

CCC-C-429F  
February 18, 1988  
SUPERSEDING  
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FEDERAL SPECIFICATION

CLOTH, OSNABURG, COTTON

This specification is approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers cotton osnaburg cloth.

1.2 Classification.

1.2.1 Types and classes. The cloth osnaburg, cotton shall be of the following types and classes, as specified (see 6.2):

Type I - Unbleached

Class 2 - 6.8 oz/sq yd

Type II - Coating quality

Class 2 - 6.1 oz/sq yd

Class 3 - 4.9 oz/sq yd

Class 5 - 3.5 oz/sq yd

Type III - Dyed

Class 2 - 6.1 oz/sq yd

2. APPLICABLE DOCUMENTS

2.1 Government publications. The following documents, of the issue in effect on the date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

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.

CCC-C-429F

Federal Specification:

PPP-P-1135 - Packaging of Duck Fabrics (Cotton; Synthetic Fiber;  
Cotton-Synthetic Fiber Blends)

Federal Standards:

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

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards, and Commercial Item Descriptions. The Index, which includes cumulative bimonthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

(Single copies of this specification and other Federal specifications and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, DC; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; and Seattle, WA.)

(Federal Government activities may obtain copies of Federal standardization documents and the Index of Federal Specifications, Standards, and Commercial Item Descriptions from established distribution points in their agencies.)

Military Standard:

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

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

Federal Regulations

Rules and Regulations Under the Textile Fiber Products  
Identification Act

(The Code of Federal Regulations (CFR) and the Federal Register (FR) are for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. When indicated, reprints of certain regulations may be obtained from the Federal agency responsible for issuance thereof.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on the date of invitation for bids or request for proposal shall apply.

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.)

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 dyed and finished cloth shall match the standard sample for shade 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 Material.

3.2.1 Cotton. The cotton, or a mixture of cotton and cotton waste, shall be of a quality to meet the requirements of this specification. The use of tinged or spotted cotton is permitted.

3.2.2 Yarn. The yarn shall be made from cotton which has been carded, drawn, and spun into singles yarn for both warp and filling.

3.3 Color. The color for types I and II shall be natural. The color for type III shall be as specified (see 6.2) and shall match the standard sample (see 6.3).

3.3.1 Matching (type III). The color 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 7500 +/- 200 K with illumination of 100 +/- 20 foot candles and shall be a good match to the standard sample under incandescent lamplight at 2300 +/- 200 K.

3.3.2 Colorfastness (type III). The dyed and finished cloth shall show fastness to light and laundering equal to or better than the standard sample or equal to or better than a rating of "good." The 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 of not lower than 3.5. Testing shall be as specified in 4.3.3.

CCC-C-429F

3.3.3 Labile sulfur (type III). The use of dyes and compounds containing elementary sulfur capable of oxidation to sulfuric acid is prohibited. The dyestuff shall be chosen and applied so that the dyed and finished cloth shall contain no more labile sulfur than shown by the standard sample when tested as specified in 4.3.3. When a standard sample is not available, the dyed and finished cloth shall show no more than a slight trace of labile sulfur as defined in the test method specified in 4.3.3.

3.4 Spectral reflectance for type III, Camouflage Green 483. When color 483 is specified, the finished cloth shall meet the spectral reflectance factors (in percent) for the visible/near infrared wavelength range 600 to 860 nanometers (nm) as specified below, when tested as specified in 4.3.3.

Wavelength (nm)	Reflectance (%)		Wavelength (nm)	Reflectance(%)	
	Max	Min		Max	Min
600	10	4	740	40	14
620	10	4	760	49	18
640	11	4	780	55	23
660	13	4	800	60	29
680	15	4	820	64	34
700	20	6	840	67	39
720	30	9	860	69	45

3.5 Physical requirements. The cloth shall conform to the applicable requirements specified in table I when tested as specified in 4.3.3.

TABLE I. Physical requirements

Type and class	Weight, oz per sq yd, minimum	Yarns per inch, minimum		Breaking strength, pounds, minimum	
		Warp	Filling	Warp	Filling
Type I Class 2	6.8	38	24	60	60
Type II Class 2	6.1	38	24	60	60
Class 3	4.9	32	26	50	50
Class 5	3.5	28	24	40	40
Type III Class 2	6.1	38	22	60	60

3.5.1 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 with tuck-in selvage looms are used. For all other shuttleless looms the width measurement shall be made between the last warp yarn on each side excluding the protruding fringe(s).

3.5.2 Weave. The weave shall be plain.

3.6 Nonfibrous materials.

3.6.1 Type I, unbleached cloth. The starch and protein content, including chloroform-soluble and water-soluble material, of the finished cloth shall not exceed 12.0 percent when tested as specified in 4.3.3.

3.6.2 Type II, coating quality. When the cloth is specified for use as the base cloth for coating, the starch and protein content including chloroform-soluble and water-soluble materials shall not exceed 4.0 percent when tested as specified in 4.3.3. The finished cloth shall be singed, scoured, and calendered.

3.6.2.1 Copper and manganese. When the cloth is specified as type II (see 6.2), the finished cloth (prior to coating) shall contain not more than 0.003 percent copper and 0.0015 percent manganese when tested as specified in 4.3.3.

3.6.3 Type III, class 2. The starch and protein content, including chloroform-soluble and water-soluble material, of the finished cloth shall not exceed 4.0 percent when tested as specified in 4.3.3.

3.7 Length and put-up. Unless otherwise specified (see 6.2), the cloth shall be furnished in continuous lengths of not less than 40 yards each and no roll shall contain more than three pieces.

3.8 Fiber identification. Each piece of cloth shall be labeled and ticketed for fiber content in accordance with the Rules and Regulations Under the Textile Fiber Products Identification Act.

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

CCC-C-429F

#### 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.

4.2 Quality conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with MIL-STD-105.

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.

#### 4.3 Examination of the end item.

4.3.1 Yard-by-yard examination. The required yardage of each roll shall be examined at normal inspection distance (3 feet) for the defects listed below. All defects are as defined in section I of FED-STD-4. The defects found shall be counted regardless of their proximity to each other, except when two or more defects represent a single local condition of the cloth, only one shall be scored. Discoloration, foreign matter, leaf, motes, or neppiness to the degree normally expected when tinged or spotted cotton waste is used, shall not be scored. A continuous defect shall be counted as one defect for each yard or fraction thereof in which it occurs. The lot size shall be expressed in yards. The sample unit shall be 1 yard full width of the finished cloth. The inspection level shall be I and the acceptable quality level (AQL), expressed in terms of defects per hundred yards, shall be 6.5. 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.

Defects  
 Hole, cut or tear  
 Smash, multiple floats  
 Knot [1]  
 Spots or stains  
 Embedded crease or wrinkle (type II)  
 Area of no finish (singeing, scouring and  
 calendering) on type II cloth

[1] To be scored in accordance with the bears Fabric Defect Scale for slubs and knots.

TABLE II. Sample size and acceptance criteria

Lot size (yards)	Sample size (rolls)	Acceptance number
Up to 1200 [1]	3	0
1,201 up to-and including 3,200	5	0
3,201 up to and including 10,000	8	0
10,001 up to and including 35,000	13	1
35,001 up to and including 150,000	20	2
150,001 and over	32	3

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

4.3.1.1 Overall examination. Each defect shall be counted no more than once in each roll examined. The sample unit shall be one roll. The size (number of rolls selected as sample) and the acceptance number shall be as shown in Table II.

Defects  
 Color not as specified  
 Baggy, ridgy, or wavy cloth  
 Width less than specified [1]  
 Not labeled in accordance with the Textile  
 Fiber Products Identification Act

[1] Shall not be scored unless it occurs for more than 5 yards per roll.

CCC-C-429F

4.3.2 Length examination. 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 two yards 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 or if the total of the actual lengths of rolls in the sample is less than the total of the lengths marked on the tickets.

4.3.3 End item testing. The methods of testing specified in FED-STD-191, wherever applicable, and as listed in table III shall be followed. The physical and chemical values specified in section 3 shall apply to the results of the determinations made on a sample unit for test purposes as specified in the applicable test method. The sample unit shall be 1 yard full width of the finished cloth. The lot shall be unacceptable if one or more sample units fail to meet any requirements specified. All test reports shall contain the individual values utilized in expressing the final results. The sample size shall be as follows:

<u>Lot size in 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 III. End item tests

Characteristic	Requirements paragraph	Test method
Yarn ply	3.2.2	Visual [1]
Fastness to crocking	3.3.2	5651
Fastness to light	3.3.2	5660
Fastness to laundering	3.3.2	5614
Presence of labile sulfur (type III)	3.3.3	2020
Spectral reflectance (type III, Camouflage Green 483)	3.4	4.4.1

TABLE III. End item tests - Continued

Characteristic	Requirements paragraph	Test method
Weight	3.5	5041
Yarns per inch	3.5	5050
Breaking strength	3.5	5100
Weave	3.5.2	Visual [1]
Non-fibrous material	3.6	2611
Copper and manganese content (type II)	3.6.2.1	2053 [2]

[1] One determination shall be made from each sample unit and the results reported as "pass" or "fail."

[2] An atomic absorption spectrophotometer may be used in lieu of the method specified in Method 2053. The number of determinations and the results reported shall be the same as that indicated for Method 2053.

4.3.4 Packaging examination. The cloth shall be inspected in accordance with the quality assurance provisions of PPP-P-1135.

#### 4.4 Methods of inspection.

4.4.1 Spectral reflectance measurements in the visible/near infrared. Spectral reflectance data shall be obtained from 600 to 860 nanometers (nm), at 20 nm intervals on a spectrophotometer (see 6.5) relative to a barium sulfate standard, the preferred white reference standard. Other white reference materials may be used, provided they are calibrated to absolute white; e.g., Halon, magnesium oxide, or vitrolite tiles (see 6.6). The spectral bandwidth shall be less than 26 nm at 860 nm. Reflectance measurements may be made by either the monochromatic or polychromatic mode of operation. When the polychromatic mode is used, the spectrophotometer shall operate with the specimen diffusely illuminated with the full emission of a source that simulates either CIE Source A or CIE Source D65. The specimen shall be measured as a single layer, backed with three layers of the same fabric and shade. Measurements will be taken on a minimum of two different areas, and the data averaged. The specimen shall be viewed at an angle no greater than 10 deg. from normal, with the specular component included. Photometric accuracy of the spectrophotometer shall be within 1 percent and wavelength accuracy within 2 nm. The standard aperture size used in the color

CCC-C-429F

measurement device shall be 1.0 to 1.25 inches in diameter. When the measured reflectance values for any color at four or more wavelengths do not meet the limits specified in 3.4, it shall be a test failure.

## 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 applicable requirements of PPP-P-1135.

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-1135.

5.3 Marking. In addition to any special marking required by the contract or purchase order, shipments shall be marked in accordance with the requirements of PPP-P-1135.

## 6. NOTES

6.1 Intended use. The cloth is used for packing material, target cloth, and may be used as a base cloth for coated cloth for use in the manufacture of clothing and equipage items.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

- a. Title, number, and date of this specification.
- b. Type, class, and color required (see 1.2.1 and 3.3).
- c. Width of cloth required (see 3.5.1).
- d. Minimum length, if other than specified (see 3.7).
- e. Selection of applicable levels of put-up, preservation, and packing required (see 5.1 and 5.2).

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

6.4 Dye combinations. A suggested but not mandatory dye combination for Camouflage Green 483 is as follows:

Vat Yellow 33  
Vat Green 1  
Vat Brown 57

6.5 Spectrophotometers. Suitable spectrophotometers for measuring spectral reflectance in the visible/near infrared are the Diano Hardy, Diano Match Scan, Hunter D54P-IR, Hunter VIS/NIR spectrophotometer, and Macbeth 1500 with IR option.

6.6 White standard. Barium sulfate of suitable quality for use as a white reference standard is available from the Eastman Kodak Company. The same source has available magnesium reagent (ribbon) and Halon. Suitable tiles can be obtained from the National Bureau of Standards or the instrument manufacturers.

6.7 Fabric defect scales. Fabric defect replica kits are available from Sears Roebuck Company, Department 817 (ATTN: BSC 23-29), Sears Tower, Chicago, IL 60684.

6.8 Subject term (key word) listing.

Cloth  
Cotton  
Osnaburg

MILITARY INTERESTS:

Custodians:

Army - GL  
Navy - NU  
Air Force - 99

CIVIL AGENCY COORDINATING ACTIVITIES:

AGR - AMS  
VA - OSS  
GSA - FSS  
USPS - POS  
DCG

Review Activities:

Army - MD, MI, AR  
Navy - CG  
Air Force - 82  
DLA - CT

PREPARING ACTIVITY:

Army - GL  
Project No. 8305-0195

User Activities:

Army - ME, AT, SM  
Navy - MC  
Air Force - 45