

CCC-C-525D
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SUPERSEDING
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FEDERAL SPECIFICATION

CLOTH CURTAIN, MODACRYLIC WARP

AND SARAN FILLING

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

1. SCOPE

1.1 Scope. This specification covers the requirements for one type of fire resistant synthetic cloth.

2. APPLICABLE DOCUMENTS

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

Federal Specifications:

P-S-1792 - Soap, Laundry Chip and Powdered.
PPP-P-1133 - Packaging and Packing of Synthetic Fiber Fabrics

Federal Standards:

FED. STD. NO. 4 - Glossary of Fabric Imperfections.
FED. TEST METHOD STD. NO. 191 - Textile Test Methods.

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

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(Single copies of this specification and other Federal specifications required by activities outside the Federal Government for bidding purposes are available without charge at the General Services Administration Business Service Office in Boston, New York, Philadelphia, PA, Washington, D.C., Atlanta, Chicago, Kansas City, MO, Denver, San Francisco, Los Angeles, Fort Worth, Houston, and Seattle, WA.)

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

Military Standard:

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

(Copies of Military Specifications, Standards, and Drawings required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

Laws and Regulations:

Federal Trade Commission Publication:

Rules and Regulations Under the Textile Fiber Products Identification Act

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

3. REQUIREMENTS

3.1 Standard sample. When a standard sample is available, the 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 First article. When specified, the contractor shall furnish sample unit(s) for first article inspection and approval (see 4.3 and 6.2).

3.3 Material. (See 6.4)

3.3.1 Yarns. The warp yarns shall be 16/2 made from a modacrylic fiber. The filling yarns shall be of suitable size to meet the requirements cited herein and shall be made from 100 percent saran; 80 percent saran and 20 percent viscose rayon; or 100 percent modacrylic fiber. (See 4.5)

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3.4 Color. Unless otherwise specified, the color of the cloth shall be green 3401 (see 6.2).

3.4.1 Colorfastness. The dyed cloth shall show colorfastness to light, dry cleaning, laundering, crocking and heat aging, equal to or better than the standard sample when tested as specified in 4.5. When no standard sample is available, the finished cloth shall show a minimum of "good" colorfastness to light, dry cleaning, laundering and heat aging and shall show a Munsell Value for crocking not lower than 8.5. Testing shall be as specified in 4.5.

3.5. Weave The weave shall conform to figure 1.

3.6 Width. Unless otherwise specified (see 6.2), the width of the cloth shall be 56 (+/- 1/4) inches (142 + 0.6 cm) exclusive of selvages.

3.7 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/msq.)		Yarns/inch (cm)		Breaking strength (lbs) (Min (N))	
Min.	Max	Warp	Filling	Warp	Filling
11.5 (390)	14.5 (492)	50 (+/-1) (19.7+4)	24 (+/-1) (9.4+.4)	150 (660)	45 (200)

3.7.1 Breaking strength after heat aging. The breaking strength of the cloth following the heat aging exposure shall not be less than 95 percent of the material before aging, when tested as specified in 4.5.

*3.7.2 Flame resistance. The time of flaming of the specimen shall not exceed 3 seconds. The average length of char shall not exceed 4.5 inches (11.4 cm) when tested as specified in 4.5. The cloth shall conform to the same requirements stated above after laundering and after dry cleaning when tested as specified in 4.5.

3.7.3 Flexibility. The hand, drape, and stiffness of the cloth shall not show any appreciable change from the original material, when tested as specified in 4.5.

3.8 Length. Unless otherwise specified, the finished cloth shall be put up in rolls as specified in PPP-P-1133 containing lengths of 40 yards (36.6m) minimum to 100 yards (91.4m) maximum. There shall be not more than 2 pieces per roll and no piece shall be less than 8 yards (7.3m) in length. Two-piece lengths in rolls totaling 40 to 65 yards (36.6 to 59.4m) will be acceptable up to 20 percent of the contract quantity. Piece tickets shall be properly marked to identify 2-piece rolls as such.

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3.9 pH. The pH value of the water extract of the dyed and finished cloth shall be no less than 5.5 nor more than 8.5 when tested as specified in 4.5.

3.10 Face identification. The face side of the cloth shall be identified by applying a stamping on that side of the cloth with the work "Face" at each end of the roll.

3.11 Fiber identification. Each roll of cloth shall be labeled, or ticketed, for fiber content in accordance with the Rules and Regulations under the Textile Fibers Products Identification Act.

3.12 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.

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 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 the specification where such inspections are 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 inspections. The inspection requirements specified herein are classified as follows:

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

4.3 First article inspection. The first article submitted in accordance with 3.2 shall be visually inspected for finish, construction, appearance and color and shall be tested for physical properties in accordance with the test 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 tested in accordance with all requirements of referenced specifications, drawings, and standards unless otherwise excluded, amended, modified, or qualified in this specification or applicable procurement document.

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 roll contains less than 100 yards (91.4m), the entire roll shall be examined. When the roll contains 100 yards or more, only 100 yards (91.4m) shall be examined. All defects as defined in Section I of FED-STD-4, which are clearly noticeable at normal inspection distances (3 feet), shall be scored and assigned demerit points as listed in 4.4.2.2 except that only those slubs and knots which exceed the limits shown on Sears Fabric Defect Scale (See 6.5), D for slubs and C for knots, shall be scored. No linear yard (increments of 1 yard (.9m) 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 30.0 points. The lot shall be unacceptable if the points per 100 square yards (83.6m²) of two or more rolls exceeds 45.0 points. If one individual roll exceeds 45.0 points per 100 square yards (83.6m²) a second sample equal in size to the first shall be selected for individual roll quality examination. The lot shall be unacceptable if one or more rolls in the second sample exceeds 45.0 points per 100 square yards (83.6m²). Point computation for lot quality and individual roll quality shall be as follows:

$$\begin{array}{rcl} \text{Total points scored in sample} & \times & 3600 \\ \text{Contracted width of cloth (inches)} & \times & \text{Total yards inspected} \end{array} \quad = \quad \begin{array}{l} \text{Points per 100} \\ \text{Square yards} \\ (83.6 \text{ m}^2) \end{array}$$

4.3.2.2 Demerit Points. Demerit points shall be assigned as follows:

For defects 3 inches (7.6cm) or less in any dimension	- one point
For defects exceeding 3 inches (7.6cm) but not exceeding 6 inches (15.2cm) in any dimension	- 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 four points for each yard (0.9m) 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 (poor dye penetration, mottled, streaky or cloudy)

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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 the 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 face identification, identification of preshrinking process 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, two or more rolls in the sample contain identification of the preshrinkage process by name or trademark on the cloth or ticket, 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 provisions of PPP-P-1133 to determine that packaging, packing and marking comply with the 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 when 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 (1.8m) full width of the cloth. The lot size shall be expressed in units of 1 yard (.9m). The sample size shall be as follows and the lot shall be unacceptable if one or more sample units fail to meet any requirement specified.

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

Table II Test Methods

Characteristic	Requirement Reference	Test method
Warp yarn:		
Type fiber	3.3.1	1600 [1]
Yarn number	3.3.1	4020 [1][5]
Yarn ply	3.3.1	Visual [1]
Filling yarn:		
Type fiber	3.3.1	2100 [4] [1]
	3.3.1	1500, 1600 [1]
	3.3.1	1540 [1] [5]
Yarn number	3.3.1	[1]
Colorfastness to:		
Light	3.4.1	5660 [2]
Drycleaning	3.4.1	5508 [3]
Heat aging	3.4.1	4.5.1 [5]
Laundering	3.4.1	4.5.2 [5]
Crocking	3.4.1	5651
Weave	3.5	Visual [5]
Yarns per inch:		
Warp	Table I	5050
Filling	Table I	5050
Weight	Table I	5041
Breaking strength		
(Initial:		
Warp	Table I	5100
Filling	Table I	5100
After aging:		
Warp	3.7.1	5100 and 4.5.1
Filling	3.7.1	5100 and 4.5.1
Flame resistance (Initial)		
Warp and filling:		
Flame time	3.7.2	5903
Length of char	3.7.2	5903
After laundering:		
Warp and filling		
Flame time	3.7.2	5903 and 4.5.2
Length of char	3.7.2	5903 and 4.5.2
After drycleaning:		
Warp and filling		
Flame time	3.7.2	5903 and 5508 [3]
Length of char	3.7.2	5903 and 5508 [3]
Flexibility	3.7.3	4.5.3 [5]
pH	3.9	2811

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- [1] 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 to 80 standard fading hours, the material shows no appreciable change in color.
- [3] Except preparation of drycleaning solution shall be as specified in method 5622.
- [4] Under method 2100, determination of starch protein content shall not be performed. The weight of the dry residual fiber is equal to the percent of polyvinylidene chloride. The percent of viscose = 100% - % PVC.
- [5] One determination per sample unit and the results reported as "pass" or "fail".

4.5.1 Heat aging test. The specimens for colorfastness and breaking strength shall be exposed in an oven for ten days at a temperature of 180 F. (+/-2 F (82 C +/-1C). The test samples shall be removed, conditioned, and evaluated for change in color and breaking strength.

4.5.2 Laundry tests.

4.5.2.1 Apparatus. A washing machine equal or similar to that specified in method 5550 of Fed. Std. No. 191 shall be used.

4.5.2.2 Washing procedure. A sample of cloth 24 inches (61cm) square shall be cut from the material under test. The test specimen, together with sufficient additional cloth to give a total dry weight of 3 pounds (1.4Kg) shall be placed in the wheel of the washing machine, and the material washed according to the procedure shown in Table III. The washed specimen shall then be dried at room temperature for 24 hours prior to testing.

TABLE III Washing procedure

Bath No.	Water	Temperature	Duration of bath	Soap[a]	Builder[b]
	Gal. (l)	Degrees F. (C)	Minutes	Grams	Grams
1	22 (83.3)	100 (38)	3	0	0
2	22 (83.3)	140 (60)	20	47	23
3	22 (83.3)	140 (60)	20	23	23
4	22 (83.3)	140 (60)	3	0	0
5	22 (83.3)	130 (54.3)	3	0	0
6	22 (83.3)	100 (38)	3	0	0

[a] Conforming to P-S-579.

[b] Soda ash. Na₂C deg. 3

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4.5.3 Flexibility. A specimen, 12 by 8 inches (30.5 by 20.3cm) shall be exposed to a temperature of 0 deg. F (-18 deg. C) for 2 hours, and shall then be evaluated manually.

5. PACKAGING

5.1 Preservation-Packaging. Packaging shall be level A or C, as specified (see 6.2).

5.1.1 Level 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 shall be level A, B, or C (see 6.2).

5.2.1 Level 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 applicable requirements of PPP-P-1133.

6. NOTES

6.1 Intended use. The cloth covered by this specification is intended for the fabrication of fire-resistant curtains in government buildings.

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] When first article sample is required (see 3.2).
- [c] Color required if other than specified (see 3.4).
- [d] Width required if other than specified (see 3.6).
- [e] Selection of applicable levels of packaging and packing (see 5.1 and 5.2).

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

6.4 Recycled material. It is encouraged that recycled materials be used when practical as long as they meet requirements of this specification.

6.5 Sears Fabric Defect Scale are available from Sears, Roebuck and Company, Department 7330, "Fabric Defect Replica Kit", Sears Tower, Chicago, Illinois 60684

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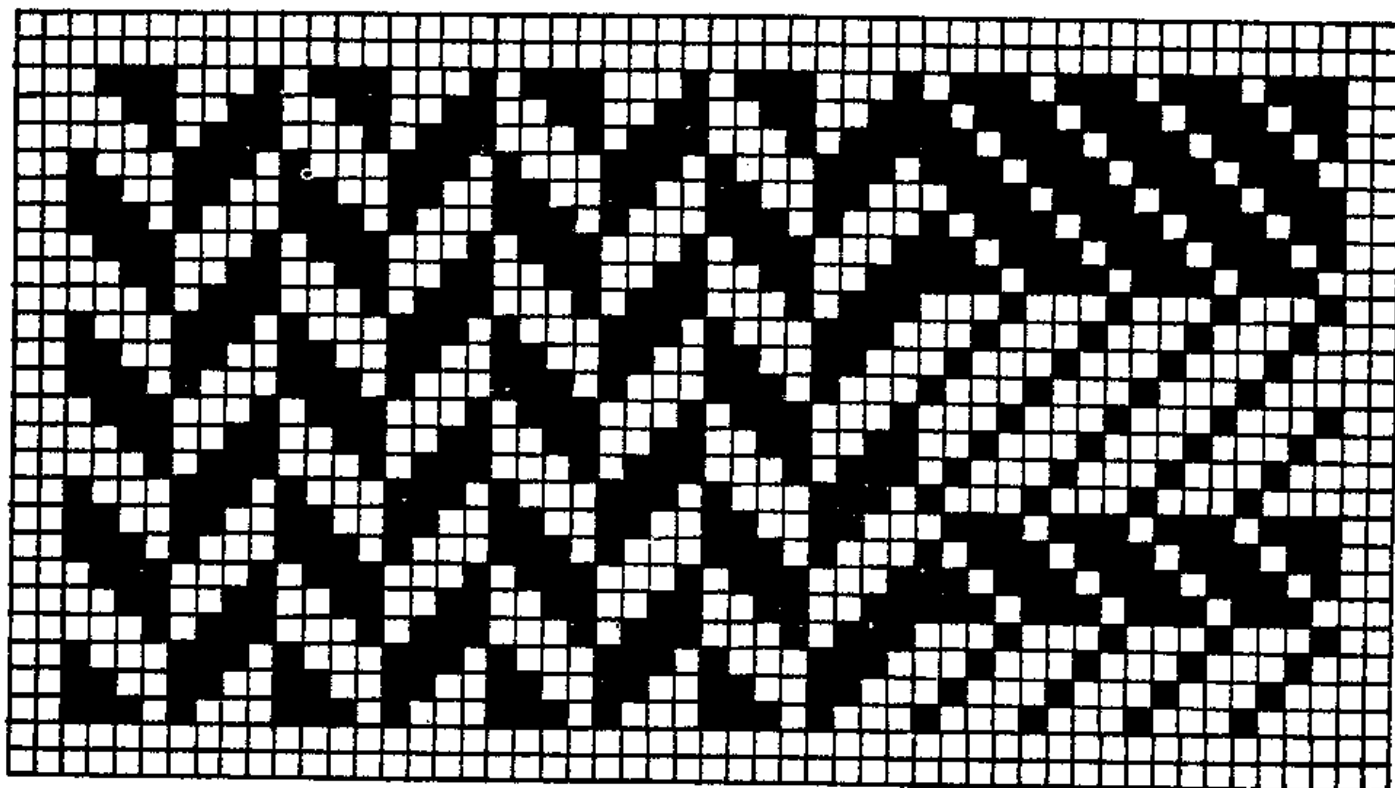


Figure 1. Weave pattern.

