INTERIM SPECIFICATION
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U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

INTERIM SPECIFICATION FOR FLY, TENT, NYLON, POLYURETHANE COATED

1. SCOPE AND CLASSIFICATION

1.1 Scope. This document covers the requirements for tent flys fabricated from polyurethane coated nylon.

1.2 Classification. The tent flys covered by this specification shall be of two types:

Type I - 16 ft. x 24 ft. (Oxford Nylon) with Carrying Case
Type II - 9 ft. x 10 ft. (Ripstop Nylon)

2. APPLICABLE DOCUMENTS

2.1 Government Documents. The following specifications and standards form part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those in effect on the date of invitation for bids or request for proposal, (see 6.2):

SPECIFICATIONS

FEDERAL

V-T-285 - Thread, Polyester
DDD-L-20 - Label: for Clothing, Equipage, and Tentage

MILITARY

MIL-T-5038 - Tape, Textile and Webbing, Textile, Reinforcing, Nylon
MIL-G-16491 - Grommet, Metallic
MIL-C-43256 - Cord, Polyester, Solid Braid

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data which may improve this document should be sent to: USDA Forest Service, Missoula Equipment Development Center, Missoula, MT 59801, by using the Specification Comment Sheet appearing at the end of this document or by letter.

USDA FOREST SERVICE

5100-86 - Cloth, Duck, Nylon (Polyurethane Coated)

STANDARDS

FEDERAL

FED-STD-123 - Marking for Shipment (Civil Agencies)
FED-STD-191 - Textile Test Methods
FED-STD-376 - Preferred Metric Units for General Use by the Federal Government
FED-STD-751 - Stitches, Seams, and Stitchings

DRAWINGS

USDA FOREST SERVICE

MEDC-724 - Fly, Tent, 16 x 24, Oxford Nylon, M-1984 (with Carrying Case)
MEDC-726 - Fly, Tent, 9 x 10, Ripstop Nylon, M-1984

(Unless otherwise indicated, copies of federal and military specifications and standards are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Ave., Philadelphia, PA 19111-5094. Copies of Forest Service specifications and drawings are available from USDA Forest Service, Missoula Technology and Development Center, Building 1, Fort Missoula, Missoula, MT 59801-7294)

2.2 Non-Government publications. The following documents form part of this specification to the extent specified herein. Unless otherwise specified, the issues in effect on the date of invitation for bids or request for proposal shall apply.

AMERICAN SOCIETY FOR QUALITY CONTROL (ASQC)

ANSI/ASQC Z1.4-1993 - Sampling Procedures and tables for Inspection by Attributes

(Address requests for copies to American Society for Quality Control, P.O. Box 3005, 611 E. Wisconsin Avenue, Milwaukee, WI 53201-4606.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3951 - Standard Practice for Commercial Packaging
ASTM D 5118 - Standard Practice for Fabrication of Fiberboard Shipping Boxes

(Address requests for copies to ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, (610) 832-9585).

INDUSTRIAL FABRICS ASSOCIATION INTERNATIONAL

CPAI-84 - Flame Retardent Materials Used In Camping Tentage

(Address requests for copies to Camping Products Manufacturer's Division, Industrial Fabrics Association International, 345 Cedar Building, Suite 450, St. Paul, MN 55101.)

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

National Motor Freight Classification

(Address requests for copies to American Trucking Associations, Inc., 2200 Mill Rd., Alexandria, VA 22314)

2.3 Order of precedence. In the event of conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. Unless otherwise specified (see 6.2), three samples of the item(s) shall be subjected to first article inspection (see 6.4) in accordance with 4.3.

3.2 Materials and components. Materials and components shall be as specified on the applicable drawings and as specified herein. For materials or components for which it is stated "or equal", if the contractor proposes to use an item considered to be equal to the material or component specified, prior to its use the contractor shall furnish a sample of material or component, with supporting data to the contracting officer for subsequent evaluation by the preparing activity (6.8). The supporting data required shall prove the functional equivalence and design compatibility of the item proposed to be used.

3.2.1 Basic fabrics. The base fabric shall be nylon oxford for type I tent fly and ripstop nylon for type II tent fly with a polyurethane coating conforming to the requirements specified herein.

3.2.1.1 Fiber. The fiber shall be a polyamide prepared from hexamethylene diamine and adipic acid or its derivatives and shall have a minimum melting point of 472°F when tested as specified in 4.5.1.

3.2.1.2 Yarn. The yarn shall be continuous filament, nominal 200 denier for oxford and 70 denier for ripstop for both the warp and filling, when tested as specified in 4.5.1.

3.2.1.3 Color. The color shall be bright yellow for oxford and royal blue for ripstop and shall match the standard shade samples (see 6.3).

3.2.1.3.1 Matching. The color of the dyed and finished cloth shall match the standard shade sample under artificial daylight having a color temperature of 7000 ± 500 Kelvin, and shall be a good approximation to the standard sample under incandescent light at 2850 ± 100 Kelvin.

3.2.1.3.2 Colorfastness. The dyed and finished cloth shall show fastness to accelerated weathering and crocking equal to or better than the standard sample. When no standard sample is available, the dyed and finished cloth shall show "good" fastness to accelerated weathering and shall show a Munsell value for crocking not less than 8.5 Testing shall be as specified in 4.5.1.

3.2.1.4 Physical requirements. The cloth shall conform to the requirements specified in table I when tested as specified in 4.5.1.

Table I. Physical Requirements

Characteristics	Requirements	
	Oxford	Ripstop
Weight, oz/sq yd		
Coated	4.2 ±0.20	2.4 ±0.10
Uncoated	3.2 ±0.20	2.1 ±0.10
Thickness, inch, minimum	0.0070	0.0050
Yarns per inch, minimum		
Warp	62	98
Filling	48	94
Breaking strength, lbs, minimum		
Warp	220	120
Filling	100	120
Tear strength		
Warp	13	5
Filling	12	5
Blocking, scale rating, maximum	No. 3	No. 3
Water repellency		
Dynamic absorbtion, maximum & increase		
Initial	20	20
After one laundering	20	20

3.2.1.5 Width. The selvage edges shall be trimmed back to the polyurethane coating. The minimum width after trimming shall be 59 inches. The trimmed edges shall finish straight with a constant width (average width ± 1/8 inch).

3.2.1.6 Weave. The weave shall be a plain weave for the type I tent fly and a ripstop weave for the type II tent fly. The use of fly shuttle or shuttleless loom is permitted.

3.2.1.7 Finish. The cloth shall be scoured, dyed, heat set, water repellent treated, and back coated to meet the requirements of this specification.

3.2.1.7.1 Water repellent treating. The water repellent treating shall consist of an aliphatic fluoro-chemical combined with a melamine extender.

3.2.1.7.2 Back coating. The scoured, dyed, heat set, and water repellent treated cloth shall be coated on one side only with a suitable clear polyurethane coating compound. If plasticizers are used in the coating, only phosphate or phthalate ester type plasticizers shall be used.

3.2.1.8 Resistance to low temperature. The finished coated cloth shall be exposed to a temperature of minus 25°F ± 5°F for a minimum of 4 hours and shall not show any cracking, flaking or separation of the coating from the base cloth when tested as specified in 4.5.1.

3.2.1.9 Spray rating. The results of three individual determinations on the finished coated cloth for spray rating shall be equal to or better than 100, 100, 90 initially and 90, 90, 80 after one laundering when tested as specified in 4.5.1.

3.2.1.10 Resistance to organic liquid. The finished coated cloth shall show no wetting by n-dodecane, either initially or after one laundering when tested as specified in 4.5.1.1.

3.2.1.11 pH. The pH value of the water extract of the finished cloth shall be not less than 5.0 nor more than 8.5 when tested as specified in 4.5.1.

3.2.1.12 Dimensional stability. The cloth shall have no more than 2.0 percent dimensional change in either warp or filling direction when tested as specified in 4.5.1.

3.2.1.13 Flame resistance. The cloth shall conform to the requirements of CPAI-84 (see 4.3.3).

3.2.2 Cloth, duck, nylon (polyurethane coated). The base fabric for the carrying case shall conform to type I of Forest Service Specification 5100-86 and shall be bright red in color to match the standard sample (see 6.3).

3.2.3 Cord, polyester. The 1/8 inch diameter and 3/16 inch diameter polyester cord shall be natural color and shall conform to MIL-C-43256.

3.2.4 Reinforcement tape. The nylon reinforcement tape shall be type III, 3/4 inch wide conforming to MIL-T-5038 and the color shall be royal blue.

3.2.5 Thread, polyester. The thread shall be type I, class 1, sub-class B conforming to V-T-285. The color shall be bright yellow or natural for type I tent fly, bright red or black for the carrying case, and royal blue or black for the type II tent fly. The thread shall be size F for all stitching.

3.2.6 Grommets, metallic. The grommets shall be brass, bright finish conforming to type III, class 1 of MIL-G-16491. The size shall be No. 2 for all locations on the type I tent fly except that the ridgeline grommets shall be size No. 4. The size shall be No. 0 for the type II tent fly and for the type I carrying case.

3.2.7 Plastic hardware.

3.2.7.1 Lock, cord. The cord lock shall conform to ITW Nexus Cord Lock, size 194 (see 6.5) or equal. The color shall be black.

3.2.7.2 Dee ring. The dee ring shall be manufactured from 6,6 nylon and shall conform to ITW Nexus 3/4 inch dee ring (see 6.5) or equal.

3.2.8 Tent slip. The tent slip shall be constructed from smooth finished hardwood, 3/4 inch diameter by 4 inches long, with 7/16 ± 1/16 inch diameter holes 3/4 ± 1/8 inch from each end (see 6.6).

3.2.9 Rope, manila. The manila rope for guy and eve lines shall be minimum circumference 5/8" (0.20" diameter), maximum circumference 7/8" (0.28" diameter), minimum breaking strength 540 lbs, and minimum length per pound 50'. The rope shall be either a 3 or 4 strand construction and shall be fabricated from manila hemp, sisal, jute, or cotton fiber. The finish shall be natural. No material shall be added for the purpose of weighting the rope. The percentage of extractable matter shall not exceed 25%.

3.3 Construction. The construction shall conform to the drawings MEDC-724 and MEDC-726 for type I and type II tent flys, respectively, and to requirements specified herein.

3.3.1 Stitches, seams and stitchings. All stitching shall conform to type 301 of FED-STD-751, 8-10 stitches per inch.

3.3.1.1 Type 301 stitching. Ends of stitching shall be backstitched or overstitched not less than 1 inch (1/2 inch for box-x) except where ends are turned under or caught in other seams or stitching. Thread tensions shall be maintained so that there will be no loose stitching resulting in loose bobbin or top thread or excessively tight stitching resulting in puckering of the materials sewn. The lock shall be imbedded in the materials sewn.

3.3.1.1.1 Repairs of type 301 stitching. Repairs of type 301 stitching shall be as follows:

a. When thread breaks or bobbin run-outs occur during stitching, except pre-sewing, the stitching shall be repaired by restarting the stitching a minimum of one inch (1/2 inch for box-x) back of the end of the stitching. When making these repairs, the ends of the stitching are not required to be backstitched.

b. Except for pre-stitching, thread breaks, or two or more consecutive skipped or run-off stitches noted during inspection of the item (in-process or end item) shall be repaired by overstitching. The stitching shall start a minimum of one inch in back of the defective area, (1/2 inch on box-x) continue over the defective area and continue a minimum of one inch beyond the defective area onto the existing stitching. Loose or excessively tight stitching shall be repaired by removing the defective stitching, without damaging the materials, and restitching in the required manner.1/

3.3.1.2 Automatic stitching. Automatic machines may be used to perform any of the stitch patterns provided the requirements for the stitch pattern, stitches per inch, size and type of thread are met; and at least three or more tying, overlapping or backstitches are used to secure the ends of the stitching.

3.3.1.3 Thread ends. All thread ends shall be trimmed to 1/4 inch maximum length.

3.3.1.4 Lubrication of thread. There shall be no lubrication of the thread by any means, prior to or during sewing (see 4.3.3).

3.3.1.5 Stitching margins. Unless otherwise specified, all stitching margins shall be 1/8 ± 1/16 inch.

3.3.2 Setting of grommets. Holes shall be pre-punched to receive the grommets. Holes pre-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 grommet shall be securely clinched without cutting the adjacent material.

3.3.3 Fusing of ends of polyester cord and nylon tape. All ends of polyester cord and nylon tape shall be fused. The apparatus used to fuse the cord and tape ends shall be capable of providing sufficient heat to provide a smooth edge and with the cut ends of the yarns all fused together. Fusing of the ends shall be accomplished prior to being assembled.

3.3.4 Repairs. Repairs such as mends, darns, patches or splices are not permitted on the tent flys.

3.3.5 Piecing. Piecing or splicing of panels shall not be permitted.

3.3.6 Replacement of defective components. During the spreading, cutting and manufacturing process, components having materials defects or damages that are classified as defects in 4.3.5.1 shall be removed from production and replaced with nondefective and properly matched components.

3.3.7 Coated cloth surface. The coated side of the cloth shall face the inside of the completed tent fly except the type I ridge reinforcement coated side shall be face-to-face with the coated side of the main panel.

3.3.8 Wicking sewing thread (cup test). There shall be no seepage of water through the tarpaulin stitching when tested as specified in 4.5.2. The cup test is intended to insure that nonwicking thread has been utilized and that no lubrication has been added to the thread during the sewing operation.

3.3.9 Finishing ends of manila rope. The manila rope ends shall be zig-zag stitched at 8 to 12 stitches per inch, or hand stitched, for a distance of 1-1/2 inches from each end; or each end shall be wire clipped.

3.4 Marking. The markings shall be silk screened with a black marking medium in accordance with type IV, class 9 of DDD-L-20. Fastness of the class 9 marking shall be as specified for class 5 marking. The color of the cloth components shall not be visible under the markings.

3.4.1 FSS and carrying case marking. The tent flys and carrying case shall be marked with the letters "FSS". The carrying case shall also be marked "Tent Fly 16X24". The lettering shall be in the size characters and locations shown on the drawings.

3.4.2 Identification marking. Marking for the tent fly shall conform to type IV, class 8 of DDD-L-20 except that size shall be excluded and date of manufacture shall be included. Markings shall be in the locations shown on the drawings.

3.5 Dimensions. All dimensions are finished dimensions unless otherwise specified.

3.6 Deviations and waivers. Deviations and waivers to the materials or construction specified herein shall not be allowed unless authorized in writing by the contracting officer.

3.7 Workmanship. The tent flys shall conform to the quality of product established by this document and the occurrence of defects shall not exceed the applicable acceptable quality levels.

3.8 Metric products. Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch/pound units, provided they fall within the tolerances specified.

3.9 Recovered materials. The contractor is encouraged to use recovered material in accordance with Federal Acquisition Regulation 23.4 to the maximum extent practical.

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 (examinations or tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his/her own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in this specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.1.2 Responsibility for dimensional requirements. Unless otherwise specified in the contract or purchase order, the contractor is responsible for ensuring that all specified dimensions have been met. When dimensions cannot be examined on the end item, inspection shall be made at any point or at all points in the manufacturing process necessary to ensure compliance with all dimensional requirements.

4.1.3 Certification of compliance. Unless otherwise specified, certificates of compliance are acceptable for proof of conformance to all test requirements of this and the referenced documents. Certificates shall be based on tests performed by the contractor or component manufacturer. Test results shall be made available upon request. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections

are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.2 Sampling for inspections and tests. Sampling for inspections and tests shall be made in accordance with ANSI/ASQC Z1.4. The inspection level and acceptable quality level (AQL) shall be as specified.

4.3 Quality conformance inspection. Each lot shall be sampled and inspected as specified in 4.3.5 and 4.4.4. The inspection levels and acceptable quality levels (AQL's) shall be as specified in 4.3.5.4.

4.3.1 First article inspection. Unless otherwise specified (see 6.2), the first article submitted in accordance with 3.1 shall be visually inspected as specified in 4.3.5.1 and 4.3.5.2 for compliance with design, construction, workmanship, material and dimensional requirements.

4.3.2 Component and materials inspection. In accordance with 4.1, components and materials shall be inspected 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 document.

4.3.3 Certification. The contractor shall furnish a certificate of compliance for the requirement of 3.3.1.4 prohibiting use of thread lubricants prior to or during sewing and the requirements of 3.2.1.13 for flame resistance.

4.3.4 In-process inspection. Inspection shall be made of the following fabrication processes to establish conformance with specified requirements. Whenever nonconformance is noted, correction shall be made to the items affected, the lot in process and to the operation. Parts which cannot be corrected shall be removed from production.

A. There shall be no lubrication of polyester thread prior to or during the sewing operation for compliance with 3.3.1.4.

B. Holes punched to receive grommets are in compliance with 3.3.2.

4.3.5 End item inspection. The end item shall be examined in accordance with 4.3.5.1, 4.3.5.2, 4.3.5.3, and 4.3.5.4. The lot shall consist of all completely fabricated tent flys offered for inspection at one time. The sample unit shall be one completely fabricated tent fly.

4.3.5.1 Visual inspection.

Examine	Defect	Classification Major	Minor
Base Fabric			
Uncoated Side	Any Slub, smash or multiple float	X	
	Baggy, ridgy or wavy cloth	X	
	Any strikethrough of coating		X
	Any spot or stain		X
	Poor dye penetration, mottled, streaky, or cloudy	X	
Coated side	Any uncoated area	X	
	Any thinly coated area	X	
	Any blister, tunnel, or delamination of coating	X	
	Any lump or heavily coated area		X
	Crease or wrinkle that cannot be corrected by manual pressure resulting in doubling or adhesion of surface	X	
	Any spot, stain or streak more than 1 inch in it's longest dimension ([1])		X
	Any imbedded foriegn matter	X	
	Anys scorch or burn	X	
	Tackiness	X	
General	Width not as specified	X	
	Any hole, cut, or tear	X	
	Any abrasion mark, smash, large slub, broken or missing yarn, multiple float ([1])	X	
	Color not as specified	X	
	Shade bar, fine or coarse filling bar		X
Trimming	Selvage edges not trimmed back to urethane coating	X	
	Edges not straight	X	
	Width not constant	X	
Guy or eave line cords (type I)	Cut, chafed, or abraded	X	
	Not threaded through grommets and tent slips or knotted as specified	X	
	Wrong size or type	X	
	One cord missing		X
	Two or more cords missing	X	
	Cut ends not fused correctly	X	
Thread	Not specified type, class, subclass, or size	X	
	Any thread lubricated		X
	Color not as specified		X

Visual inspection (continued)

Examine	Defect	Classification Major	Classification Minor
Tape (type II)	Cut ends not fused correctly		X
	Frayed or scalloped edges, not firmly and tightly woven		X
	Any hole, cut, tear, or splice	X	
Brass Grommets	Clinched excessively tight, cutting adjacent material	X	
	Insecurely clinched to a degree that grommet may be detached from material	X	
	Clinched lossely, allowing grommet to rotate in hole but not to a degree that it can be expected to become detached during use		X
	Washer installed on incorrect side of material		X
	Eyelet barrel split		X
Dee ring and cord lock	Not specified type, size and color	X	
	Broken, cracked, chipped, distorted or out of shape	X	
	Any dirt or flash		X
Tent slip (type I only)	Not hardwood	X	
Open seam[2]	Not finished smooth		X
	1/2 inch or less		X
	More than 1/2 inch	X	
Raw edge (edge required to be finished)[3]	More than 1/2 inch when securely caught in stitching		X
Seam and stitch type	Wrong seam or stitch type	X	
Stitch tension	Loose, resulting in a loose bobbin or top thread		X
	Excessively tight, resulting in puckering of material		X
Stitches/inch	Up to 2 less than minimum[4]		X
	3 or more less than minimum[4]	X	
	2 or more in excess of maximum[4]		X
Stitching gauge	Not as specified		X
Stitching ends	Not secured as specified		X
Thread breaks skipped stitched or runoffs[5]	Not overstitched as specified		X
Rows of stitching	Any row missing except on box-x	X	
	One row missing on box-x		X
	Two or more rows missing on box-x	X	

Visual inspection. (continued)

Examine	Defect	Classification Major	Minor
Components and assembly	Any component part omitted or not as specified or any operation omitted or not as specified not otherwise classified	X	
	Needle chews	X	
	Ant mend, darn, patch, splice, or other unauthorized repair	X	
	Any material pleated or caught in stitch line where not specified	X	
Piecing	Any piecing or splicing of panels	X	
Edge reinforcement cord	Missing or incorrectly located	X	
	Wrong type or size	X	
Cleanness	Grease, oil, dirt, ink, or other stains clearly noticeable		X
	Thread ends not trimmed throughout as specified		X
Markings	Omitted, incorrect, illegible, misplaced or size of characters not as specified		X

[1] Clearly visible at normal inspection distance (approximately 3 feet

[2] A seam shall be classified as open when one or more stitches joining a seam are broken or when two or more consecutive skipped or run-off stitches occur. On double stitched seams, a seam shall be considered open when either one or both sides of the seam are open.

[3] Raw edge not securely caught in stitching shall be classified as open seam.

[4] Variation in the number of stitches per inch caused by the operator speeding up the machine and pulling the fabric in order to sew over heavy seams or in turning corners, shall be classified as follows: (a) Within the minor defect classification - no defect; (b) Within the major defect classification - minor defect. Defects noted shall be scored only when the conditions exists for 3 inches or more in several areas with an accumulated distance of 5 inches or more, applicable to individual seams.

[5] Thread breaks or two or more consecutive skipped or runoff stitches not overstitched shall be classified as open seams.

4.3.5.2 Dimensional examination.

Examine	Defect	Classification Major	Minor
Overall dimensions	Smaller than specified dimensions	X	
	Larger than specified		X
Tent Slip	Incorrect size		X
Components and location dimensions	Not within the specified tolerance		X
Grommets	Set off center on hems by more than 1/4 inch on type I and 1/8 inch on type II		X

4.3.5.3 Testing of the end product. Tent fly samples shall be tested as specified in 4.5.2 for compliance with 3.3.8. The sample unit shall be one completely fabricated tent fly. The lot shall consist of all completely fabricated tent flys offered for inspection and the inspection level shall be S-3. Failure in any area shall be cause for rejection of the lot.

4.3.5.4 Inspection level and acceptable quality level (AQL). The inspection levels and AQL's expressed in defects per hundred units shall be as follows:

Examine	Inspection Level	AQL
For defects in 4.3.5.1 examination for visual defects	I	4.0 major 15.0 major and minor combine
For defects in 4.3.5.2 examination for dimensional defects	S-3	6.5 major 15.0 major and minor combined

4.4 Packaging inspection. An examination shall be made to determine that preservation, packing, and marking comply with the section 5 requirements. Defects shall be scored in accordance with the list below. The sample unit shall be one shipping container fully packaged with the exception that it need not be closed. Examination of closure defects listed below shall be made on shipping containers fully packaged. The lot size shall be the number of shipping containers in the end item inspection lot. The inspection level shall be S-2 and the AQL expressed in terms of defects per hundred units shall be 6.5.

Examine	Defects
Marking (exterior and unit pack)	Omitted; incorrect; illegible; of improper size, location, sequence, or method application
Materials	Any component missing, damaged, or not as specified
Workmanship	Inadequate application of components, such as incomplete closure of container flaps, loose strapping, improper taping, or inadequate stapling, bulged or distorted container, open or noncontinuous heat-sealed seams and closures or polyethylene bags, incorrectly fabricated polyethylene bag
Contents	Number per container is more or less than required

4.5 Tests.

4.5.1 Component testing of the base fabric. 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 where otherwise specified, apply to the results of the determinations made on the 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 for the test purposes shall be 2 continuous yards full width of the finished cloth. The lot size shall be expressed in units of one yard. The shall be unacceptable if one or more sample units fail to meet any of the test requirements specified. The sample size shall be in accordance with the following:

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 Paragraph	Test method
Fiber	3.2.1.1	1/
Yarn	3.2.1.2	1/
Colorfastness to Accelerated weathering	3.2.1.3.2	5671 2/
Crocking	3.2.1.3.2	5651
Weight		
Coated	3.2.1.4	5041
Uncoated	3.2.1.4	1/
Thickness	3.2.1.4	5030
Yarns per inch		
Warp	3.2.1.4	5050
Filling	3.2.1.4	5050
Breaking strength		
Warp	3.2.1.4	5100
Filling	3.2.1.4	5100

Table II. Test methods. (continued)

Characteristic	Requirement Paragraph	Test method
Tear strength		
Warp	3.2.1.4	5134
Filling	3.2.1.4	5134
Blocking	3.2.1.4	5872
Water repellency		
Initial	3.2.1.4	5500
After one laundering	3.2.1.4	5500
Weave	3.2.1.6	Visual 3/
Finish	3.2.1.7	1/
Water repellency	3.2.1.7.1	1/
Polyurethane coating	3.2.1.7.2	1/
Plasticizers	3.2.1.7.2	1/
Resistance to low temperature	3.2.1.8	5874
Spray rating	3.2.1.9	5526
Resistance to organic liquid	3.2.1.10	4.5.1.1
pH	3.2.1.11	
Dimensional stability	3.2.1.12	5556
Flame resistance	3.2.1.13	CPAI-84 4/

1/ Unless otherwise specified, a certificate of compliance shall be submitted and will be acceptable for the stated requirement.
2/ The time of exposure shall be 40 hours.
3/ One determination per sample unit and the results reported as "pass" or "fail".
4/ Each lot of flame resistant material shall be accompanied by a Certificate of Compliance.

4.5.1.1 Test for resistance to organic liquid. Place a small specimen of the cloth on a smooth horizontal surface, face up. Using a pipette or eye dropper, gently deposit one drop of n-dodecane on the surface of the specimen. After one minute, examine the specimen under the light at an angle. Absence of light reflectance at the fabric drop interface shall be taken as evidence of wetting. Three specimens taken at various locations across the sample shall be tested. Evidence of wetting on any specimen shall be cause for rejection of the lot.

4.5.2 Wicking of sewing thread (cup test). The test flys shall be tested in two areas on the joining seams.

4.5.2.1 Procedure. Suspend the seamed section of the test fabric in the center of a 6 ± 1/8 inch diameter hoop and form a depression with the seamed fabric in the hoop to a depth of 1 ± 1/4 inch. Slowly pour 500 ml of water at 77°F ± 4°F into the cupped area (depression) and observe the under surface of the fabric for water penetration. Any wicking of water along the sewing thread, identified by a discoloration or darkening of the thread within 5 minutes after water is poured, shall constitute a failure. Water leakage through the needle holes or between the plies of the fell seamed fabric shall not be considered a failure.

5. PACKAGING

5.1 Preservation. Preservation shall be in accordance with ASTM D 3951 or as specified in the contract or purchase order.

5.1.1 Folding.

5.1.1.1 Type I. One (1) complete type I tent fly shall be neatly folded in the lengthwise direction until approximately 19 inches wide then rolled up tightly with all guy and eve lines tucked inside. The rolled tent fly shall be inserted into the carrying case with flap in place and drawstring tightened and tucked into opening.

5.1.1.2 Type II. One (1) complete type II tent fly shall be neatly folded so that the identification markings are visible and shall be packaged into a snug-fitting flat clear polyethylene film bag of 0.004 inch thickness (± 10 percent tolerance). Sheet or tubular film is acceptable. The bag shall be formed with heat-sealed seams that are straight, continuous and parallel to each other and the formed edges of the bag. The bag closure shall be effected by heat-sealing with the heat-seal made as close as possible to the open end yet provide a good tight seal. Prior to or during the final heat-sealing closure operation, excess air within the bag shall be expelled. Identification marking shall be visible.

5.2 Packing.

5.2.1 Type I. One (1) type I tent fly preserved as specified in 5.1 shall be packed in a close-fitting fiberboard shipping container, minimum burst strength 275 psi (minimum edge crush test 44 lbs per inch width). The container shall comply with the National Motor Freight Classification. Boxes shall be type CF (variety SW) or SF, class Domestic, meeting the requirements of the latest version of ASTM D 5118.

5.2.1.1 Type II. Twenty (20) type II tent flys preserved as specified in 5.1 shall be packed in a close-fitting fiberboard box of the same style, type, class, and grade cited in 5.2.1.

5.3 Marking. In addition to any special marking required by the contract or purchase order, shipping containers shall be marked in accordance with FED-STD-123.

6. NOTES

6.1 Intended use. Type I tent fly is intended for use in wildland firefighting camps. Type II tent fly is intended for use as a one-person ground cloth and shelter. Both tent flys are suitable for general use as tarpaulins.

6.2 Acquisition requirements. Acquisition documents must specify:

(a) Title, number, and date of this specification.
(b) Type required (see 1.2).
(c) When first article samples are not required.
(d) Width of cloth if other than specified (see 3.2.1.5)

6.3 Standard samples. For access to the standard samples (see 3.2.1.3 and 3.2.2) address the procuring activity issuing the invitation for bids.

6.4 First article. When first articles are required, they shall be inspected and approved under the appropriate provisions of the first article clause contained in the solicitation. The first articles shall be preproduction samples consisting of three completed tent flys. The contracting officer should include specific instructions in all acquisition instruments regarding arrangements for selection, inspection, and approval of the first articles.

6.5 Plastic hardware. A suggested source of supply for the plastic hardware specified in 3.2.7 is ITW Nexus, Division Illinois Tool, Inc., 201 Scott Street, Elk Grove, IL 60007.

6.6 Tent slip. A suggested source of supply for the tent slip specified in 3.2.8 is Henry Evers Manufacturing Co., 2232 McNair, St. Louis, MO 63104.

6.7 Notice. When Government drawings, specification or other data used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever.

6.8 Preparing Activity. USDA Forest Service, Missoula Technology and Development Center, Building 1, Fort Missoula, Missoula, MT 59801-7294.