

MIL-C-87052A (NU)
13 September 1983
SUPERSEDING
MIL-C-87052(SA)
30 October 1978

MILITARY SPECIFICATION

CLOTH, TWILL, POLYESTER, WHITE

This specification is approved for use by Naval Supply Systems Command, Department of the Navy and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope This specification covers one type of twill cloth made from 100% texturized polyester.

2. APPLICABLE DOCUMENTS

2.1 Government documents

2.1.1 Specifications, standards, and handbooks. Unless otherwise specified, the following specifications, standards and handbooks of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation, form a part of this specification to the extent specified.

SPECIFICATION

FEDERAL

PPP-P-1133 - Packaging and Packing of Synthetic Fiber
Fabrics

STANDARDS

FEDERAL

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

Beneficial comments recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Navy Clothing and Textile Research Facility, 21 Strathmore Road, Natick, MA 01760, by using the self-addressed standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FSC 8305

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

(Copies of specifications, standards, drawings and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

*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.

LAWS AND REGULATIONS

Rules and Regulations Under the Textile Fiber Products Identification Act

(Copies may be obtained without charge from the Federal Trade Commission, Washington, DC 20580).

3. REQUIREMENTS

3.1 Standard sample The finished cloth shall match the standard 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, the contractor shall furnish a sample unit(s) for first article inspection and approval (see 4.3 and 6.2).

3.3 Materials

3.3.1 Fiber The fiber shall be polyethylene glycol terephthalate, regular tenacity, semi-dull (see 4.4.1).

*3.3.2 Yarn. The yarn used in both the warp and filling shall be made by plying two ends of 150 denier octalobal cross section, 33 ± 3 filaments per end polyester and shall be texturized by the false twist process. All yarns shall contain the same number of filaments (see 4.4.1).

*3.4 Color Unless otherwise specified the color of the finished cloth shall be White 3006 and shall match the standard sample. The White cloth shall be fully bleached and supplemented with a blue violet fluorescing optical brightener. All cloth within any one contract shall be processed for whiteness in the same manner.

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3.4.1 Matching The color of the finished cloth shall match the standard sample under artificial daylight having a color temperature of 7500° Kelvin and shall be a good approximation to the standard sample under incandescent lamplight at 2800° Kelvin.

3.4.2 Discoloration The finished cloth shall show fastness to light, combined laundering and bleaching, wet-dry cleaning and perspiration equal to or better than the standard sample. When no standard sample is available, the finished cloth shall show a minimum of "good" fastness to combined laundering and bleaching, light, wet-dry cleaning, and perspiration. Testing shall be as specified in 4.5.

* 3.5 Physical requirements The finished cloth shall conform to the requirements specified in table I when tested as specified in 4.5.

Table I - Physical requirements

Weight oz/sq yd (g/m)	Yarns per inch (cm) (Min)		Breaking strength lbs (newtons) (min)		Tearing strength lbs (newton) (min)	
	Warp	Filling	Warp	Filling	Warp	Filling
6.7 ± 0.5 (227.1 ± 17)	67 (26.4)	57 (22.4)	200 (890)	150 (668)	12 (53)	12 (53)

3.5.1 Weave The weave shall be a 2 right hand twill.

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3.5.2 Width Unless otherwise specified (see 6.2) the width of the cloth shall be a minimum of 60 inches (1.5m).

* 3.6 Finish The cloth shall be scoured, heat set, dyed and given an approved soil release finish (see 4.4.1 and 6.5). Percent add-on of the soil release finish shall be in accordance with the manufacturer's instructions. The character of the finished cloth shall be equal to that of the standard sample.

3.7 Non-fibrous materials The starch and protein content including chloroform-soluble and water-soluble material of the cloth shall not exceed 3.0 percent when tested as specified in 4.5.

3.8 Dimensional stability The finished cloth shall not shrink or elongate more than 2.0 percent in the warp and filling when tested as specified in 4.5.

3.9 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 4.5.

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3.10 Length and put-up Unless otherwise specified (see 6.2), the finished cloth shall be furnished in continuous lengths each not less than 40 yards (36.6m). Each length shall be put up on rolls as specified in PPP-P-1133.

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

3.12 Face identification The face side of the cloth shall be identified by stamping on that side with the word "Face" at each end of the roll.

3.13 Workmanship The finished cloth shall conform to the quality established by this specification. The demerit points per 100 square yards (83.6m²) when calculated as specified in section 4 shall not exceed the established maximum point value.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, 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 deemed necessary to assure that supplies and services conform to prescribed requirements.

4.1.1 Certificate of compliance Where certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certification.

4.2 Classification of inspection The inspection requirements specified herein are classified as follows:

1. First article inspection (see 4.3).
2. Quality conformance inspection (see 4.4).

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4.3 First article inspection When required, the first article of finished cloth shall be visually inspected for color and finished appearance and shall be tested for chemical and physical properties in accordance with the applicable methods specified in 4.5.

4.4 Quality conformance inspection Inspection shall be performed in accordance with MIL-STD-105, except where otherwise indicated.

4.4.1 Component and material inspection In accordance with 4.1 above, components and materials shall be inspected and tested in accordance with all requirements of referenced specifications, drawings, and standards unless otherwise excluded, amended, modified, or qualified, in this specification or applicable purchase document. In addition, a certificate of compliance shall be submitted for the material requirements of 3.3.1, 3.3.2, and the soil release finish requirements of 3.6.

4.4.2 Examination of the end item Examination of the end item shall be in accordance with 4.4.2.1 through 4.4.2.4.

4.4.2.1 Yard-by-yard examination Each roll in the sample shall be examined on face side only. When the total yardage in the roll does not exceed 100 yards (91.4m), the entire yardage in the roll shall be examined. When the total yardage in the roll exceeds 100 yards (91.4m) only 100 yards (91.4m) shall be examined. All defects as defined in Section III of FED-STD-4, which are clearly noticeable at normal inspection distance (3 feet) (0.91m) shall be scored and assigned demerit points as listed in 4.4.2.1.1, except that only those knots which exceed the limits shown on Sears Fabric Defect Scale (see 6.4), "C" knots shall be scored. No linear yard (increments of 1 yard (0.91m) on the measuring device of the inspection machine) from any one roll within the sample shall be penalized more than 4 points. The sample size shall be 20 rolls selected from 20 containers. The lot shall be unacceptable if the points per 100 square yards (83.6m²) of the total yardage examined exceeds 25 points. The lot shall be unacceptable if the point per 100 square yards (83.6m²) of two or more individual rolls exceeds 38 points. If one roll exceeds the point level per 100 square yards (83.6m²), a second sample of 20 rolls shall be examined only for individual roll quality examination. The lot shall be unacceptable if one or more rolls in the second sample exceeds 38 points per 100 square yards (83.6m²). Point computation for lot quality and individual roll quality shall be as follows:

Total points scored in sample X 3600	= Points per 100
Contracted width of cloth (inches) X total yards inspected	square yards
	(83.6m ²)

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4.4.2.1.1 Demerit points Demerit points shall be assigned as follows:

For defects 3 inches (7.6cm) or less in any dimensions - one point
 For defects exceeding 3 inches (7.6cm), but not exceeding
 6 inches (15.2cm) in any direction - two points
 For defects exceeding 6 inches (15.2cm), but not exceeding
 9 inches (22.9cm) in any dimension - three points
 For defects exceeding 9 inches (22.9cm) in any dimension - four points

The following defects, when present, shall be scored 4 points for each yard (0.91m) in which they occur:

Baggy, ridgy or wavy cloth
 Width less than specified
 Characteristics of finish, hand and shade not equal to
 the standard sample
 Non uniformity of shade (mottled, streaky or cloudy)
 Holes, cuts, tears, open places

4.4.2.2 Examination for length

4.4.2.2.1 Individual rolls During the yard-by-yard examination, each roll in the sample shall be examined for length. Any length found to be less than the minimum specified or more than 2 yards (1.82m) less than the length marked on the ticket shall be considered a defect with respect to length. The lot shall be unacceptable if two or more rolls in the sample are defective with respect to length.

4.4.2.2.2 Total yardage in sample The lot shall be unacceptable if the total of the actual lengths of rolls in the sample is less than the total of the lengths marked on the tickets. The rolls examined shall be those selected for the examination of individual rolls.

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

4.4.2.4 Examination for shade match and finish, individual rolls Each roll in the lot shall be examined visually for shade match (see 3.4.1) and finish (see 3.6). A roll shall be unacceptable if it fails to meet the requirements for shade match or finish. The sample unit shall be a 4 inch by 20 inch (10.2 by 50.8cm) swatch of the cloth. A sample unit shall be drawn from each roll in the lot.

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4.4.2.5 Examination for face identification and non-conformance with the Textile Fiber Products Identification Act During the yard-by-yard examination, each roll in the sample shall be examined for these defects. The lot shall be unacceptable if two or more rolls in the sample have face identification missing from either or both ends, or are not labeled or ticketed in accordance with the Textile Fiber Products Identification Act.

4.4.3 Examination of packaging requirements An examination shall be made in accordance with the provision of PPP-P-1133 to determine that packaging, packing and marking comply with Section 5 requirements of this specification.

4.5 Testing of the end item 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, except where otherwise indicated, apply to the results of the determinations made on a sample unit for test purposes as specified in the applicable test methods. All test reports shall contain the individual values utilized in expressing the final result. The sample unit shall be 2 yards (1.82m), full width of the finished cloth. The lot size shall be expressed in units of one yard (0.91m). The sample size shall be as follows and the lot shall be unacceptable if one or more sample units fail to meet any requirements specified.

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

Table II - Test Methods

<u>Characteristic</u>	<u>Requirement Paragraph</u>	<u>Test Method</u>
Discoloration to:		
Light	3.4.2	5660
Combined laundering and bleaching	3.4.2	5605 1/
Perspiration	3.4.2	5680
Wet-dry cleaning	3.4.2	5622
Weight	3.5	5041
Yarns per inch:		
Warp	3.5	5050
Filling	3.5	5050
Breaking strength:		
Warp	3.5	5100
Filling	3.5	5100
Tearing strength:		
Warp	3.5	5132
Filling	3.5	5132
Dimensional stability		
Warp	3.8	5550
Filling	3.8	5550
Non-fibrous material content	3.7	2611
pH	3.11	2811

1/ Only the stain on the polyester fibers of the transfer cloth shall be evaluated.

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5. PACKAGING

5.1 Preservation-packaging. Packaging shall be level A or C (see 6.2).

5.1.1 Levels A and C. The cloth, put up as specified, shall be packaged in accordance with the applicable requirements of PPP-P-1133.

5.2 Packing Packing shall be level A, B or C (see 6.2).

5.2.1 Levels A, B and C. 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 order, shipments shall be marked in accordance with the requirements of PPP-P-1133.

6. NOTES

6.1 Intended use The cloth covered by this specification is intended for use in clothing items worn by Navy personnel.

* 6.2 Ordering data Procurement documents should specify the following:

- a. Title, number and date of this specification.
- b. When first article is required (see 3.2).
- c. Minimum width of cloth, if other than specified (see 3.5.2).
- d. Levels of packaging and packing requirements (see 5.1 and 5.2).
- e. Minimum length, if other than specified (see 3.10).
- f. Color, if other than specified.

6.3 Standard sample. For access to the standard sample, address the procuring office issuing the invitation for bids.

6.4 Sears Fabric Defect Scales are available from Sears Roebuck and Company, Department 817 (ATTN: BSC 23-29), Sears Tower, Chicago, IL 60684.

6.5 The following Soil Release Agents are approved by the Navy Clothing and Textile Research Facility, Natick, MA 01760 for use and are based on extensive tests, including those for human toxicity. Because of the time necessary to conduct full evaluation, only those treatments listed below shall be considered acceptable for the related procurements.

<u>Compound</u>	<u>Company</u>
Zelcon 4951	E.I. DuPont de Nemours & Co. Wilmington, DE 19898
FC-258	Minnesota Mining & Mfg. Co. St. Paul, MN
Milease HPA	ICI Americas, Inc. Wilmington, DE 19897

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6.6 Recycled material. It is encouraged that recycled material be used when practical as long as it meets the requirements of the specification.

6.7 Changes from previous issue. The margins of this specification 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 irrespective of the marginal notations and relationship to the last previous issue.

Custodian:
Navy - NU

Preparing Activity:
Navy - NU

Review Activity:
DLA - CT

Project NO. 8305-N923

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL*(See Instructions - Reverse Side)*

1. DOCUMENT NUMBER MIL-C-87052 (NU)		2. DOCUMENT TITLE Cloth, Twill, Polyester, White	
3a. NAME OF SUBMITTING ORGANIZATION		4. TYPE OF ORGANIZATION (Mark one)	
		<input type="checkbox"/> VENDOR <input type="checkbox"/> USER <input type="checkbox"/> MANUFACTURER <input type="checkbox"/> OTHER (Specify): _____	
b. 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		b. WORK TELEPHONE NUMBER (Include Area Code) - Optional	
c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional		8. DATE OF SUBMISSION (YYMMDD)	