

MIL-C-23070B

30 August 1972

SUPERSEDING

MIL-C-23070A(AS)

12 April 1966

MILITARY SPECIFICATION

CLOTH, LAMINATED, AND TAPE, COATED CLOTH, POLYISOPRENE,
NATURAL OR SYNTHETIC, RUBBER ON NYLON

* This specification is approved for use by
all Departments and Agencies of the Depart-
ment of Defense.

1. SCOPE

1.1 Scope - This specification covers requirements for pro-
curement of polyisoprene, natural or synthetic, rubber laminated nylon cloth
and coated cloth tape used in the construction of inflatable life rafts.

1.2 Classification - The fabrics shall be of the following
varieties as specified (see 6.2):

Variety C - Laminated cloth, 11.4 ounces per square
yard, min.

Variety D - Laminated cloth, 8.15 ounces per square
yard, min.

Variety T - Coated cloth tape, 5.4 ounces per square
yard, min.

* 2. APPLICABLE DOCUMENTS

2.1 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:

SPECIFICATIONS

Federal

PPP-P-1136

Packaging and Packing of Coated (Plastic,
Rubber) and Laminated Fabrics

FSC 8305 and 8315

MIL-C-23070B

SPECIFICATIONS

Military

MIL-C-7020	Cloth, Nylon, Parachute
MIL-C-19377	Cloth, Twill, Nylon
MIL-W-43334	Webbing and Tape, Textile, Packaging and Packing of

STANDARDS

Federal

FED-STD-191	Textile Test Methods
FED-STD-595	Colors
FED-STD-601	Rubber, Sampling and Testing

Military

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-1487	Glossary of Cloth Coating Imperfections

(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.)

3. REQUIREMENTS

* 3.1 Samples -

* 3.1.1 Laboratory report approval - Unless otherwise specified at the time of submission of a bid (see 6.2), the bidder shall submit to the contracting officer a certified copy of a recent laboratory report covering material which he proposes to deliver. Unless otherwise specified by the contracting officer, the bidder shall certify that the laminated cloth and coated cloth tape were manufactured in a plant where the coating will be performed if a contract is awarded. The laboratory report shall contain test data which demonstrates that the laminated cloth which the supplier proposes to deliver has been tested, and complies with the requirements of this specification. Any one of the following types of report will be satisfactory from the standpoint of this requirement.

MIL-C-23070B

- (a) An independent or commercial laboratory report.
- (b) The prospective supplier's own laboratory report.
- (c) A governmental laboratory report from a contract within 6 months of the date of submission of bid.

The purpose of the above requirement is to assist the Government to determine the capability of bidders to manufacture a laminated cloth meeting all the requirements of this specification.

* 3.1.2 First article - When specified (see 6.2), the supplier shall furnish a sample for first article inspection and approval. The submission of an acceptable sample under this requirement shall not be construed as relieving a supplier from subsequently meeting all requirements of the specification on all deliveries.

3.2 Materials - The finished laminated cloth and coated cloth tape shall consist of nylon base cloths uniformly coated with a polyisoprene, natural or synthetic, rubber compound and constructed in accordance with 3.5 or 3.7.

3.2.1 Base cloth - The base cloth shall be undyed nylon and shall conform to the following specifications or requirements:

- (a) MIL-C-19377
- (b) MIL-C-7020, Type I or Type II, as specified, except that silicone oil shall not be used and the cloth need not conform to the air permeability and permanence of finish requirements. The cloth shall be scoured and uniformly heat set.
- (c) The nylon yarn used in this base cloth shall be bright, high-tenacity, heat and light resistant polyamide prepared from hexamethylene diamine and adipic acid or its derivatives, and shall have a melting point of 471.2°F (244°C) min. The yarn shall be first quality and knot free. The yarn shall be of 100 denier with 6 turns per inch in the warp direction and 5 turns per inch in filling direction. The nylon cloth shall have a minimum 80 yarns per inch in both the warp and filling direction and shall weigh 2.35 - 2.55 ounces per square yard. The cloth shall have a breaking strength (strip) of 115 pounds, minimum, for both the warp and filling direction. The cloth shall be scoured and uniformly heat set.

MIL-C-23070B

Each defect shall be marked with a single strand thread, sewn into the selvage opposite the defect. It shall not increase the cloth thickness and, when coated, shall permit uniformity of coating on the spreading machine. The marking thread shall be such that it shall be visible after the cloth is coated (see 4.5.1).

3.2.2 Coating - The compound used in coating and laminating the base cloths shall contain not less than 80 percent by volume of new plantation natural or polyisoprene rubber. The compound shall also contain softeners, curing agents, anti-oxidants and reinforcing materials. The compound used in the outer coatings shall be pigmented during the compounding process so that the cured coating shall have a uniform and permanent color as specified in 3.3. The pigment shall be of such fineness that 100 percent of the pigment shall pass through a standard 325 mesh screen. The foundation coating and rubber coating compounds shall not be injurious to the base cloth and shall contain no compounding ingredients which would bloom to the surface or which would adversely affect the specified properties of the finished laminated cloth or coated cloth tape. The compounding ingredients shall be prepared in such proportions as to cure properly and provide proofing films which shall be insoluble in water. The coating compound, cured in sheet form to the same degree of cure and in the same manner as the finished product, shall conform to the physical requirements specified in Table I when tested as specified in Table IX.

3.2.2.1 Coating adhesion - The coating adhesion test specimens described in 4.2.1.1 shall have a coating adhesion of not less than 7.0 pounds per inch of width when tested as specified in Table VIII.

* 3.3 Color - The color of the finished laminated cloth and coated cloth tape shall be as specified by the procuring activity. The procuring activity will usually select Color Chip 32246, lusterless orange or Color Chip 35042, lusterless blue (usually on straight ply side) of FED-STD-595 for the laminated cloth. Normally, the pure gum rubber coating of the coated cloth tape, which is not fully cured, shall not be pigmented. The opposite side shall match the selected color (see 4.5.4 and 6.2).

TABLE I

Physical Properties of Cured Coating Compound

Characteristic	Requirement
Water extract, percent	1.0 max
Tensile strength	
Original, psi	2300 min
After heat aging for 168 hours at 212 \pm 5°F (100 \pm 3°C), percent loss	30 max
Elongation	
Original, percent	450 min
After heat aging for 168 hours at 212 \pm 5°F (100 \pm 3°C), percent loss	15 max
Shore hardness reading	
Original	50 \pm 10
After heat aging for 168 hours at 212 \pm 5°F (100 \pm 3°C), change	\pm 5

3.4 Age - Material offered for acceptance under this specification shall be from current production, and not more than 90 days old prior to release for shipment by the Government Quality Assurance Representative. The date of completion of the coating or laminating operations shall be stamped at the end of each roll and on the identification tags. The ink used for stamping this date of manufacture on the roll shall be free of manganese and copper.

* 3.5 Laminated cloth construction and weight distribution - The construction and weight distribution of components of the finished cloth shall be as specified in Table II. The maximum weight of the Variety C finished cloth shall be 12.5 ounces per square yard. The maximum weight of the Variety D finished cloth shall be 9.2 ounces per square yard. Necessary splicing shall be accomplished with a cloth overlap of $3/4 \pm 1/8$ inch (see 4.5.3). Each roll shall contain no more than an average of one splice per 20 yards.

MIL-C-23070B

TABLE II
Laminated Cloth Construction and Weight

Layer	Material	Weight oz per sq yd, min
<u>Variety C:</u>		
1	Rubber	1.5
2	Nylon, straight ply (3.2.1a)	3.0
3	Rubber	4.0
4	Nylon, bias ply (3.2.1b)	1.4
5	Rubber	1.5
<u>Variety D:</u>		
1	Rubber	1.00
2	Nylon, straight ply (3.2.1c)	2.35
3	Rubber	2.90
4	Nylon, bias ply (3.2.1b)	0.90
5	Rubber	1.00

3.5.1 Manufacture - A foundation coating, which shall be compatible with the base cloth and the remainder of the coating compound, shall be applied to the base cloths in order to achieve the required adhesion; and the coating compound shall then be applied to the base cloth by means of a spread coating operation. The rubber coating compound shall be applied in a sequence of operations so that both sides of each variety of cloth ply shall be coated and laminated or built up to the construction shown in Table II. The pigment shall be incorporated in the outermost coatings. The laminated cloth shall be cured to meet the requirements of this specification. The cured laminated cloth may be lightly dusted with whiting talc or other finely divided material matter which does not support mildew growth.

3.6 Properties of laminated cloth - The laminated cloth properties shall conform to the requirements specified in Table III.

MIL-C-23070B

* TABLE III

Properties of Laminated Cloth

Characteristic	Requirement	
	Variety C	Variety D
Breaking strength		
As received		
Warp	300	200
Filling	250	175
After heat aging for 168 hours at 200 \pm 2°F 1/ (93 \pm 1.1°C), percent loss, max		
Warp	10	10
Filling	10	10
After weatherometer exposure for 300 hours, percent loss, 2/ max		
Warp	25	-
Filling	25	
After weatherometer exposure for 100 hours 2/		
Warp	-	125
Filling	-	100
Adhesion between plies, pounds per inch of width, min		
As received	7.0	7.0
After heat aging for 168 hours at 200 \pm 2°F (93 \pm 1.1°C)	5.0	5.0
After weatherometer exposure for 300 hours	5.0	-
100 hours	-	5.0
Air leakage under pressure	None	None
At a pressure of 10 pounds per square inch		
Blocking at 212 \pm 2°F (100 \pm 1.1°C) rating, max.	2	2
After low temperature exposure for 4 hours at -65 \pm 2°F (-54 \pm 1.1°C)	No Cracking	No Cracking
After exposure for 4 hours at 200 \pm 2°F (93 \pm 1.1°C)	3/	3/

MIL-C-23070B

1/ The laminated cloth shall not become stiff and brittle nor soft and tacky.

2/ The laminated cloth shall not become discolored or brittle and shall show no signs of blooming.

3/ The laminated cloth specimens shall not become tacky or adhere to themselves.

* 3.7 Coated cloth tape construction, weight distribution and properties - The coated cloth tape shall be constructed with the 1.6 ounce maximum nylon cloth (3.2.1b) rubber coated as specified in 3.2.2. The edges of the coated tape shall be smooth, not pinked. The coated tape shall be constructed in accordance with Table IV. The maximum weight of the finished tape shall be 7.0 ounces per square yard. The coated cloth tape shall not be dusted. Each roll shall contain no more than an average of one splice per 20 yards.

* TABLE IV

Coated Cloth Tape Construction and Weight Distribution

Layer	Material	Weight oz per sq yd, min
1	Rubber	1.0
2	Nylon (bias (3.2.1b)	1.4
3	Rubber	1.0
4	Uncured gum coating	2.0

3.7.1 Age - The age of the coated cloth tape shall be as specified in 3.4.

3.7.2 Protection of gum coating - The calendered uncured gum coating side of the coated cloth tape shall be protected by a suitable liner which shall be capable of free separation without affecting the adhesion or cementability of the material.

* 3.8 Length and putup - The laminated cloth shall be put up on rolls as specified in PPP-P-1136. The length of the rolls shall be as specified by the procuring activity.

* 3.9 Width of laminated cloth - The width of the laminated cloth shall be as specified (see 6.2).

MIL-C-23070B

3.9.1 Coated cloth tape dimensions - Unless otherwise specified by the procuring activity, the tape shall be furnished in rolls of 72 ± 2 yards continuous length with splices. Additional roll put-up requirements may be specified by the procuring activity. The width of the coated cloth tape to be furnished is normally selected by the procuring activity from the following widths in inches: 1-1/4 $\pm 1/16$; 1-5/8 $\pm 1/16$; 2 $\pm 1/16$ (see 6.2).

3.10 Workmanship - The finished laminated cloth and coated cloth tape shall be made from clean, evenly woven base cloths evenly coated and uniformly processed to produce the quality and grade of product established by this specification. The occurrence of defects shall not exceed the specified acceptable quality levels specified herein.

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 - A certificate of compliance shall be furnished with each shipment or lot stating the following requirements have been met:

- (a) The compound in the coating contains a minimum of 80 percent natural or polyisoprene rubber, by volume (see 3.2.2).
- (b) The remainder of the coating compound consists of softeners, curing agents, anti-oxidants, and reinforcing materials (see 3.2.2).
- (c) The dusting powder does not support mildew growth (see 3.5.1).
- (d) The ink for stamping the date of manufacture on the roll has no manganese or copper (see 3.4).
- (e) The coating film shall be insoluble in water (see 3.2.2).

MIL-P-23070B

* 4.2 First article inspection - The First Article sample submitted in accordance with 3.1.2 shall be visually inspected for appearance and color. The sample shall be tested for all physical properties in accordance with the methods specified in 4.5.

4.2.1 Adhesion of coating specimen -

4.2.1.1 Manufacturer's prepared specimen - The coating adhesion test specimen shall be prepared by the manufacturer (coater). Each of 2 pieces of base cloth (see 3.2.1) measuring 12 by 12 inches shall be coated with the uncured coating compound described in 3.2.2. The specimen shall be constructed so that adhesion will be measured in the warp direction of the straight ply. The 2 pieces shall be placed together coating to coating, except for a 1 inch wide separation along one edge allowed by insertion of paper. The specimen shall be cured in the same manner and degree of cure as the finished product. The specimen shall be made to represent the construction and weight distribution for laminated cloths as shown in Table II.

4.3 Inspection - Sampling for inspection shall be performed in accordance with MIL-STD-105, except where otherwise indicated herein-after.

4.3.1 Component and material inspection - In accordance with 4.1 above, components and materials shall be tested in accordance with all the requirements of referenced specifications, drawings and standards unless otherwise excluded, amended, modified or qualified in this specification or applicable purchase documents.

* 4.3.2 Examination of the end item - Examination of the end item shall be in accordance with the provisions of 4.3.2.1 through 4.3.2.4.2.

* 4.3.2.1 Yard-by-yard examination of laminated cloth - The required yardage of each roll shall be inspected and visual defects as defined in MIL-STD-1487 shall be classified as listed in Table V. The laminated cloth shall be given a through-light inspection. The through-lighting inspection shall be performed in accordance with MIL-STD-1487.

MIL-C-23070B

All defects found shall be counted regardless of their proximity to each other except where two or more defects represent a single local condition of the cloth, in which case only the more serious defects shall be counted. A continuous defect shall be counted as one defect for each warpwise yard or fraction thereof in which it occurs. The inspection sample unit shall be 1 linear yard. The acceptable quality level (AQL) for this examination shall be 6.5 defects per 100 units (yards). The sample size shall be based upon inspection level II of MIL-STD-105. The lot size shall be expressed in units of 1 yard each. The number of rolls from which the inspection samples are to be selected shall be in accordance with Table VI. An approximately equal number of yards shall be examined in each roll of the inspection sample. All coating defects shall be marked on the defect and at the selvage edge adjacent to the defect. All such defects shall be cut out and eliminated by the fabricator.

TABLE V

List of Defects

Any cut, hole, pinhole, tear, scratch or abrasion mark.

Any blister or delamination.

Any lump or foreign matter.

Crease or wrinkle - resulting in doubling or adhesion of surfaces, distortion or ripples that cannot be corrected by manual pressure.

Any film missing - base cloth, light area.

Any spot, stain or streak.

4.3.2.2 Examination of coated cloth tape - Samples of the coated cloth tape shall be selected in accordance with MIL-STD-105, Inspection Level II. The acceptable quality level shall be 1.5 defects per 100 units (yards). All defects shall be counted regardless of their proximity, to each other, except where two or more defects represent a single local condition of the tape, 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. An approximate equal number of yards shall be examined from each roll selected for the defects listed in Table V. The number of rolls over which the sample yardage shall be distributed shall be in accordance with Table VI.

MIL-C-23070B

* TABLE VI

Sample Size

Lot size in yards	Sample size in rolls	Maximum number of defects acceptable in sample <u>1/</u>
Up to 1200	3	0
1201 up to and including 3200	5	0
3201 up to and including 10,000	8	0
10,001 up to and including 35,000	13	0
35,001 up to and including 150,000	20	1
150,001 and over	32	2

1/ If a lot contains fewer than 3 rolls, each roll in the lot shall be examined.

4.3.2.3 Overall examination - Each defect listed in Table VII shall be counted no more than once in each roll examined. The sample unit for this examination shall be one roll. The sample size and acceptance number shall be as specified in Table VI. The lot size shall be expressed in units of 1 linear yard each.

TABLE VII

Overall Defects

Overall uncleanness.
Objectionable odor.
Note. Odors of chemicals commonly used in coating compounds shall not be regarded as objectionable.
Color off shade, not uniform, mottled, blotchy or spotted.
Uneven thickness of film, clearly noticeable.
Tackiness (Film will adhere and not readily unroll).
Edges rolled, folded, scalloped, or corded and extending more than 1/3 the length of the roll.
Uncoated area over 1 inch square.
Blooming or bleeding of compounding ingredients to surface that would impair adhesion or cementability of the finished coated fabric.
Date of coating application missing from end of roll or identification tag.

MIL-C-23070B

4.3.2.4 Examination for length -

4.3.2.4.1 Individual for length - The sample unit shall be one roll. The number of rolls to be examined and the acceptance number shall be in accordance with Table VI. The following shall be considered a defect:

Any roll (gross length) less than minimum or more than maximum specified.

Any roll (gross length) more than 2 yards less than gross length marked on ticket.

Any roll containing more than 3 pieces.

Any piece in roll less than 20 gross yards.

Average of more than one splice per 20 yards.

4.3.2.4.2 Total yardage in sample - The rolls examined shall be those selected for examination of individual rolls as specified in 4.3.2.4.1. The lot shall be unacceptable if the total of the gross lengths of the rolls in the sample is less than the total of the gross lengths marked on the tickets. The absence of manganese and copper in ink for stamping the date of manufacture on the roll shall be verified.

* 4.4 Examination of preparation for delivery requirements - An examination shall be made to determine that packaging, packing and marking requirements of Section 5 are complied with. The examination shall be as specified in PPP-P-1136 and MIL-W-43334.

* 4.5 Testing of the end item - The methods of testing specified in Table VIII, 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. The sample unit for testing shall be:

- (a) 3 continuous yards, full width of the laminated cloth.
- (b) 2 coating adhesion test specimens (see 4.2.1) in warp direction.

All test reports shall contain the individual values utilized in expressing the final result. The lot size shall be expressed in units of 1 yard. The lot shall be unacceptable if one or more units fail to meet any requirement specified. The sample (number of sample units) shall be as follows:

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

MIL-C-23070B

TABLE VIII
Testing of Laminated Cloth

Characteristic	Requirement Paragraph	Test Method
Total weight	Table II and 3.7	5041
Breaking strength		
Original - Warp	Table III	5100
Filling	Table III	5100
After heat aging <u>1/</u> - Warp	Table III	4.5.5
Filling	Table III	4.5.5
After weatherometer exposure <u>2/</u>		
Warp	Table III	4.5.6
Filling	Table III	4.5.6
Resistance to low temperature exposure	Table III	4.5.7
Resistance to high temperature exposure	Table III	4.5.8
Adhesion		
Original	Table III	8011 <u>3/</u>
After heat aging	Table III	4.5.5
After weatherometer exposure	Table III	4.5.6
Air leakage	Table III	4.5.9
Blocking	Table III	4.5.10
Coating adhesion <u>4/</u>	4.2.1.1	8011
Width	3.9	5020

1/ Specimens shall also be examined for stiffness, brittleness, softness and tackiness.

2/ Specimens shall also be examined for discoloration, brittleness, and blooming.

3/ Test Method Standard 601.

4/ Warp direction only.

MIL-C-23070B

4.5.1 Base cloths - The base cloths shall be examined and tested to determine conformance to MIL-C-19377 and MIL-C-7020, Type I, Type II, as applicable, and the requirements of this specification (see 3.2.1). The 2.35 - 2.55 ounces per square yard cloth (3.2.1c) shall be examined and tested to determine conformance of 3.2.1c by MIL-C-7020 methods.

4.5.2 Coating - Conformance to the coating compound ingredient requirements shall be determined by appropriate examination and testing in accordance with Table IX and by acceptance of a contractor's certification of compliance.

TABLE IX
Testing of Cured Coating Compound

Characteristic	Requirement Paragraph	Test Method Fed-Std No. 601
Water extract, percent	Table I	6621
Tensile strength <u>1/</u> Original, psi	Table I	4111
After heat aging for 168 hours at 212 ± 5°F (100 ± 3°C), percent loss		7221 and 4111
Elongation <u>1/</u> Original, percent	Table I	4121
After heat aging for 168 hours at 212 ± 5°F (100 ± 3°C), percent loss		7221 and 4121
Shore hardness reading Original	Table I	3021
After heat aging for 168 hours at 212 ± 5°F (100 ± 3°C), change		7221 and 3021

1/ The determinations for tensile strength and elongation may be determined simultaneously. The Type III die shall be used to prepare the test specimens.

MIL-C-23070B

4.5.3 Construction, weight distribution, and manufacture - Conformance to the construction and weight distribution requirements of Tables II and IV and manufacture requirements of 3.5 and 3.7 shall be determined by appropriate examination and in accordance with Table VIII and by acceptance of a contractor's certification of compliance.

4.5.4 Color - The colors of the laminated cloth and coated cloth tape shall be compared with the standard color chips specified in 3.3 and 6.2 in accordance with Method 9010 of FED-STD-191.

4.5.5 Resistance to heat aging - Resistance to heat aging of the laminated cloth shall be determined in accordance with Method 5850 of FED-STD-191. The test specimen shall be heated in the oven for 168 hours at a temperature of $200 \pm 2^\circ\text{F}$ ($93 \pm 1.1^\circ\text{C}$). After the heat aging, the specimen shall be examined for stiffness, brittleness, softness, and tackiness (see Table VIII). The heat aged specimen shall be cooled and conditioned under standard atmospheric conditions for 4 hours, and then separate specimens shall be tested as indicated in Table VIII for breaking strength by the grab method in accordance with Method 5100 of FED-STD-191, and for adhesion between plies in accordance with Method 8011 of Federal Test Method Standard No. 601. The above properties of the heat aged cloth shall be compared with the same properties of the cloth in the "as received" condition.

* 4.5.6 Resistance to weatherometer exposure - Resistance to weatherometer exposure of 100 or 300 hours of the laminated cloth shall be determined in accordance with Method 5804 of FED-STD-191. The side containing the nylon straight ply cloth shall be exposed to the arc. After the weatherometer exposure, the specimen shall be examined for discoloration, brittleness, and blooming (see Table VIII). After conditioning under standard atmospheric conditions for 4 hours, separate specimens, as indicated in Table VIII, shall be tested for breaking strength by the grab method in accordance with Method 5100 of FED-STD-191, adhesion between plies in accordance with Method 8011 of FED-STD-601. The above properties of the exposed cloth shall be compared with the same properties of the cloth in the "as received" condition.

* 4.5.7 Resistance to low temperature exposure - A specimen of the laminated cloth shall be separately folded into quarters, the folds being made along the warp and filling directions of the straight ply cloth. The folds shall be sharply creased and the folded specimen shall be placed on a polished metal plate and completely covered with another metal plate. A weight shall be centrally placed on the covering plate. The covering plate and weight shall weigh a total of 5 pounds. The assembly shall be subjected to a temperature of $-65 \pm 2^\circ\text{F}$ ($-54 \pm 1.1^\circ\text{C}$) for a total of 4 hours.

MTL-C-23070B

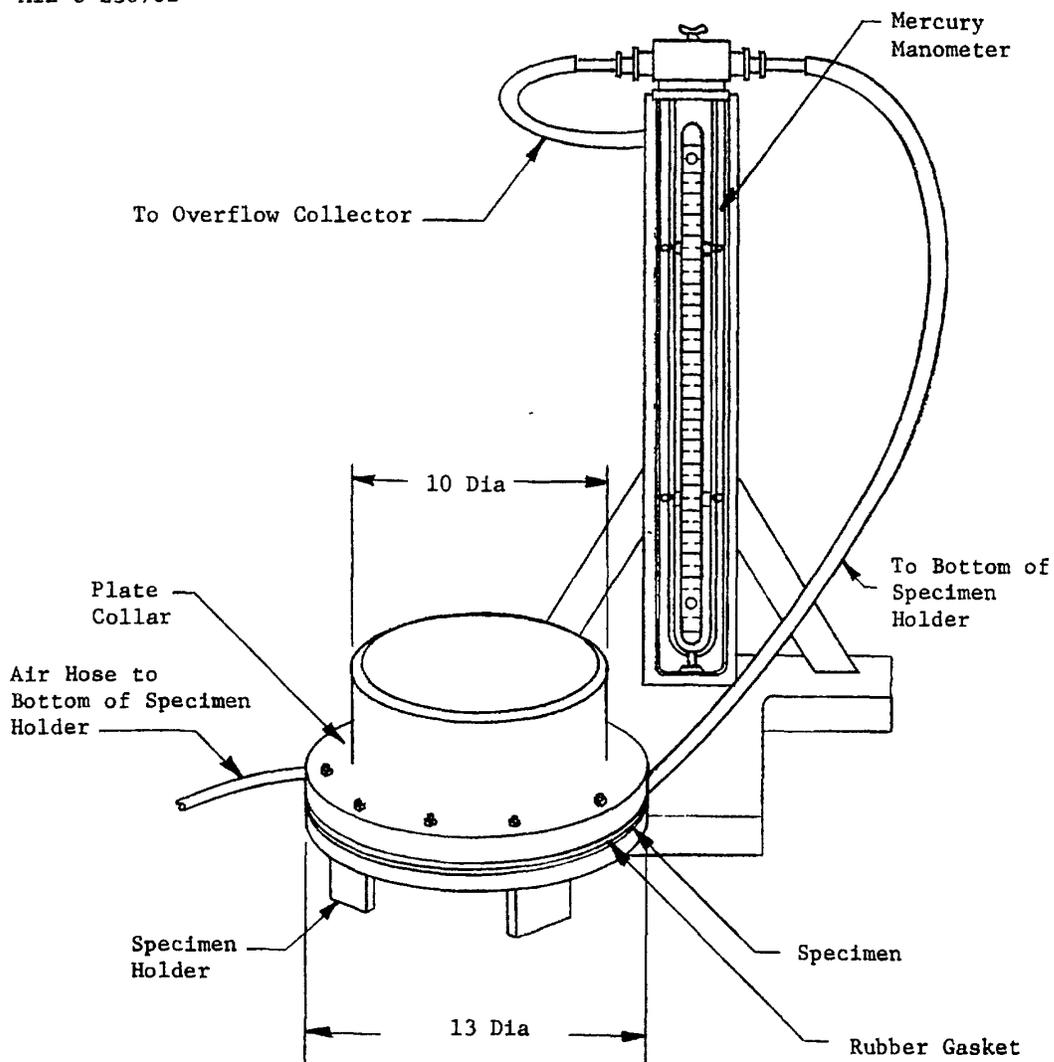
After 3-1/2 hours of exposure to this temperature, the specimen shall be unfolded carefully and refolded so that the folds are reversed. The unfolding and refolding shall be performed in the cold box at the specified low temperature. After refolding, and with the covering plate and weight replaced, the assembly shall remain in the cold box at the specified low temperature, for the remainder of the 4-hour period. The specimen shall then be removed, conditioned under standard atmospheric conditions for 2 hours, examined for evidence of cracking (see Table VIII). This property of the exposed cloth shall be compared with the same property of the cloth in the "as received" condition.

* 4.5.8 Resistance to high temperature exposure - A specimen of the laminated cloth shall be separately folded, and placed in an assembly with a covering plate and weight as specified in 4.5.7. The assembly shall be placed, for 4 hours, in an oven maintained at a temperature of $200 \pm 2^\circ\text{F}$ ($93 \pm 1.1^\circ\text{C}$). Five minutes after removal from the oven, the specimen shall be examined for tackiness and adherence to itself (see Table VIII). This property of the exposed cloth shall be compared with the same property of the cloth in the "as received" condition.

4.5.9 Air leakage under pressure - The laminated cloth shall be tested for air leakage under pressure. Three specimens (at least one with a bias seam) measuring 13 inches in diameter shall be individually tested on the test jig shown in Figure 1. The cloth specimen shall be placed on the holder and the plate collar shall be tightly bolted thereon. Care shall be taken to insure a leaktight fit. Water shall be poured on the specimen, sufficient to keep the top of the specimen under water throughout the test. The specimen shall then be inflated to the applicable air pressure of 10 psi. The surface of the laminated cloth shall be gently wiped to remove any bubbles of air, which may form slowly, which have been trapped between the cloth and the coating. The slow formation and escape of bubbles of entrapped air shall not be considered leakage. After 5 minutes, the specimen shall be examined for leakage evidenced by a steady stream of air bubbles coming through the laminated cloth.

4.5.10 Blocking - The blocking test rating of the laminated cloth shall be determined in accordance with Method 5872 of FED-STD-191 except the exposure temperature shall be $212 \pm 2^\circ\text{F}$ ($100 \pm 1.1^\circ\text{C}$).

MIL-C-23070B



DIMENSIONS IN INCHES

Figure 1. Air Leakage Test Jig

MIL-C-23070B

+ 5. PREPARATION FOR DELIVERY

5.1 Packaging, packing, and marking - The cloth shall be packaged, packed, and marked in accordance with requirements of PPP-P-1136. The tape shall be packaged, packed, and marked in accordance with requirements of MIL-W-43334. The levels of packaging and packing shall be as specified by the procuring activity. In addition to the markings required, each tag shall be marked with the following information: "Date of Application of Coating." The following precautionary marking shall appear on all containers "STORE IN A COOL DRY PLACE."

6. NOTES

6.1 Intended use - The laminated cloth and coated cloth tape covered by this specification is for use in inflatable life rafts.

* 6.2 Ordering data - Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Variety required (see 1.2).
- (c) Color required (see 3.3).
- (d) Width and width tolerance required.
- (e) Dimensions and roll put-up requirements.
- (f) Quantity required.
- (g) Selection of applicable levels of packaging and packing (see 5.1).
- (h) When first article is required (see 3.1.2, 4.2, 6.4).
- (i) Whether laboratory report is not required (see 3.1.1).

* 6.3 Marginal notations - 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 suppliers are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the previous issue.

MIL-C-23070B

* 6.4 First article - When a first article is required, it shall be inspected and approved under the appropriate provisions of ASPR7-104.55. The first article should be a preproduction sample, initial production item or other specific item described under the definition of a first article in the ASPR. The first article should consist of five yards of the coated fabric specified in the contract or order. The contracting officer should include specific instructions in all procurement instruments regarding arrangements for inspection and approval of the first article.

Custodians:
Navy - AS
Army - GL
Air Force - 11

Preparing activity:
Navy - AS
(Project No. 8305-0186)

Review:
Army - ME

User:
Army - AV

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