MIL-T-7249B
30 December 1969
SUPERSEDING
MIL-P-7249A(USAF)
28 June 1963

MILITARY SPECIFICATION

TARPAULIN, LIGHT WEIGHT

This specification is mandatory for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

* 1.1 This specification covers tarpaulins for use with liferafts.

* 1.2 Classification. The tarpaulin shall be of the following sizes as specified (see 6.2).

Size	Dimensions
1	67 1/2 X 84 inches
2	84 X 132 inches

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

V-T-295	Thread, Nylon
DDD-L-20	Label; For Clothing, Equipage, And Tentage, (General Use)
PPP-B-636	Box, Fiberboard

Military

MIL-C-577	Cloth, Twill, Nylon, 1.6 And 3.0 Ounce
MIL-D-4736	Decal, Light Weight Paulin
MIL-G-16491	Grommet, Metallic

STANDARDS

Federal

FED-STD-191	Textile Test Method
FED-STD-595	Colors
FED-STD-751	Stitches, Seams, And Stitchings

Military

MIL-STD-105	Sampling Procedures And Tables For Inspection By Attributes
MIL-STD-129	Marking For Shipment And Storage
MIL-STD-143	Specifications And Standards Order Of Precedence For The Selection Of

(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.

Federal Food, Drug and Cosmetic Act and General Regulations for Its Enforcement.

(Application for copies should be addressed to the Superintendent of Documents, US Government Printing Office, Washington DC 20402.)

National Classification Board
National Motor Freight Classification

(Application for copies shall be addressed to the National Classification Board, 1616 P Street, N.W. Washington DC 20036.)

Uniform Classification Committee
Uniform Freight Classification

(Application for copies shall be addressed to the Uniform Classification Committee, 202 Union Station, Chicago IL 60606.)

3. REQUIREMENTS

* 3.1 First article approval. Unless otherwise specified (see 6.2) before production is commenced, a sample of each type of tarpaulin being furnished shall be submitted to Contracting Officer or his authorized representative for inspection as specified in 4.2. The approval of the first article authorizes the commencement of production, but does not relieve the supplier of responsibility for compliance with all the provisions of this specification. First article shall be manufactured in the same facilities to be used in the manufacture of production items.

* 3.2 Selection of specifications and standards. Specifications and standards for necessary commodities and services not specified herein shall be selected in accordance with MIL-STD-143.

* 3.3 Materials.

* 3.3.1 Basic fabric. The basic fabric for the tarpaulin shall conform to Type I of MIL-C-577.

* 3.3.1.1 Coating compound. The coating compound for the basic fabric shall be suitably compounded polymer or copolymer vinyl resin pigmented to meet the requirements of this specification. The coating compound shall not have a detrimental affect on the fabric nor on the skin of personnel coming in contact with the coated fabric, and shall not render rain water caught on the finished tarpaulin unsuitable for use as drinking water. The coating compound shall conform to the standards set forth in the Federal Food, Drug, and Cosmetic Act as amended and regulations promulgated thereunder.

* 3.3.1.2 Coated fabric. The coating compound specified in 3.3.1.1 shall thoroughly impregnate the base fabric and shall be applied equally to both sides to form a balanced coating. Coated fabric shall weigh not more than 5.5 ounces per square yard.

* 3.3.2 Thread. The thread shall conform to type I, class 1, size E of V-T-295. The color of the thread shall be an approximation of the blue color of the fabric and shall show good colorfastness to weathering.

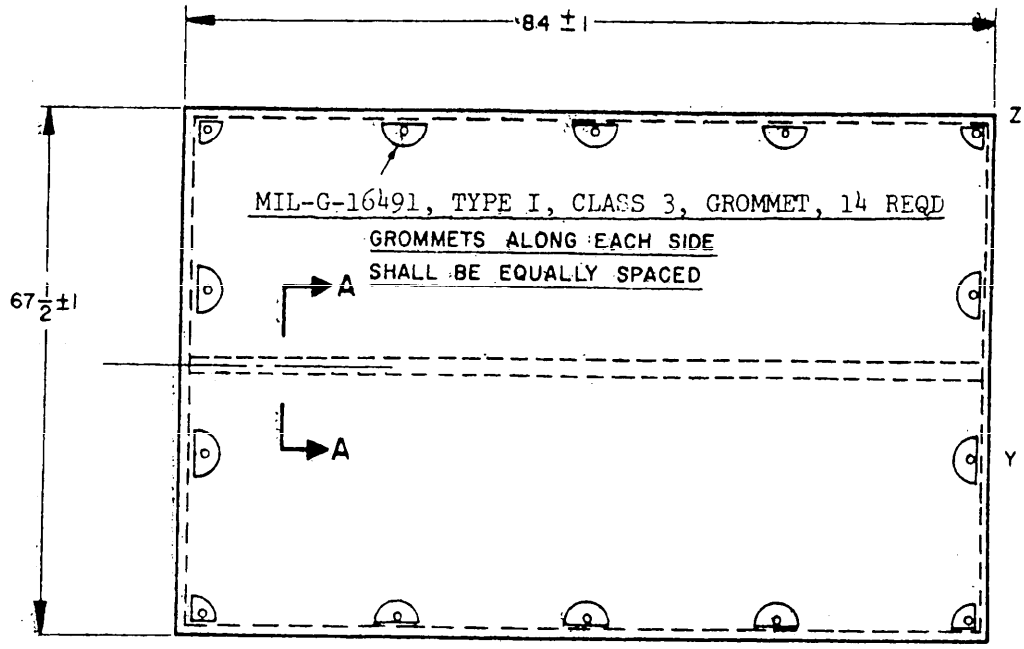
* 3.3.3 Grommets. The grommets shall be black, oxidized, brass grommets conforming to type I, class 3 of MIL-G-16491 and shall be located as shown on Figures 1 and 2. Reinforcement patches of the coated fabric shall be placed under each grommet on the yellow side and shall be secured either by heat sealing or with an adhesive compatible with the coating compound used with the basic fabric. The yellow side of the patch shall be up.

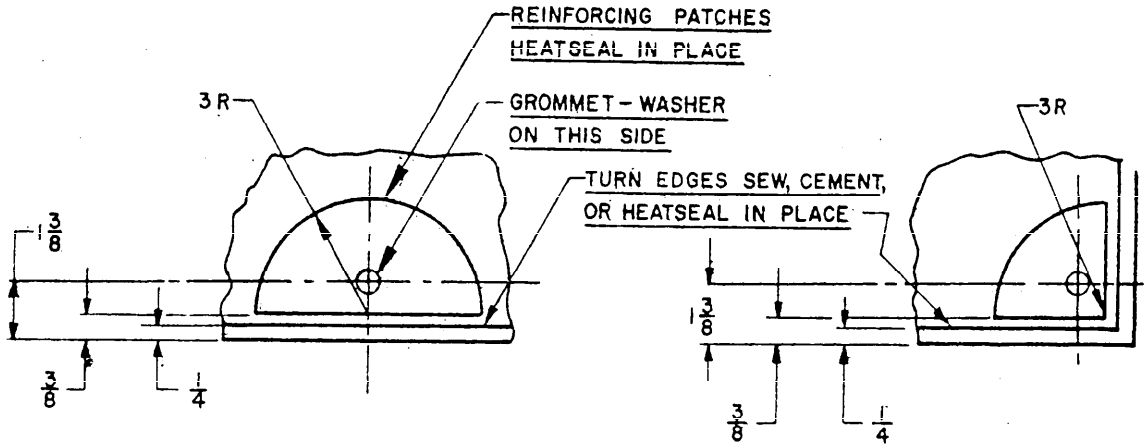
* 3.3.3.1 Setting of grommets. Holes punched to receive the grommets shall be smaller than the outside diameter of the grommet barrel so that the barrel must be forced through the hole. The grommets shall be tightly clinched without cutting the materials.

* 3.4 Construction. The tarpaulin shall be constructed in accordance with Figures 1 and 2, and as specified herein.

* 3.4.1 Seam construction. Seam construction may be either stitched and sealed, cemented or heat sealed. The outside edge of the tarpaulin shall be folded back 1/4 inch plus or minus 1/16 inch on the yellow side and shall be securely sewn, cemented or heat sealed to the fabric. The yellow side shall not show on the blue side of the tarpaulin. The panel joining seams shall be in accordance with FED-STD-751, type LSA-2 and shall be single lapped a minimum of one inch in width.

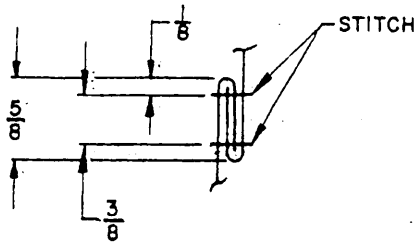
* 3.4.1.1 Stitched and sealed seams. Stitches, stitching, and formation of stitched seams shall conform to FED-STD-751 and shall be made using stitch type 301 with 5 to 7 stitches per inch. Panel joining seams shall be either stitch type 301 or 401, with 5 to 7 stitches per inch and with the seam construction and stitching gage in accordance with the applicable figure. Whenever stitch 401 is used, the looper (under thread) shall be on the yellow side of the





DETAIL VIEW AT Y

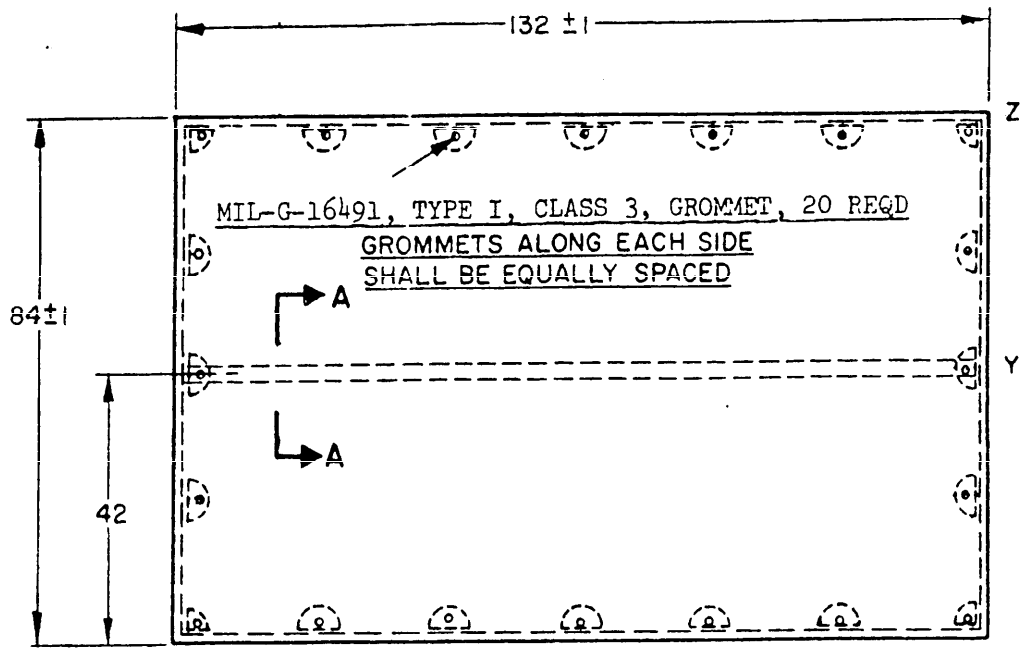
DETAIL VIEW AT Z

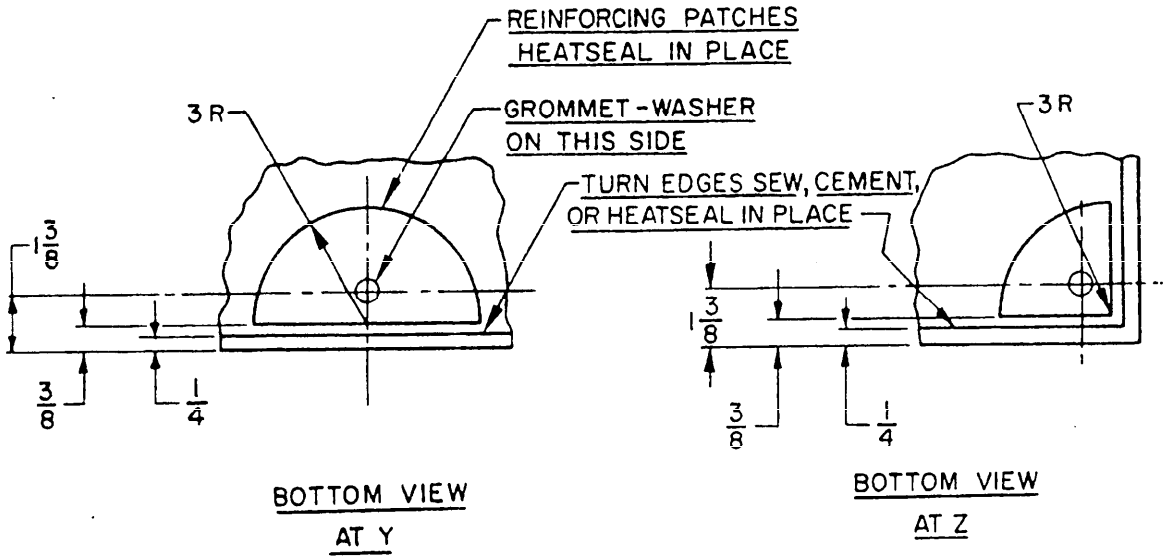


SECTION A-A

DIMENSIONS IN INCHES
UNLESS OTHERWISE SPECIFIED,
TOLERANCES: FRACTION ±1/16

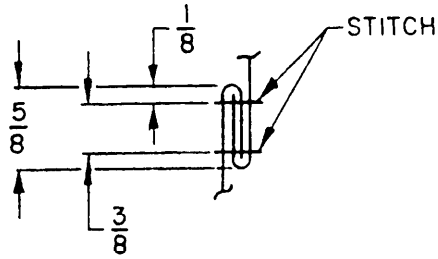
FIGURE 1 TARPAULIN SIZE 1





BOTTOM VIEW
AT Y

BOTTOM VIEW
AT Z



SECTION A-A

DIMENSIONS IN INCHES
UNLESS OTHERWISE SPECIFIED,
TOLERANCES: FRACTION ± 1/16

FIGURE 2 TARPAULIN SIZE 2

tarpaulin. The needle used shall be the smallest size that can be used with the specified thread so that the hole made in the fabric by the needle is of the minimum size. Thread breaks in stitch type 301 shall be backstitched not less than 1 inch at each break. Thread breaks in stitch type 401 shall be overstitched not less than 1-1/2 inches. Except where ends are turned under in a hem or held down by other stitching, stitching shall be backstitched at the ends not less than 1 inch. Thread tension shall be maintained so that there will be no loose stitching. All ends of thread shall be trimmed to a length of 1/2 inch or less.

* 3.4.1.1.1 Sealing of stitched seams. All sewed seams shall be sealed with a sealing compound compatible with the coating compound used for the basic fabric. The sealing compound shall be applied so as to effectively seal all needle holes, and shall approximate the yellow shade of the tarpaulin. Application of sealant to the hem is not required.

* 3.4.1.2 Cemented seams. The panel joining seams shall be single lapped a minimum of one inch in width, cemented and rolled to secure adhesion of the cemented parts.

* 3.4.1.3 Heat sealed seams. The panel joining seams shall be single lapped a minimum of one inch in width and heat sealed so as to form a secure bond between the sealed parts.

* 3.4.1.4 Dusting powder. The coated fabric and all sealed seams shall be dusted with whiting, talc or any finely divided mineral material that will not support mildew growth or affect potability of rain water which is trapped by the tarpaulin.

* 3.5 Performance.

* 3.5.1 Flexibility.

* 3.5.1.1 Room temperature. The coated fabric shall be flexible and shall bend sharply when tested as specified in 4.5.2.1.

* 3.5.1.2 Low temperature. The coated fabric shall not crack when tested as specified in 4.5.2.2.

* 3.5.2 Heat resistance. The coated fabric shall show no evidence of tackiness, blistering, or softening when tested as specified in 4.5.3.

* 3.5.3 Water resistance. The coated fabric shall remain impervious to water when tested as specified in 4.5.4.

* 3.5.4 Seam hydrostatic. The sealed seams and the immediate adjacent area shall be subjected to hydrostatic test specified in 4.5.5.

* 3.5.5 Seam blocking. There shall be no tackiness, blistering, or softening of the fabric when tested for seam blocking as specified in 4.5.6.

* 3.5.6 Seam adhesion. Cemented or heat-sealed panel joining seams shall have an initial seam adhesion of not less than four pounds per inch when tested as specified in 4.5.7.

* 3.6 Dimensions. The dimensions of the size 1 and size 2 tarpaulins are as specified in Figures 1 and 2.

* 3.7 Color. One side of the tarpaulin shall be yellow in accordance with color No. 33538 of FED-STD-595, and the other side shall be blue in accordance with color No. 34158 of FED-STD-595.

* 3.8 Signal panels for signaling. An instruction decal conforming to MIL-D-4736 shall be attached to the lower left corner of the blue side of the tarpaulin.

* 3.9 Identification of product. Each tarpaulin shall have an identification label conforming to type IV, class 8 of DDD-L-20 except that the content of the label shall be as shown in 3.9.1. The label shall be located on the lower left corner not more than two inches from the hem of the yellow side of the tarpaulin.

* 3.9.1 Label contents:

Tarpaulin Light Weight
Specification MIL-P-7249B
Order No. *
Stock No. *
Manufacturer's Name or Trademark *
Contractor's Name *
Size

* For use with survival kits. May be used as a signal, a camouflage cloth, a sunshade or tent, or for catching drinking water. The manufacturer shall include the applicable data.

* 3.10 Workmanship. The tarpaulin shall be constructed in a thoroughly workmanlike manner. The finished tarpaulin shall be clean and free from any defects that might affect appearance or functionability.

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.

* 4.2 Classification of inspections The inspection requirements specified herein are classified as follows:

a. First article sample inspection (see 4.3).

b. Quality conformance inspection (see 4.4).

* 4.3 First article inspection. When a first article sample is required, it shall be examined for defects listed in Table III and 4.4.2, and tested for characteristics listed in Table II.

* 4.4 Quality conformance inspection. The tests and examinations comprising quality conformance inspection are to be classified as specified in 4.4.1 and 4.4.2.

* 4.4.1 Tests.

* 4.4.1.1 Coated nylon cloth. The sample unit for testing shall be 1-1/2 yards full width. The lot shall be expressed in terms of linear yards of coated nylon cloth. The inspection level shall be S-1 of MIL-STD-105. The acceptable quality level shall be 6.5 defects per 100 units. Tests shall be made for characterisitcs listed in Table I.

TABLE I

Characteristic	Requirement	Test Method
Weight	3.3.1.2	4.5.1
Flexibility		
Room Temperature	3.5.1.1	4.5.2.1
Low Temperature	3.5.1.2	4.5.2.2
Heat Resistance	3.5.2	4.5.3
Water Resistance	3.5.3	4.5.4

* 4.4.1.2 End item. The sample unit shall be one completely fabricated tarpaulin. The inspection level shall be S-3 of MIL-STD-105 and the acceptable quality level shall be 1.5 defects per 100 units. All requirements are applicable to the sample unit. Tests shall be made for characteristics listed in Table II.

TABLE II

Characteristic	Requirement	Test Method
Seam Hydrostatic	3.5.4	4.5.5
Seam Blocking	3.5.5	4.5.6
Seam Adhesion	3.5.6	4.5.7

stitched at the ends not less than 1 inch. Thread tension shall be maintained

TABLE III - CLASSIFICATION OF DEFECTS FOR VISUAL CHARACTERISTICS

Examine	Defect	Major	Minor A	Minor B
Fabric	Holes, cuts, or tears	X		
	Pinholes when light is clearly visible through coated fabric	X		
	Fabric or coating defects affecting serviceability or appearance seriously	X		
	Fabric or coating defects affecting serviceability or appearance but not seriously		X	
Coating	Damaged, cracked, or punctured	X		
	Any area of coating omitted or coating tacky or flaking	X		
Grommets	Size or type not as specified -affecting serviceability seriously	X		
	-affecting serviceability but not seriously		X	
	-not affecting serviceability			X
	Improperly set or loosely clinched, allowing grommet to rotate around hole			X
	Clinched excessively tight, cutting fabric or insecurely clinched, i.e., grommet or washer becomes disengaged	X		
	Broken or malformed, protective finish omitted, or burrs or sharp edges which may damage the item or cause injury in handling	X		

Examine	Defect	Major	Minor A	Minor B
Seams and stitchings				
Open seams	A seam shall be classified as open when one or more stitches joining a seam are broken or when two or more consecutive skipped stitches or run-offs occur. On seams stitched with double needles, a seam shall be considered open when either one or both sides of the seam are open			
	On stitch type 301			
	-1/2 inch or less			X
	-more than 1/2 inch		X	
	On stitch type 401, except run-offs	X		
	Run-offs on stitch type 401 on one row			
	-1/2 inch or less			X
	-more than 1/2 inch		X	
	Run-offs on stitch type 401 on both rows			
	-1/2 inch or less	X		
	-more than 1/2 inch	X		
Raw edges	Raw edges not securley caught in stitching shall be classified as open seams			X
	When securely caught in stitching, any raw edge on body seam or on hem, when edges are required to be turned under.			X
Seam and stitch type	Wrong seam or stitch type			
	-affecting serviceability seriously	X		
	-affecting serviceability but not seriously		X	
Stitch tension	Loose, resulting in a loosely exposed top or bobbin thread			X

Examine	Defect	Major	Minor A	Minor B
	Tight, resulting in excessive puckering of fabric or seams -thread breaks or cuts fabric when normal pull is applied	X		
	-thread withstands normal pull		X	
Stitches per inch	One stitch less than minimum specified			X
	Two or more stitches less than minimum specified		X	
	One or more stitches in excess of maximum specified			X
	Variations in the number of stitches per inch caused by the operator's speeding up the machine and pulling the fabric in order or sew over heavy seams or turning corners shall be classified -within the minor A defect classification			X
	-within the minor B defect classification		No defect	
Stitching margins and stitching gage	Not as specified, affecting serviceability		X	
Sealed seams	Seams not sealed as specified		X	
Heat-sealed or cemented seam assemblies	Heat-sealed or cemented areas not securely bonded, or unsealed areas affecting serviceability	X		
	Panel joining seams	X		
	Grommet reinforcements		X	
	Hem			X
Stitching ends	Backstitched less than 1 inch except where held down by other stitching or turned under in a hem		X	

Examine	Defect	Major	Minor A	Minor B
Thread breaks	Thread breaks not backstitched or overstitched shall be classified as open seams		X	
	Backstitched or overstitched less than specified		X	
Components and assembly	Any required operation or construction detail omitted or not as specified -affecting serviceability or appearance seriously	X		
	-affecting serviceability or appearance but not seriously		X	
	-not affecting serviceability or appearance			X
	Any required component or part of tarpaulin omitted	X		
	Seams or hems badly pleated or puckered			X
	Needle chew expected to develop into hole	X		
	Mends, darns, or patches	X		
Reinforcements	Omitted or misplaced, failing to serve intended purpose	X		
	Finished dimensions of reinforcements less than specified by more than 1/2 inch			X
	Improperly applied, causing excessive fullness or reinforcements or reinforced parts			X
Hems	Hems formed on the blue side of tarpaulin instead of yellow side		X	
	Grommets not equally spaced by more than 1/2 inch		X	
Cleanness	Grease, oil stains, or adhesive marks clearly noticeable or thread ends not trimmed throughout		X	

* 4.4.2 Examinations. The tarpaulins shall be examined for defects listed in Table III and 4.4.2.2. The sample unit for these examinations shall be one completely fabricated tarpaulin. The inspection levels shall be II for Table III and S-3 of MIL-STD-105 for 4.4.2.2. The acceptable quality level for Table III shall be 2.5 defects per 100 units for major defects, 15.0 defects per 100 units for major and minor A defects and 40.0 defects per 100 units for total defects. The acceptable quality level for 4.4.2.2 shall be 15.0 defects per 100 units (one class). The lot shall consist of all completely fabricated items offered for inspection at one time.

* 4.4.2.1 Visual examination. The completed tarpaulin shall be examined for defects listed in Table III.

* 4.4.2.2 Examination of finished dimensions of tarpaulins. The finished dimensions of the tarpaulins shall be examined. Any over-all dimension or component and location dimension not within specified tolerance shall be classified as a defect.

* 4.5 Test methods.

* 4.5.1 Weight. The weight of the coated fabric shall be determined in accordance with method 5041, FED-STD-191. Test results shall be reported in ounces per square yard to the nearest 0.1 ounce.

* 4.5.2 Flexibility.

* 4.5.2.1 Room temperature. At a temperature of approximately 70° Fahrenheit (F), a piece of the coated fabric, at least 12 inches wide, shall be pushed over the edge of a table or any other horizontal surface having a straight edge and shall be observed for flexibility. Failure of the fabric to be flexible or to bend sharply at a 90 degree angle shall be cause for rejection. Test results shall be reported as pass or fail.

* 4.5.2.2 Low temperature. The coated fabric shall be tested at low temperature in accordance with method 5874 of FED-STD-191, except that the temperature shall be at least minus 20°F for 1 hour. Cracking of the fabric when bent sharply shall be cause for rejection.

* 4.5.3 Heat resistance. The coated fabric shall be tested for heat resistance in accordance with method 5872 of FED-STD-191, except for the following: The sample shall be placed in an oven maintained at a temperature of at least plus 160°F for a 24 hour period. The sample shall then be removed from the oven and allowed to cool at room temperature for 5 minutes. It shall then be examined. Tackiness, blistering, or softening of the fabric shall be cause for rejection.

* 4.5.4 Water resistance. The coated fabric shall be tested for water resistance in accordance with method 5516 of FED-STD-191, except that the hydrostatic head shall be 50 centimeters of water pressure for 1 hour. Test specimens shall be those previously subjected to the tests specified under 4.5.2. Samples subjected to the test specified in 4.5.2.2 shall be returned to room temperature prior to the water resistance test.

* 4.5.5 Seam hydrostatic. The tarpaulin shall be tested in accordance with method 5514 of FED-STD-191, with the following exceptions: The seam shall be positioned in the center of the 4-1/2 inch test area. Water pressure shall be applied to the blue side of the seam. The hydrostatic head shall be raised to 20 centimeters and held for 1 minute. The appearance of water at three or more different places within the 4-1/2 inch diameter test area shall be cause for rejection.

* 4.5.6 Seam blocking. The tarpaulin shall be tested in accordance with the method 5872 of FED-STD-191, with the following exceptions: The test surfaces are superimposed with the yellow side of the fabric on the inside of the ensemble and the seam in the center of the glass plate. The sample shall be exposed to a temperature of at least 160°F for a period of 30 minutes. Tackiness, blistering or softening of the fabric shall be cause for rejection.

* 4.5.7 Seam adhesion. Tarpaulins with cemented or heat-sealed panel joining seams shall be tested in accordance with method 5960 of FED-STD-191.

* 4.6 Inspection of the preservation, packaging, packing and marking for shipment and storage. Sample items or packs and the inspection of the preservation, packaging, packing and marking for shipment and storage shall be in accordance with the requirements of Section 5, or the documents specified therein.

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging. Preservation and packaging shall be level A or C as specified. (See 6.2)

* 5.1.1 Level A. Each tarpaulin shall be folded so that the marking is on the outside of the final fold. During the folding operation all areas shall be dusted lightly with talcum to prevent adjacent surfaces from adhering under normal storage and transportation conditions. The flat folded size of each tarpaulin shall be approximately 16 inches by 9 inches.

* 5.1.2 Level C. Each tarpaulin shall be folded, dusted with talcum and packaged in a manner which affords adequate protection against damage during shipment from supply source to the first receiving activity for immediate use. This may be the supplier's commercial practice provided it meets the requirements of this level.

5.2 Packing. Packing shall be level A, B or C as specified (see 6.2).

* 5.2.1 Level A. Ten tarpaulins of equal size, folded as specified in 5.1.1, shall be stacked in two equal tiers within a snug fitting fiberboard container conforming to PPP-B-636, style RSC, weather resistant class, variety SW, grade V3C or V3S. Closure and waterproofing of the container shall be in accordance with the appendix to PPP-B-636.

* 5.2.2 Level B. Level B shall be the same as level A except that the fiberboard container shall be domestic class, variety SW, grade 200. Closure shall be in accordance with method II of the appendix to PPP-B-636.

* 5.2.3 Level C. Tarpaulins shall be packed in a manner to insure carrier acceptance and safe delivery at destination at the lowest transportation rate for such supplies. Container shall be in accordance with Uniform Freight Classification Rules or National Motor Freight Classification Rules, as applicable.

* 5.3 Marking. In addition to any special marking required by the contract or order, the shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

* 6.1 Intended use. The tarpaulins covered by this specification are intended for use in life rafts, survival kits, and any other places where lightweight tarpaulins of this size are suitable. The size 1 tarpaulin is for use in survival kit in Army OV-1 aircraft.

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

a. Title, number, and date of this specification.

b. Selection of applicable levels of preservation and packaging and packing (see 5.1 and 5.2).

c. Size required (see 1.2).

d. When first article inspection is not required (see 3.1).

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

Custodians:
Air Force - 82
Army - GL

Review Activities:
Air Force - 82
Army - GL

Preparing Activity:
Air Force - 82

Project No. 8340-0203

or not as specified

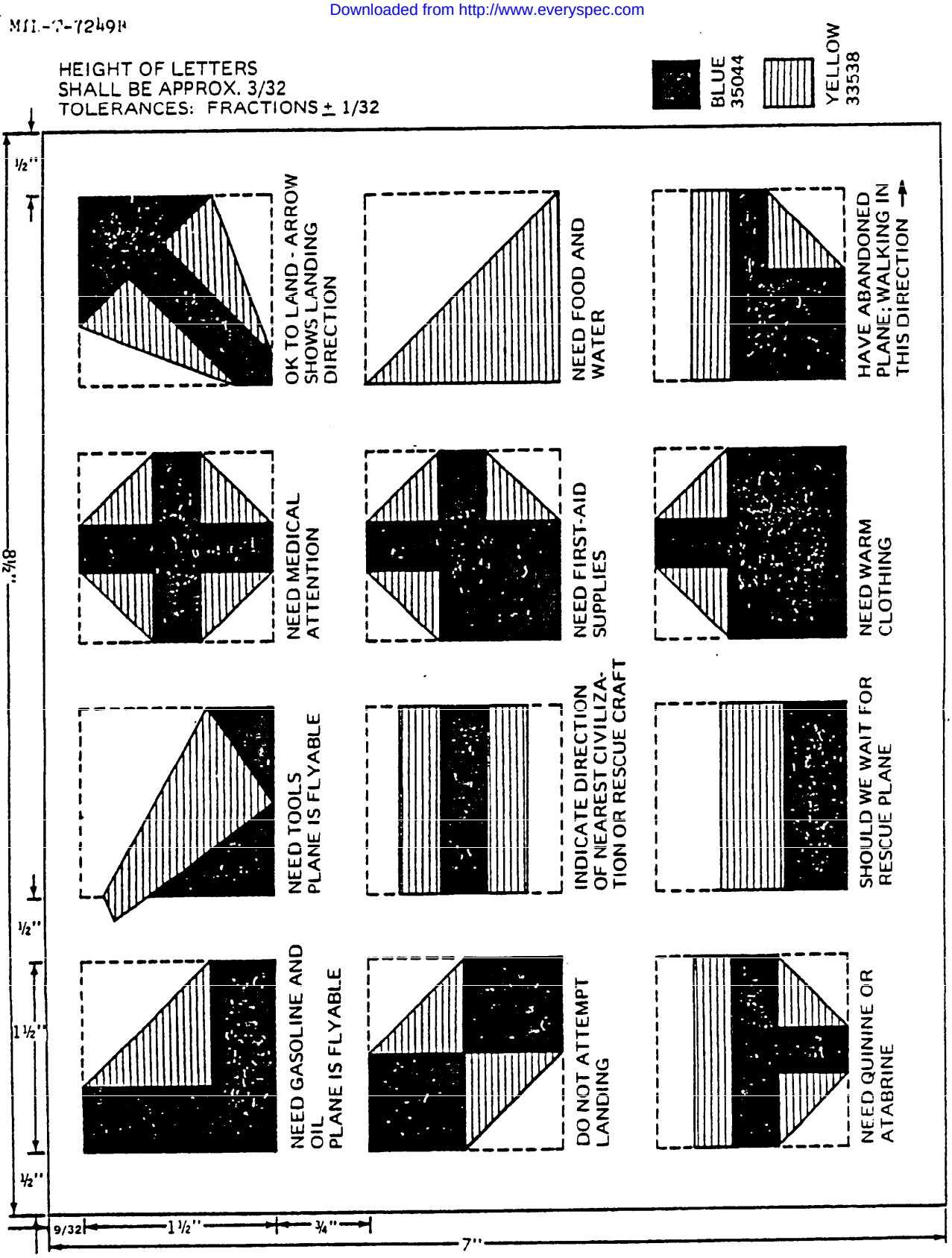


FIGURE 3. Instruction - decal design

DIMENSIONS IN INCHES.

FOLD

POSTAGE AND FEES PAID

DEPARTMENT OF THE AIR FORCE

OFFICIAL BUSINESS

San Antonio Air Materiel Area
Service Engineering Division (SANEOB)
Kelly AFB, Texas 78241

FOLD

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SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No. 22-R...

INSTRUCTIONS: This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.

SPECIFICATION

ORGANIZATION

CITY AND STATE | CONTRACT NUMBER

MATERIAL PROCURED UNDER A

☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

☐ YES ☐ NO *(If "yes", in what way?)*

4. REMARKS *(Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)*

SUBMITTED BY *(Printed or typed name and activity - Optional)* | DATE

DD FORM 1 JAN 66 1426 REPLACES EDITION OF 1 OCT 64 WHICH MAY BE USED.