

MILITARY SPECIFICATION
CLOTH, DRAPERY, BUNK CURTAIN, SLIPCOVERS, AND LABEL, POLY-
ARAMID AND POLYARAMID NOVOLOID FIBER BLENDS,
SHIPBOARD USE

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

1. SCOPE

1.1 Scope. This specification covers inherently fire-safe, shrink-safe, woven polyaramid and polyaramid/novoloid fiber blended fiber cloth primarily intended for use in fabrication of bunk curtains, draperies, slipcovers, and labels for various shipboard applications.

1.2 Classification.

1.2.1 Types. Cloth covered by this specification shall be of the following types, as specified (see 6.2):

- Type I - Polyaramid.
- Type II - Polyaramid/novoloid fiber blend.

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

FEDERAL

- DDD-L-20 - Label, For Clothing, Equipage, And Tentage (General Use).
- PPP-P-1133 - Packaging And Packing Of Synthetic Fiber Fabrics.

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- MIL-D-12182 - Detergent, Laundry (Powdered, Flaked, Bead Or Granular).

STANDARDS

FEDERAL

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

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- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-1623 - Fire Performance Requirements and Approved Specifications for Interior Finish Materials and Furnishings (Naval Shipboard Use).

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

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- D1175-71 - Abrasion Resistance of Textile Fabrics, Tests for.
- D1391-57 - Measurement of Odor in Atmospheres (Dilution Method).
- D1905-68 - Dimensional Changes in Woven or Knitted Textiles Excluding (Excluding Wood), Test for.
- STP 422 - Special Technical Publication. Method for Measuring Smoke from Burning Materials.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.)

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FEDERAL TRADE COMMISSION PUBLICATION
Textile Fiber Products Identification Act (16 CFR 303).

(Copies may be obtained from the Federal Trade Commission, Washington, D.C. 20580.)

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS (AATCC)
AATCC Color Transference Chart.

(Copies may be obtained from the American Association of Textile Chemists and Colorists,
P.O. Box 12215, Research Triangle Park, North Carolina 27709.)

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

3. REQUIREMENTS

3.1 Sample for first article inspection. When required, prior to beginning production a sample shall be tested as specified in 4.3 (see 6.4). A three yard full width sample of the finished cloth shall be submitted or made ready for the contracting officer or his authorized representative for inspection, as specified (see 6.2).

3.1.1 Standard sample (type I only). When a standard sample is available the cloth shall match the sample with respect to all characteristics for which the standard sample is referenced (see 6.3).

3.2 Material.

3.2.1 Fibers and yarns. Fibers and yarns shall be of virgin quality polyaramid and polyaramid/novoloid fiber blends designed for textile usage.

3.3 Weave. Unless otherwise specified (see 6.2) the woven cloth shall be opaque or translucent.

3.4 Color. The fiber may be dope dyed, dyed, printed, or virgin color. The color of the cloth shall be as specified (see 6.2). The coloring matter shall be imparted by the application of dyes or by the use of organic or inorganic pigments applied to the fibers, yarn, or woven cloth or dope dyed as applicable.

3.4.1 Colorfastness. The colorfastness of the cloth where dye stuffs have been applied, to light, wet and dry crocking, heat ageing and laundering, shall be as follows:

3.4.1.1 Light. The cloth shall show "good" colorfastness to light after 10.0 standard fading hours when tested in accordance with 4.5.

3.4.1.2 Crocking (wet and dry). The cloth shall show an adjective rating of "good" (Munsell Value 8.5) or numerically Rating of 3.0 (good), AATCC Color Transference Chart, when using white crock cloth and tested in accordance with 4.5.

3.4.1.3 Heat ageing (type I only). The cloth shall show "good" colorfastness to heat after seven days of exposure when tested in accordance with 4.5.1.

3.4.1.4 Laundering. The cloth shall show no less than class "3.5" (moderate) colorfastness to laundering when tested in accordance with 4.5.2 and rated in accordance with AATCC gray scale for evaluating change in color.

3.4.1.5 Color, shade, and finish. The color, shade, and finish shall approximate standard samples when standard samples are available. When standard samples are not available, the color, shade, and finish shall approximate for first article samples which have been approved by the contracting officer as conforming to the desired color, shade, and finish (see 3.1 and 6.3).

3.5 Odor. The material shall have no objectionable odor. (An objectionable odor shall be defined as that other than the typical odor of the material.) When tested in accordance with 4.5.5 the odor concentration shall be 10 or less.

3.6 Shrinkage. The fabric shall not shrink more than 3 percent when tested in accordance with 4.5.3.

3.7 Width. When cloth is required for delivery to Government installations, the width inclusive of selvage shall be as specified by the procuring activity with a plus or minus tolerance of 2 percent (see 6.2).

3.8 Designs and patterns. The designs and patterns, dyed color or natural, shall be as specified (see 6.2).

3.9 Length. Unless otherwise specified (see 6.2), cloth shall be in one continuous length of $50 \pm 2\frac{1}{2}$ yards, put up in rolls in accordance with PPP-P-1133, when purchased by Government agencies.

3.10 Physical requirements. The finished cloth shall conform to the physical requirements in table I when tested in accordance with 4.5.

Table I - Physical requirements.

Characteristic	Requirement
Weave texture	Closed weave
Breaking strength (pounds, min)	
Warp	100
Fill	40
Weight per square yard (ounces, min)	5.0 ± 0.2

3.11 Fire resistance and optical smoke density. The finished cloth shall conform to the fire resistance and optical smoke density requirements set forth in MIL-STD-1623 (see 4.5).

3.11.1 Fire resistance after laundering. The fire resistance shall not change after five launderings (see 4.5.2).

3.12 Hand, character, and appearance. The hand, character and appearance of the cloth after testing for colorfastness to laundering, heat ageing, and light shall show no appreciable change from the original cloth when tested in accordance with 4.5.4.

3.13 Marking. The length of each roll shall be legibly marked with indelible ink on a ticket securely attached to the roll.

3.14 Abrasion resistance. Fabric weight loss shall be not greater than 4 percent for polyaramid cloth or 20 percent for polyaramid/novoloid fiber blended cloth when tested in accordance with 4.5 except that a 5 minute test time and the Impeller Tumble method referenced in Report paragraph of ASTM D1175-71.

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

3.16 Labels. Labels shall be made of a fire-resistive material conforming to this specification, and shall be supplied in the quantity specified by the procuring activity for later attachment to the finished articles (see 6.2). Each label shall have the following information:

- (a) Specification number, and type.
- (b) Manufacturer of the woven cloth.
- (c) Laundering instructions:
 - (1) WASH CURTAINS BY THEMSELVES at a temperature not greater than $160^\circ + 5^\circ\text{F}$.
 - (2) Rinse twice.
 - (3) Use commercial fabric softener.
 - (4) Tumble dry (not to exceed 140°F).
 - (5) Dry cleaning acceptable.
- (d) Lot number.

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4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier 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 the specification where such inspections are deemed necessary to assure 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 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.

4.3.1 First article sample. If more than one weave, color, or pattern of cloth is procured at any one time, only one three yard cut for each fabric shall constitute the first article sample.

4.3.2 First article inspection. First article inspection shall consist of the examination and tests specified in 4.5. Sample shall be visually inspected for appearance, color, and finish.

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

4.4.1 Examination of end item. Defects found during the examination shall be classified as specified in 4.4.1.1 through 4.4.1.5.

4.4.1.1 Yard-by-yard examination. Each roll in the sample shall be examined on the face side only. When the total yardage in the roll does not exceed 100 yards, the entire yardage in the roll shall be examined. When the total yardage in the roll exceeds 100 yards, only 100 yards shall be examined. All defects as defined in section III of FED-STD-4 which are clearly noticeable at normal inspection distance (3 feet) shall be scored and assigned demerit points as listed in 4.4.1.2, except that only those slubs and knots which exceed the limits shown on figure 2 of FED-STD-4 shall be scored.^{1/} No linear yard (increments of 1 yard 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 in accordance with the following:

<u>Lot size (yards)</u>	<u>Sample size (rolls)^{2/}</u>
3200 or less	8
3201 up to and including 10,000	13
10,001 and over	20

The lot shall be unacceptable if the points per 100 square yards of the total yardage examined exceeds 50 points. The lot shall be unacceptable if the points per 100 square yards of two or more individual rolls exceed 75 points. If one roll exceeds 45 points per 100 square yards, a second sample equal in size to that of the first sample shall be examined only for individual roll quality examination. The lot shall be unacceptable if one or more rolls in the second sample exceeds 45 points per 100 square yards. Point computation for lot quality and individual roll quality shall be as follows:

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

^{1/}Type II material shall not be subject to demerits for slubs.

^{2/}No more than one roll shall be taken from any shipping container unless the number of shipping containers in the lot is less than the required number of rolls in which case all shipping containers shall be present in the sample.

4.4.1.2 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 6 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:

- (a) Baggy, ridgy, or wavy cloth.
- (b) Width less than specified.
- (c) Uneven weaving.
- (d) Objectionable odor.
- (e) Overall uncleanness or discoloration.
- (f) Character of finish not equal to standard sample or first article when applicable.

4.4.1.3 Examination for length of individual rolls. The individual roll shall be examined for gross length and the number of pieces in the roll. Any gross length found to be more than 2 yards below the gross length marked on the ticket or any roll found to contain more than one piece, when applicable, shall be considered a defect with respect to length. The unit of product for this examination shall be one roll. The sample unit for this examination shall be one roll.

4.4.1.4 Examination for total yardage in sample. The lot shall be unacceptable if the total of the actual gross lengths of rolls in the sample is less than the total of the gross lengths marked on the roll tickets.

4.4.1.5 Examination for compliance with the Textile Fiber Products Identification Act. During the yard by yard examination, each piece in the sample shall be examined for compliance with the Rules and Regulations under the Textile Fiber Products Identification Act. Each piece not labeled in accordance with this Act shall be a defect. The lot shall be unacceptable if two or more of these defects occur.

4.5 Testing of the end item. The methods of testing specified in FED-STD-191, whenever applicable and as listed in table II shall be followed. The physical values specified apply to the average of the determinations made on a unit of product for test purposes as specified in the applicable test method. The unit of product for test purposes shall be 2 continuous linear yards, full width of the finished cloth. When the data in the "number of determinations per individual unit of product" and the "results reported as" columns are not specified in the following table, they shall be as required by the referenced test methods. The sample size shall be as shown in the list below. The lot size shall be expressed in units of 1 linear yard. The lot shall be unacceptable if one or more units of products fail to meet any test requirements specified.

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

4.5.1 Heat ageing test. The test specimen for colorfastness shall be exposed in an oven for seven days at a temperature of 180°F (+ 2°F). The test sample shall be removed, conditioned and evaluated for change in color and hand. "Good" colorfastness is equivalent to AATCC gray scale class 4 change in color when compared with cutting from piece taken for test.

4.5.2 Laundry tests. Laundry tests shall be conducted in accordance with ASTM D 1905-68. Test option III-E-0 shall be used except that the water temperature shall not exceed 160° + 5°F.

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Table II - Inspection for testing.

Characteristic	Requirement reference	Test method	ASTM method	No. det. per individual sample unit	Results reported as:
Identification of fiber	3.2.1	1600 ^{1/}		----	Pass or fail
Type of yarns	3.2.1	Visual ^{1/}		1	Pass or fail
Weave	Table I	Visual		1	Pass or fail
Weight per square yard	Table I	5041		----	----
Breaking strength:					
Warp	Table I	5100 (GRAB method)		----	----
Filling	Table I	5100 (GRAB method)		----	----
Colorfastness to:					
Light	3.4.1.1	AATCC 16/16B ^{2/}		1	Pass or fail
Heat ageing	3.4.1.3	AATCC 16/		1	Pass or fail
Laundering	3.4.1.4	AATCC 16/		1	Pass or fail
Crocking	3.4.1.2	5651 (method B)		----	----
Odor	3.5		D1391-57	3	----
Flame resistance (warp and filling)	3.11	5903 ^{3/}		6	Pass or fail
smoke density	3.11		STP 422	3	Pass or fail
Hand, character, appearance	3.12	4.5.4		1	Pass or fail
Abrasion resistance	3.14	----	D1175-71	6	Pass or fail

^{1/} Unless otherwise specified a certificate of compliance is acceptable for this requirement and shall be submitted with each lot.

^{2/} The test shall be terminated if at the end of exposure of 10.0 standard fading hours, the material shows no appreciable change in color, or shall be compared with the standard sample, if applicable.

^{3/} Method using an 8 ounce weight shall be used.

4.5.3 Shrinkage. The fabric shall be measured before and after washing (see 4.5.2), and the shrinkage determined.

4.5.4 Hand, character, and appearance. Following colorfastness tests for light, heat ageing, and laundering, samples shall be compared to original samples to determine whether an appreciable change has taken place. The lot shall be unacceptable if one or more units of product show "appreciable change" in the hand, character, and appearance.

4.5.5 Odor test. The odor test shall be conducted in accordance with ASTM D1391-57.

4.6 Inspection of preparation for delivery. Sample packages and packs and the inspection of the packaging, packing, and marking shall be in accordance with the requirements of Section 5 and the documents specified therein.

5. PREPARATION FOR DELIVERY

(The preparation for delivery requirements specified herein apply only for direct Government procurements. For the extent of applicability of the preparation for delivery requirements of referenced documents listed in section 2, see 6.5.)

5.1 Packaging and packing.

5.1.1 Cloth shall be put-up in the form of a roll or flat-fold (bolt) at the supplier's option. Rolls shall be packaged and packed for the level(s) specified (see 6.2) in accordance with PPP-P-1133. Cloth when furnished in the flat-folded (bolt) form shall be packaged and packed as required for rolls in PPP-P-1133.

5.1.2 Labels (see 3.16) shall be packaged and packed for the level(s) specified (see 6.2) in accordance with DDD-L-20.

5.2 Marking. In addition to any special markings required by the contract or order (see 6.2), shipment markings shall be as follows:

- (a) Cloth - Rolls or bolts of materials, as applicable, and shipping containers shall be marked in accordance with the requirements of PPP-P-1133, and shall include date of manufacture.
- (b) Labels - Interior packages and exterior shipping containers shall be marked in accordance with the requirements of DDD-L-20.

6. NOTES

6.1 Intended use. The woven cloth materials detailed in this specification are intended for use as drapes, curtains, and slipcover material on ships and for other applications where extreme fire resistance is required. The type II material shall not be used for slipcovers in weights of less than 6.0 ounces per square yard.

6.2 Ordering data.

6.2.1 Procurement requirements. Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Type required (see 1.2.1).
- (c) Whether a first article sample is required (see 3.1).
- (d) Whether woven cloth is other than opaque (see 3.3).
- (e) Color required (see 3.4).
- (f) Width required (see 3.7).
- (g) Designs and patterns (see 3.8).
- (h) Whether length shall be other than 50 + 2-1/2 yards (see 3.9).
- (i) Labels required (see 3.16 and 5.1.2).
- (j) Selection of applicable levels of packaging, packing, and marking (see 5.1 and 5.2).

6.2.2 Contract data requirements. When this specification is used in a procurement invoking the data requirement clause of the Armed Services Procurement Regulations (ASPR) paragraph 7-104.9(n) and which incorporates a DD Form 1423 Contract Data Requirements List (CDRL), the data requirements identified below will be developed as specified in the cited Data Item Description (DID) and delivered in accordance with such CDRL. When the ASPR provisions are not invoked, the data specified below shall be delivered in accordance with the contract requirements.

<u>Specification paragraph</u>	<u>Data requirements</u>	<u>Service</u>	<u>Applicable DID</u>	<u>Options</u>
(a) 4.3	First article inspection report	SH	UDI-T-23450	---

(Copies of DID's required by the supplier in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

6.3 Standard sample. For access to a standard sample, address the procuring activity using the invitation for bids.

6.4 First article inspection.

6.4.1 Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection as to those bidders offering a product which has been previously procured or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending procurement.

6.5 Sub-contracted material and parts. The preparation for delivery requirements of referenced documents listed in Section 2 do not apply when material and parts are procured by the supplier for incorporation into the equipment and lose their separate identity when the equipment is shipped.

Preparing activity:
Navy - SH
(Project 8305-N310)