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SUPERSEDING
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MILITARY SPECIFICATION

CLOTH, BANNER, RAYON

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 rayon banner cloth.

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.

SPECIFICATIONS

FEDERAL

PPP-P-1133 - Packaging of Synthetic Fiber Fabrics

STANDARDS

FEDERAL

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

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, Pennsylvania Avenue at Sixth Street, N.W., Washington, DC 20580.)

(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.)

- * 2.2 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, AATCC National Headquarters, P.O. Box 12215, Research Triangle Park, NC 27709-2215.)

COLOR ASSOCIATION OF THE UNITED STATES

Standard Color Reference of America

(Application for copies should be addressed to the Color Association of the United States, Inc., 343 Lexington Avenue, New York, NY 10016).

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

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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 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 Material.

3.2.1 Rayon. The rayon shall be multifilament cuprammonium rayon.

3.2.1.1 Yarn. The yarn shall be 2-ply for both the warp and filling.

* 3.3 Color. The color shall be as specified (see 6.2). Shade designations and cable numbers (see 6.3.1) are from the Color Association of the United States (see 2.2 and 6.4). The dyeing shall be accomplished on the yarns prior to weaving, using vats, naphthols, or cellulose reactive dyes as appropriate (see 6.3.1). The use of solution dyed cuprammonium yarns in lieu of the above dye types is permitted provided that the hue and brilliancy of the shade can be achieved. Care should be exercised during dyeing to achieve a degree of penetration of the yarns such that the finished cloth shall show no more barre than is shown by the standard sample.

* 3.3.1 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 $2300 \pm 200K$.

* 3.3.2 Colorfastness. The finished cloth shall show fastness to wet drycleaning and light 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 of not lower than 7.5, except that for naphthol dyed cloth shall have an AATCC Chromatic Transference Scale rating of not lower than 6.5. Testing shall be as specified in 4.3.

3.4 Physical requirements. The dyed and finished cloth shall conform to the requirements as specified in table I when tested as specified in 4.3.

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TABLE I. Physical requirements

Weight per square yard, ounces (minimum)	Yarns per inch (minimum)		Breaking strength, pounds (minimum)		Weave
	Warp	Filling	Warp	Filling	
5.0	282	94	125	50	$\frac{2}{2}$ Right twill

3.4.1 Width. The width of the cloth shall be as specified (see 6.2) and shall be the minimum acceptable width inclusive of selvages when fly shuttle looms are used, and exclusive of selvages and fringe when shuttleless looms are used. Tuck-in selvages shall not be permitted.

3.5 Finish. The cloth shall have a hand and drape equal to or better than the standard sample. The use of resin finishes to impart stiffness to the cloth is prohibited, unless otherwise specifically approved and authorized by the contracting officer (see 4.3).

3.5.1 pH. The pH value of the water extract of the finished cloth shall be no less than 5.5 nor more than 8.5 when tested as specified in 4.3.

3.6 Length and put-up. Unless otherwise specified (see 6.2), the finished cloth shall be furnished in continuous lengths, each not less than 50 yards. Each length shall be put up in a full width roll as specified in 5.1.1.

3.7 Fiber identification. Each roll of cloth shall be labeled and ticketed for fiber content in accordance with the Textile Fiber Products Identification Act.

3.8 Workmanship. The finished 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.

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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 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. 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.

4.2.2 End item examination.

4.2.2.1 One hundred percent inspection. The entire yardage of each roll of cloth shall be inspected on both sides. All defects listed below that are clearly noticeable at normal inspection distance (3 feet) shall be scored as a defect. All defects found shall be counted except where two or more defects appear within 1/2 linear yard of the cloth, in which case only one defect shall be counted. A continuous defect shall be counted as one defect for each warpwise yard or fraction thereof in which it occurs. Each defect shall be marked with a red string, 1 inch to 1 1/2 inches long, sewn into the selvage opposite the defect. A deduction of 1/4 yard for each strung defect shall be

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subtracted from the gross length of the roll to determine the net yards to be entered on the roll ticket. Acceptance by the Government shall be on a net yardage basis.

Cut, hole, or tear
 Broken or missing yarn
 Smash
 Float, mispick, harness skip, or other misweave
 Hitchback, stripback
 Open or thin place, crack (warp or filling)
 Knot, kink
 Loose, slack, or tight yarns
 Reed mark, wrong draw
 Abrasion mark, bruise, tender or weak spot
 Crease or wrinkle, embedded
 Selvage cut, torn, folded, rolled, slack, tight or scalloped with indentations more than 1/2 inch
 Filling bar, coarse filling, or mixed filling
 Spot, stain, streak, or dirty yarn —
 Foreign matter

4.2.2.2 Overall examination. The cloth shall be examined for extensive, general, or overall defects. Any roll containing any of the following defects shall be rejected.

Finish not equal to nor better than standard
 Offshade, or uneven throughout piece
 Mottled, cloudy, streaky, or barre
 Overall uncleanness or soiled
 Baggy, ridgy, wavy, or unevenly woven
 Width not within established tolerances
 Net length less than indicated on the ticket
 Incorrect deduction for defects strung by the supplier, as indicated on piece ticket
 Fiber identification marking omitted

4.2.3 Government verification. Verification examination shall be on a sampling basis.

4.2.3.1 Yard-by-yard examination. The finished cloth shall be examined for the defects listed in 4.2.2.1. Any defect not strung and visible at normal inspection distance (3 feet) and not within 1/2 linear yard of a strung defect shall be scored. The lot shall be expressed in units of one yard each. The sample unit shall be one linear yard. The inspection level shall be III and the acceptable quality level (AQL) shall be 1.0 unstrung defects per 100 linear yards. If the number of unstrung defects in the sample equals or exceeds the reject number for the sample size and foregoing AQL, the entire lot shall be returned to the contractor for screening and stringing of all unstrung defects.

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4.2.3.2 Overall examination. The sample size for overall examination shall be the number of rolls selected for the yard-by-yard examination (see 4.2.3.1). The lot shall be unacceptable if one or more rolls contain any of the defects listed in 4.2.2.2.

4.2.4 Shade examination. Each roll in the lot shall be examined visually for shade match (see 3.3.1). A roll shall be unacceptable if it fails to meet the requirements for shade match. The sample unit for this examination shall be a 4-inch by 20-inch swatch of the cloth. A sample unit shall be drawn from each roll in the lot.

4.3 End item testing. The cloth shall be tested for the characteristics listed in table III. 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, except where otherwise specified, apply to the results of the determinations made on a sample unit for test purposes as specified in the applicable test method. All test reports shall contain the individual values utilized in expressing the final result. The sample unit shall be 1 1/2 continuous yards full width of the finished cloth. The lot size shall be expressed in units of one yard. The lot shall be unacceptable 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 (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 reference</u>	<u>Test method</u>
Rayon fiber identification	3.2.1	<u>1/</u>
Multifilament	3.2.1	Visual <u>2/</u>
Yarn ply		
Warp	3.2.1.1	Visual <u>2/</u>
Filling	3.2.1.1	Visual <u>2/</u>

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TABLE II. End item tests - Continued

Characteristic	Requirement reference	Test method
Colorfastness to:		
Light	3.3.2	5660
Crocking	3.3.2	5651 <u>3/</u>
Wet drycleaning	3.3.2	5622 <u>3/</u>
Weight	3.4	5041
Yarns per inch:		
Warp	3.4	5050
Filling	3.4	5050
Breaking strength:		
Warp	3.4	5100
Filling	3.4	5100
Weave	3.4	Visual <u>2/</u>
Finish	3.5	<u>4/</u>
pH	3.5.1	2811

1/ Unless otherwise specified, a certificate of compliance shall be submitted and will be acceptable for the stated requirement.

2/ One determination for each sample unit and the result reported as "pass" or "fail".

3/ When naphthol dyes are used, the contractor shall so indicate on his test report.

4/ The contractor shall certify that resin finishes have not been used to impart stiffness to the cloth; however, if authorized by the contracting officer, the supplier shall certify as to the type of resin used.

4.4 Packaging examination. The examination shall be in accordance with the quality assurance provisions of PPP-P-1133.

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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-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 of purchase order, shipments shall be marked in accordance with the requirements of PPP-P-1133.

6. NOTES

6.1 Intended use. The rayon banner cloth is intended for use in the manufacture of various types of flags.

6.2 Ordering data. Acquisition documents should specify the following:

- a. Title, number, and date of this document.
- b. Color required (see 3.3).
- c. Width required (see 3.4.1).
- d. Minimum length if other than specified (see 3.6).
- e. Selection of applicable levels of 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.

6.3.1 Dye formulations of standard samples. The standard samples of the rayon banner cloth supplied by the contracting officer have been dyed with vat, naphthol, or reactive dyes. The following formulations were used in dyeing the various standards:

65001 - U.S. Army Golden Yellow Vat Yellow 2 CI 67300	65010 - U.S. Army Ultramarine Blue
65002 - U.S. Army Yellow	70087 - U.S. Army Royal Blue Vat Blue 6 - CI 69825 Vat Violet 1 - CI 60010
65003 - U.S. Army Golden Orange	65011 - U.S. Army Cobalt Blue Vat Blue 18 - CI 59825 Vat Blue 6 - CI 69825 Vat Black 27 - CI 69005
65004 - U.S. Army Orange Vat Yellow 2 - CI 67300 Vat Orange 2 - CI 59705	

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65005 or 70001 - U.S. Army White	65012 - U.S. Army Dark Blue
Vat Blue 4 - CI 69800	Vat Green 1 - CI 59825
Fluorescent Brightener	Vat Blue 18 - CI 59815
65006 - U.S. Army Scarlet	65013 - U.S. Army Crimson
Azoic Coupling - CI 37565	Vat Red 13 - CI 70320
Azoic Diazo 13 - CI 37130	Vat Violet 1 - CI 60010
Azoic Diazo 4 - CI 37210	Vat Red 1 - CI 73360
65007 - U.S. Army Green	65014 - U.S. Army Light Blue
Vat Green 1 - CI 59825	Vat Blue 6 - CI 69825
Vat Yellow 2 - CI 67300	Vat Black 27 - CI 69005
Vat Orange 2 - CI 59705	Vat Violet 13 - CI 68700
65008 - U.S. Army Silver Gray	65015 - U.S. Army Buff
Vat Black 27 - CI 69005	Vat Yellow 2 - CI 67300
Vat Violet 13 - CI 68700	Vat Brown 3 - CI 69015
65017 - U.S. Army Maroon	65024 - U.S. Army Teal Blue
Azoic Coupling 7 - CI 37565	Vat Blue 6 - CI 69825
Azoic Coupling 3 - CI 37575	Vat Green 1 - CI 59825
Azoic Diazo 1 - CI 37135	Vat Black 27 - CI 69005
65019 - U.S. Army Sky Blue	70082 - U.S. Army Dark Cardinal
Vat Blue 18 - CI 59815	Azoic Coupling 7 - CI 37565
Vat Green 1 - CI 59825	Azoic Diazo 9 - CI 37040
65020 - U.S. Army Brick Red	70180 - U.S. Army Old Glory Red
Vat Orange 2 - CI 59705	Azoic Coupling 7 - CI 37565
Vat Red 13 - CI 70320	Azoic Diazo 13 - CI 37130
Vat Brown 3 - CI 69015	Azoic Diazo 12 - CI 37105
Vat Brown PR - CI 380	70168 - U.S. Army Irish Green
65021 - U.S. Army Old Gold	Vat Green 1 - CI 59825
Vat Yellow 2 - CI 67300	Vat Yellow 2 - CI 67300
Vat Black 27 - CI 69005	70077 - U.S. Army National Flag Blue
65022 - U.S. Army Mosstone Green	Vat Blue 18 - CI 59815
Vat Yellow 2 - CI 67300	Vat Blue 6 - CI 69825
Vat Black 27 - CI 69005	Vat Black 27 - CI 69005
Vat Green 1 - CI 59825	70075 - U.S. Army National Flag Blue
	Vat Blue 18 - CI 59815
	Vat Black 27 - CI 69005
	Vat Blue 6 - CI 69825

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6.4 Standard colors. When standard color references are not available from the Color Association of the United States, they may be obtained from the contracting activity.

6.5 Subject term (key word) listing.

Banner
Cloth
Flags
Rayon

6.6 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.

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Navy - NU
Air Force - 99

Preparing activity:

Army - GL

Project No. 8305-0188

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1 DOCUMENT NUMBER MIL-C-606F	2 DOCUMENT TITLE Cloth, Banner, Rayon
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) _____
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