Products Identification Act

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- \* 4.2.3 End item testing. The cloth shall be tested for the characteristics listed in table II. The methods of testing specified in FED-STD-191, wherever applicable, and as listed in table II shall be followed. The physical and chemical values specified in section 3 apply to the average of the determinations made on a sample unit for test purposes as specified in the applicable test methods. The sample unit shall be 5 continuous yards full width of the finished cloth. The lot shall be unacceptable if one or more sample units fail to meet any test requirement specified. All test reports shall contain the individual values utilized in expressing the final results. The sample size shall be in accordance with the following:

<u>Lot size (yards)</u>	<u>Sample size (sample units)</u>
800 or less	2
801 up to and including 22,000	3
22,001 and over	5

TABLE II. End item tests

<u>Characteristic</u>	<u>Requirement paragraph</u>	<u>Test method</u>
Yarn ply	3.2.1	Visual <u>1/</u>
Presence of labile sulfur	3.3.1	2020 <u>2/</u>
Colorfastness to:		
Light	3.3.4	5660 <u>3/</u>
Laundering (after 3 cycles)	3.3.4	5610 <u>4/ 5/</u>
Perspiration	3.3.4	5680
Crocking (class 1 only)	3.3.4	5651
Weight	3.4	5041
Yarns per inch	3.4	5050
Breaking strength	3.4	5100
Weave	3.4.1	Visual <u>1/</u>

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TABLE II. End item tests - Continued

Characteristic	Requirement paragraph	Test method
Identification of mercerization	3.5	Microscopic examination for swelling of cotton fiber <u>1/</u>
Starch and protein content including chloroform-soluble and water-soluble material	3.5.1	2611
pH	3.6	2811
Dimensional stability	3.8	5550
Seam efficiency	3.9	5110 <u>6/</u>

1/ One determination shall be made from each sample unit and the result reported as "pass" or "fail".

2/ A certificate of compliance shall be submitted and will be acceptable for the stated requirement.

3/ For class 2, the exposure of the specimen and standard sample shall be for 20 standard fading hours.

4/ The specimens must be dried after each of the 3 laundering cycles.

5/ On the color transfer cloth evaluation, only the stain on the cotton fibers of the color transfer cloth shall be evaluated.

6/ The thread shall conform to type IA1 of V-T-276. The needle size shall be  $0.049 \pm 0.001$  inch. The top (needle) thread shall be ticket No. 24, 3 ply, and the bottom (looper) thread shall be ticket No. 60, 3 ply.

4.2.4 Packaging inspection. The inspection shall be made in accordance with the quality assurance provisions of PPP-P-1134.

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## \* 5. PACKAGING

5.1 Put-up and preservation. Put-up and preservation shall be level A or Commercial, as specified (see 6.2).

5.1.1 Levels A and Commercial. The cloth shall be put up and preserved in accordance with the applicable requirements of PPP-P-1134.

5.2 Packing. Packing shall be level A, B, or Commercial, as specified (see 6.2).

5.2.1 Levels A, B, and Commercial. The cloth shall be packed in accordance with the applicable requirements of PPP-P-1134.

5.3 Marking. In addition to any special marking required in the contract or purchase order, shipments shall be marked in accordance with the applicable requirements of PPP-P-1134.

## 6. NOTES

6.1 Intended use. The cloth is intended for use in clothing and equipage items for personnel of the Department of Defense.

6.2 Ordering data. Acquisition documents should specify the following:

- a. Title, number, and date of this document.
- b. Class of cloth required (see 1.2).
- c. Color of class 1 cloth required (see 3.3.1).
- d. Width of cloth required (see 3.4.2).
- e. Length, if other than specified (see 3.10).
- f. Where put-up is to be in folded pieces (see 3.10).
- g. Selection of applicable levels of put-up, preservation, and packing (see 5.1 and 5.2).

6.3 Standard sample. For access to standard sample, address the contracting activity issuing the invitation for bids (see 3.1).

6.4 Dye formulation.

6.4.1 Olive Green 107. A suggested but not mandatory dye formulation for Olive Green 107 is as follows:

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New color index

Vat Black 25, CI 69525

Vat Green 3, CI 69500

Vat Green 8, CI 71050

Shaded with either or both of the following:

Vat Brown 3, CI 69015

Vat Yellow of suitable fastness

The redness of shade should result from the predominant use of the main colors specified and not from the shading colors.

6.5 Filling yarns. A suggested but not mandatory filling yarn size is  $9.5 \pm 0.25$ .

\* 6.6 Subject term (key word) listing.

Bag, barracks

Cloth, sateen, cotton

Hood, chemical protective

Liner, shirt

6.7 Changes from previous issue. The margins of this document are marked with an asterisk (\*) to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only, and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content, as written, irrespective of the marginal notations and relationship to the last previous issue.

## Custodians:

Army - GL

Navy - NU

Air Force - 11

## Preparing activity:

Army - GL

Project No. 8305-0084

## Review activities:

Army - MD

Navy - MC

Air Force - 82, 99

DLA-CT

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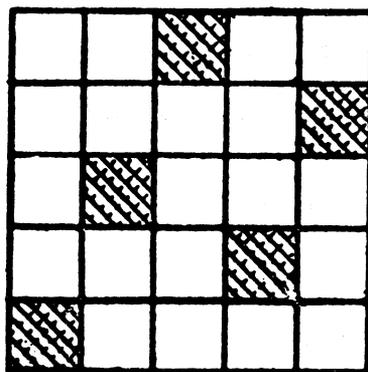


Figure 1. Weave

