

MIL-C-43358B
26 August 1988
SUPERSEDING
MIL-C-43358A
11 April 1972

MILITARY SPECIFICATION

* CLOTH, KNITTED, NYLON/ACETATE, TRICOT, CAMOUFLAGE GREEN 483

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

1. SCOPE

* 1.1 Scope. This document covers one type of nylon/acetate tricot knitted cloth, Camouflage Green 483.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

* 2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this specification 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.

SPECIFICATION

FEDERAL

PPP-P-1133 - Packaging of Synthetic Fiber Fabrics

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

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

MIL-C-43358B

STANDARDS

FEDERAL

FED-STD-191 - Textile Test Methods

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes

(Copies of specifications, standards, and handbooks 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, drawings, and publications. The following other Government documents, drawings, and publications form a part of this specification 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

(Copies may be obtained from the Federal Trade Commission, Pennsylvania Avenue at Sixth Street, N.W., Washington, DC 20508-0001.)

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

2.2 Other publications. The following documents form a part of this specification 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

(Copies should be obtained from the American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709-2215.)

(Nongovernment standards and other publications are normally available from the organizations which prepare or which distribute the documents. These documents also may be available in or through libraries or other informational services.)

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

3. REQUIREMENTS

3.1 Standard sample. The finished cloth shall match the standard sample for shade and appearance and 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 First article. When specified in the contract or purchase order, a sample shall be subjected to first article inspection (see 4.3, 6.2, and 6.4).

3.3 Material.

* 3.3.1 Yarn. The yarn for the back bar shall be multifilament semidull, normal tenacity nylon and the yarn for the front bar shall be multifilament acetate yarn (see 6.5).

* 3.4 Color. The color of the finished cloth shall be Camouflage Green 483.

* 3.4.1 Matching. The color of the 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 $7500 \pm 200K$, with illumination of 100 ± 20 foot candles and shall be a good match to the standard sample under incandescent lamplight at $2300 \pm 200K$.

* 3.4.2 Colorfastness. The finished cloth shall show fastness to laundering and perspiration equal to or better than the standard sample or equal to or better than a rating of "good." The 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. Testing shall be as specified in 4.4.3.

3.5 Physical requirements. The finished cloth shall conform to the requirements specified in table I when tested as specified in 4.4.3.

TABLE I. Physical requirements

Weight oz/yd ²		Yarns per inch, min		Bursting strength, min	Thickness, min
Min	Max	Wales	Courses	Pounds	Inches
5.0	6.5	40	47	45	0.065

3.5.1 Knit. The cloth shall be warp knitted in such a manner that the acetate yarn will be run in to produce a long float.

3.5.2 Width. The width of the cloth shall be as specified (see 6.2) and shall be the minimum acceptable width inclusive of selvages.

3.6 Finish. The cloth shall be thoroughly scoured and heat set. The long floats on the reverse side of the cloth shall be napped and sheared so as to produce a uniform density of pile throughout the surface to meet the physical requirements specified in table I. The character of the napped surface shall be equal to that exhibited by the standard sample.

3.6.1 pH. The pH value of the water extract of the finished cloth shall be no less than 5.0 nor more than 8.5 when tested as specified in 4.4.3.

* 3.7 Shrinkage requirements. The finished cloth shall not shrink or elongate more than 3.0 percent in length (wale direction) or 5.0 percent in width (course direction) when tested as specified in 4.4.3.

3.8 Nonfibrous material content. The starch and protein content of the finished cloth, including carbon-tetrachloride-soluble and water-soluble material, shall not exceed 2.0 percent when tested as specified in 4.4.3.

3.9 Length and put-up. Unless otherwise specified (see 6.2), the cloth shall be one continuous piece of not less than 40 yards and shall be put up in rolls as specified in 5.1.1.

3.10 Fiber identification. Each roll shall be labeled, ticketed, or invoiced for fiber content in accordance with the Textile Fiber Products Identification Act.

3.11 Workmanship. The cloth shall conform to the quality of product established by this document and the occurrence of defects shall not exceed the applicable acceptable quality levels.

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.

- * 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 Responsibility for dimensional requirements. Unless otherwise specified in the contract or purchase order, the contractor is responsible for assuring that all specified dimensions have been met. When dimensions cannot be examined on the end item, inspection shall be made at any point or at all points in the manufacturing process necessary to assure compliance with all dimensional requirements.
- * 4.1.3 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 Classification of inspections. The inspection requirements specified herein are classified as follows:
 - a. First article inspection (see 4.3).
 - b. Quality conformance inspection (see 4.4).
- * 4.3 First article inspection. When a first article is required (see 6.2), it shall be examined for the defects specified in 4.4.2.1 and shall be tested for the characteristics specified in table IV. The presence of any defect or failure of any test shall be cause for rejection of the first article.
- 4.4 Quality conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with MIL-STD-105.

4.4.1 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.

4.4.2 End item examination.

4.4.2.1 Yard-by-yard examination. The cloth shall be examined on the unnapped face side for the defects listed in table II. All defects found shall be counted regardless of their proximity to each other, except where two or more defects represent a single local condition of the cloth in which case only the more serious defect shall be counted. A continuous defect shall be counted as one defect for each wale-wise (lengthwise) yard or fraction thereof in which it occurs. The lot size shall be expressed in units of yards. The sample unit shall be 1 linear yard. The inspection level shall be II and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 2.5 for major defects and 10.0 for total (major and minor) combined defects. The number of rolls from which the sample yardage is to be selected shall be in accordance with table II. The sample yardage shall be apportioned equally among the selected rolls.

TABLE II. Yard-by-yard examination defects

Defect	Classification	
	Major	Minor
Any hole, cut, tear	X	
Run, missing yarn	X	
Any float on unnapped side more than 1/4 inch		X
Tucking defect, snag, or needle line		X
Mend	X	
Abrasion mark resulting in a weak area	X	
Thin or thick places	X	
Heavy or thin yarn <u>1/</u>		X
Tight twist yarn		X
Slubs or slugs more than twice the size of normal yarn		X
Foreign matter <u>1/</u>		X
Knots, oversize, extending above the surface of cloth	X	
Kinks or untrimmed ends		X
Tight yarn or loose yarn	X	
Barre <u>1/</u>		X
Spot or stain		X

1/ Clearly visible at normal inspection distance (approximately 3 feet).

4.4.2.2 Overall examination. The cloth shall be examined for the defects listed below. Each defect listed shall be counted not more than once in each roll examined. The sample size shall be the applicable number of rolls indicated in table III. Each roll in the sample shall be examined over its entire length. The lot shall be rejected if the total number of defects in the sample exceeds the applicable acceptance number specified in table III.

Defects

Width less than specified

Objectionable odor

Overall uncleanness

Uneven knitting throughout the piece

Off shade, shaded end to end, side to side, side to center, or throughout the roll

Poor dye penetration, mottled, streaky, or cloudy

Character of napped surface not equal to the standard sample

Not labeled in accordance with the Textile Fiber Products

Identification Act

TABLE III. Sample size

Lot size (yards)	Sample size (rolls)	Acceptance number
Up to 1,300 1/	3	0
1,301 up to and including 3,200	5	0
3,201 up to and including 8,000	7	0
8,001 up to and including 22,000	10	0
22,001 up to and including 110,000	15	1
110,001 and over	25	1

1/ If a lot contains fewer than three rolls, each roll in the lot shall be examined.

4.4.2.3 Length examination. During the overall examination, each roll in the sample shall be examined for gross length. If the total of the actual gross lengths of the rolls in the sample is less than the total of the gross lengths marked on the roll tickets, the lot shall be rejected.

MIL-C-43358B

4.4.3 End item testing. The cloth shall be tested for the characteristics listed in table IV. The methods of testing specified in FED-STD-191, wherever applicable, and as listed in table IV shall be followed. All test reports shall contain the individual values utilized in expressing the final results. The sample unit shall be 3-1/2 continuous yards full width of the cloth. The lot shall be rejected if one or more sample units fail to meet any requirement specified. The sample size shall be in accordance with the following:

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

TABLE IV. End item tests

Characteristic	Requirement paragraph	Test method
Colorfastness to:		
Laundering	3.4.2	5614
Crocking	3.4.2	5651
Perspiration	3.4.2	5680
Weight	3.5	5041
Yarns per inch:		
Wales	3.5	5070
Courses	3.5	5070
Bursting strength	3.5	5120
Thickness	3.5	4.5.1
Type of knit	3.5.1	1/
Finish	3.6	1/
pH	3.6.1	2811
Shrinkage	3.7	5556 2/
Non-fibrous material	3.8	2611 3/

- 1/ A certificate of compliance shall be submitted and will be acceptable for the stated requirement.
- 2/ Cotton laundering procedure.
- 3/ Except that the solvent used in the chloroform extraction shall be carbon tetrachloride.

* 4.4.4 Packaging inspection. The inspection shall be in accordance with the quality assurance provisions of PPP-P-1133.

* 4.5 Methods of inspection.

4.5.1 Thickness test. The specimen shall be cut from different parts of a full width sample and shall measure not less than 6 inches by 6 inches. The specimen shall always be larger than the pressure foot on the test apparatus.

4.5.1.1 Apparatus. The test apparatus shall be a compressometer (see 6.6) with a round pressure foot of not less than 3 square inches with a bearing surface capable of measuring 0.01 pounds per square inch (psi) without moving the specimen from under the pressure foot or changing the pressure foot once the test is started. The pressure foot shall travel 0.2 inch per minute.

4.5.1.2 Procedure. The compressometer shall be balanced. After balancing, the test specimen shall be placed under the pressure foot, the machine shall be set for 0.01 p.s.i., and the thickness shall be recorded. Five specimens shall be tested from each sample unit. The results shall be reported as the average of the five specimens tested to the nearest 0.001 inch.

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-1133.

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-1133.

5.3 Marking. In addition to any special marking required by the contract or purchase order, shipments shall be marked in accordance with the applicable requirements of PPP-P-1133.

6. NOTES

6.1 Intended use. The cloth is intended for use as the basic material for the Shirt, Sleeping, Heat Retentive and Moisture Resistant, Nylon/Acetate, Tricot Knit.

6.2 Ordering data. Acquisition documents should specify the following:

- a. Title, number, and date of this document.
- b. When a first article is required (see 3.2, 4.3, and 6.4).
- c. Width of cloth required (see 3.5.2).
- d. Length required if other than specified (see 3.9).
- e. Selection of applicable levels of put-up, preservation, and packing (see 5.1 and 5.2).

6.3 Standard sample. For access to samples, address the contracting activity issuing the invitation for bids.

* 6.4 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of FAR 52.209. The first article should be a preproduction sample. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should include specific instructions in all acquisition instruments regarding arrangements for selection, inspection, and approval of the first article.

* 6.5 Knitting machine. Two-bar, 28-gage, tricot knitting machines or Raschel knitting machines of suitable gage have been found capable of producing fabric meeting the requirements of this specification. Note, the standard sample (see 6.3) was knitted using 40 denier nylon for the back bar and 75 denier for the front bar.

6.6 Test apparatus for thickness. The test apparatus described for measuring thickness may be procured from the following:

Instron Corporation
100 Royall St.
Canton, MA 02021

Satec Systems, Inc.
900 Liberty St.
Grove City, PA 16127

Tinius Olsen Testing Machine Co.
Easton Rd., P.O. Box 429
Willow Grove, PA 19090

* 6.7 Subject term (key word) listing.

Cloth
Knit
Nylon/acetate
Shirt, sleeping
Tricot

6.8 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 - 99

Preparing activity:

Army - GL
Project No. 8305-0219

Review activities:

Army - MD
Air Force - 82
DLA - CT

User activities:

Navy - MC, MS

INSTRUCTIONS. In a continuing effort to improve our standards, we are requesting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge (DO NOT STAPLE), and mailed. In block 6, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

NOTE This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

(Fold along this line)

(Fold along this line)

DEPARTMENT OF THE ARMY

US Army Natick Research, Development, and
Engineering Center
Natick, MA 01760-5014



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE \$300
STRNC-ES



Commander
US Army Natick Research, Development,
and Engineering Center
ATTN: STRNC-ES
Box 14A
Natick, MA 01760-5014

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER MIL-C-43358B	2. DOCUMENT TITLE Cloth, Knitted, Nylon/Acetate, Tricot, Camouflage Green 483
------------------------------------	--

3a. NAME OF SUBMITTING ORGANIZATION

4. TYPE OF ORGANIZATION (Mark one)

 VENDOR USER MANUFACTURER OTHER (Specify) _____

5. ADDRESS (Street, City, State, ZIP Code)

5. PROBLEM AREAS

a. Paragraph Number and Wording

b. Recommended Wording

c. Reason/Rationale for Recommendation

6. REMARKS

7a. NAME OF SUBMITTER (Last, First, MI) - Optional

8. WORK TELEPHONE NUMBER (Include A Code) - Optional

c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional

9. DATE OF SUBMISSION (YYMMDD)