USDA Forest Service
U.S. DEPARTMENT OF AGRICULTURE
National Technology & Development Program

Specification 5100-31E
FLY, TENT, NYLON, POLYURETHANE COATED

Issue Date: April 25, 2024
Supersedes: 5100-0031D
March, 1996
FSC 8340

Record of Revisions

Date	Revision summary
4/25/24	Revised format to 508 Compliance. Updated referenced specifications and standards Incorporated IPD exceptions Corrected typos and formatting errors

1. **SCOPE AND CLASSIFICATION**

1.1. Scope.

This document covers the requirements for tent flies fabricated of polyurethane-coated nylon.

1.2. Classification.

The tent flies covered by this specification shall be of two types:

Type 1 – 24 ft. x 16 ft.., Oxford Nylon, M1984 (with Carrying Case)
NSN: 0834-00-102-6370
NFES: 000070
Type 2 - 10 ft. x 9 ft., Ripstop Nylon, M1984
NSN: 8340-01-185-5512
NFES: 001521

1.3. Interpretations and Definitions.

1.3.1. Interpretation.

To carry out the provisions of this document, the word “shall” is understood to be mandatory.

1.3.2. Definitions.

Nonconformity: A departure of a quality characteristic from its intended level or state that occurs with severity sufficient to cause an associated product or service not to meet a specification requirement (per ANSI/ASQ Z1.4).

2. APPLICABLE DOCUMENTS

2.1. Government documents.

The following specifications and standards form a 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 Unless otherwise indicated, copies of federal and military specifications and standards are available online at http://assist.daps.dla.mil/quicksearch/ or in hard copy from the Standardization Documents Order Desk, Building 4D, 700 Robbins Ave., Philadelphia, PA 19111-5094. Copies of USDA Forest Service specifications are available from the preparing activity, 6.8.

2.1.1. SPECIFICATIONS

A-A-59826 - Thread, Nylon
MIL-DTL-32075 - Label: for Clothing, Equipage, and Tentage
MIL-C-43256 - Cord, Polyester, Solid Braid
MIL-DTL-5038 – Tape, Textile and webbing, Textile, Reinforcing, Nylon

2.1.2. STANDARDS

FED-STD-191 - Textile Test Methods

FED-STD-376 - Preferred Metric Units for General Use by the Federal Government
MIL-STD-129 – Marking and Labeling Requirements for Department of Defense (DoD) Shipments

2.1.3. DRAWINGS

2.1.3.1. USDA FOREST SERVICE

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

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 date of invitation for bids or request for proposal shall apply. Non-Government standards and other publications normally are available from the organizations that prepare and distribute the documents. These documents also may be available in or through libraries or other informational services.

2.2.1. AEROSPACE INDUSTRIES ASSOCIATION (AIA)

Copies are available from the Aerospace Industries Association, 1000 Wilson Boulevard, Suite 1700, Arlington VA 22209-3928, www.aia-aerospace.org.

NASM16491 - Grommet Metallic, General Specification
NASM20230 - Grommet, Metallic, Plain, and Rolled Rim, With Washer, Type 1 and Type 2I

2.2.2. AMERICAN SOCIETY FOR QUALITY (ASQ)

Copies are available from the American Society for Quality, PO Box 3005, Milwaukee, WI 53201-3005, www.asq.org.

Z1.4 - Sampling Procedures and Tables for Inspection by Attributes

2.2.3. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

Copies are available from ASTM, 100 Barr Harbor Dr., West Conshohocken, PA 19428-2959, http://www.astm.org.

D 3951 - Standard Practice for Commercial Packaging
D 5118 - Standard Practice for Fabrication of Fiberboard Shipping Boxes
D 1974 - Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Shipping Containers
D 6193 - Standard Practice for Stitches and Seams

2.2.4. INDUSTRIAL FABRICS ASSOCIATION INTERNATIONAL

Copies are available from the Camping Products Manufacturer's Division, Industrial Fabrics Association International, 345 Cedar Building, Suite 450, St. Paul, MN 55101, www.ifai.com.

CPAI-84 - Flame Retardant Materials Used In Camping Tentage

2.2.5. NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

Copies are available from the American Trucking Associations, Inc., 2200 Mill Rd., Alexandria, VA 22314, www.nmfta.org.)

National Motor Freight Classification

2.2.6. PARACHUTE INDUSTRY ASSOCIATION (PIA)

Copies are available from PIA, 3833 West Oakton Street, Skokie, IL 60076. www.pia.com.

PIA-T-5038 - Tape, Textile and Webbing, Textile, Reinforcing, Nylon

2.3. Order of precedence.

In the event of conflict between the text of this document and the reference cited herein, the text of this document shall take precedence. Nothing in this document, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. **REQUIREMENTS**

3.1. First article.

Unless otherwise specified (see 6.2), the item shall be subjected to first article inspection (see 6.4) in accordance with 4.3.1. During the term of the contract the contractor shall be required to notify the contracting officer in writing when a component, or the component supplier, changes in any way; when a major manufacturing process changes in any way; and when a manufacturing location changes. The contracting officer may at any time require the contractor to submit a new first article sample when substantive changes occur during the term of the contract.

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 purposes 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 basic fabric for the Type 1 Tent Fly shall be nylon oxford. The basic fabric for the Type 2 Tent Fly shall be ripstop nylon. Both fabrics shall have a polyurethane coating and shall otherwise conform to the requirements of this document.

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 472ºF when tested as specified in 4.4.1.

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 4.4.1.

3.2.1.3. Color.

The color shall be bright yellow for oxford (Type 1) and royal blue for ripstop (Type 2) 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 kelvins and shall be a good approximation to the standard sample under incandescent light at 2850 ± 100 kelvins.

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 4.4.1

3.2.1.4. Physical requirements.

The cloth shall conform to the physical requirements specified in Table 1 when tested as specified in 4.4.1. Component testing of the basic fabric (See Table 5).

Table 1 - Physical Requirements

Characteristic	Requirements	
Type of cloth	Oxford (Type 1 Fly)	Ripstop (Type 2 Fly)
Weight Coated, oz/sq yd	4.2 ± 0.2	2.4 ± 0.1
Weight Uncoated, oz/sq yd	3.2 ± 0.2	2.1 ± 0.1
Thickness, inch (minimum)	0.0070	0.0050
Warp, Yarns per inch (minimum)	62	98
Filling Yarns per inch (minimum)	48	94
Warp Breaking strength, lbs (minimum)	220	120
Filling Breaking strength, lbs (minimum)	100	120
Warp Tear strength, lbs (minimum)	18	5

Filling Tear strength, lbs (minimum)	19	5
Blocking, scale rating (minimum)	No. 3	No. 3
Initial Water repellency dynamic absorption, increase (maximum)	20%	20%
After one laundering Water repellency dynamic absorption, increase (maximum)	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 1 tent fly and a ripstop weave for the type 2 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 treatment.

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 25ºF ± 5ºF 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 4.4.1.

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 4.4.1.

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 4.4.2.

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 4.4.1.

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 4.4.1.

3.2.1.13. Flame resistance.

The cloth shall conform to the requirements of CPIA-84 (see 4.4.1).

3.2.2. Cloth, carrying case.

The carrying case cloth shall meet the following requirements and the requirements of table 2.

3.2.2.1. Yarn.

The yarn shall be continuous filament, nominal 1000 denier, producer bulked nylon for both warp and filling. Conformance shall be attested to by COC.

3.2.2.2. Color.

The color shall be a bright red and shall match the standard sample (see 6.3).

3.2.2.3. Weave.

3.2.2.4. The weave for the cloth shall be plain, one up and one down.

3.2.2.5. Testing.

Unless otherwise specified, Certificates of Conformance backed by test results are acceptable in lieu of lot-by-lot testing. Tests used for verification shall be recognized, repeatable test methods.

Table 2. Cloth, Carrying Case Physical Requirements

Characteristics	**Min**	**Max**
Weight (oz./sq. yd)		
Uncoated base material	9.00	10.00
Polyurethane coating	1.25	-
Yarns per inch		
Warp	33	-
Filling	26	-
Breaking strength (lbs.)		
Warp	350	-

Filling	300	-
Blocking (scale rating) (max)	-	No. 3
Water repellency/Dynamic absorption (maximum % increase)		
Initial	-	20%
After one laundering	-	20%

3.2.3. Cord, polyester.

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

3.2.4. Reinforcement tape.

The nylon reinforcement tape for the type 2 fly shall be type III, 3/4 inch wide conforming to MIL-DTL-5038 and the color shall be royal blue or black.

3.2.5. Thread, nylon.

The thread shall conform to type II. class A of A-A-59826. Thread size for sewing the type 1 tent fly and carrying case shall be F and for the type 2 tent fly, E. The thread color shall be natural for the type 1 tent fly, black for the type 1 carrying case, and black or blue to match the fabric for the type 2 tent fly.

3.2.6. Grommets, metallic.

The grommets shall be brass, bright finish conforming to type 2 of NASM16491. The size for all locations for the type 1 tent fly shall be No. 4. The size shall be No. 0 for the type 2 tent fly and No. 1 for the type 1 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. D ring.

The D ring shall be manufactured from 6,6 nylon and shall conform to ITW Nexus ¾ inch D ring (see 6.5) or equal.

3.2.8. Tent slip.

The tent slip shall be constructed from smooth finished hardwood, ¾ inch diameter by 4 inches long, with 7/16 ± 1/16 inch diameter holes ¾ ± 1/8 inch from each end (see 6.6).

3.2.9. Guy lines.

The guy lines shall be braided 100% nylon with a circumference of ¾ +/- 1/16 inch (nominal diameter of ¼ inch) under 12 lbs of load, a linear density of 1.35 lbs/100 ft minimum, and

1000 lbs minimum breaking strength. The rope shall be white in color. The rope shall consist of 8 braids around a straight core. The ends of the ropes shall be completely heat fused (including core) to prevent unraveling.

3.3. Construction.

The construction shall conform to the drawings NTDP-724 and NTDP-726 for type 1 and type 2 tent flies, respectively, and to the requirements of this document.

3.3.1. Stitches, seams and stitchings.

All stitching shall conform to type 301 of ASTM D 6193-11, 6-8 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 presewing, 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 nonconforming area, (1/2 inch on box-x) continue over the nonconforming area and continue a minimum of one inch beyond the nonconforming area onto the existing stitching. Loose or excessively tight stitching shall be repaired by removing the nonconforming stitching, without damaging the materials, and restitching in the required manner. When making these repairs, the ends of the stitching are not required to be backstitched.

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 ¼ inch maximum length.

3.3.1.4. Lubrication of thread.

There shall be no lubrication of the thread 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 pro-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 flies.

3.3.5. Piecing.

Piecing or splicing of panels shall not be permitted.

3.3.6. Replacement of nonconforming components.

During the spreading, cutting, and manufacturing process, components having materials nonconformities or damages that are classified as nonconformities table 3 shall be removed from production and replaced with conforming 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 1 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 evidence of the thread wicking water, identified by a discoloration, or darkening of the thread, when tested as specified in 4.4.3.. The cup test is intended to ensure that nonwicking thread has been utilized and that no lubrication has been added to the thread during the sewing operation. Leakage through sewing holes or the fell seam without evidence of wicking of the thread does not constitute a failure.

3.4. Fly and Carrying Case Markings

3.4.1. NFES Marking.

The “NFES" markings shall be silk screened with a black marking medium in accordance with type lV, class 9 of MIL-DTL-32075 in the locations shown on the tent flies and carrying case drawings. Fastness of the class 9 marking shall be as specified for the class 5 marking. The color of the cloth components shall not be visible under the markings. The

carrying case shall also be marked “Tent Fly 16 x 24”. The lettering shall be in the size characters and locations shown on the drawings.

3.4.2. Identification marking.

Identification markings for the tent flies as specified in 3.4.2.1 and 3.4.2.2 shall conform to type lV, class 8 of MIL-DTL-23075. Markings shall be in the locations shown on the drawings.

3.4.2.1. Type 1.

Shall show the following information:

FLY, TENT, TYPE 1 (24x16)
CONTRACT NO [1/]
NSN 8340-00-102-6370
NFES 0070
DATE OF MFG [1/ MM/YY]
MFG BY [1/]

1/ - Insert the necessary information

3.4.2.2. Type 2.

Shall show the following information:

FLY, TENT, TYPE 2 (10x9)
CONTRACT NO [1/]
NSN 8340-01-185-5512
NFES 1521
DATE OF MFG MM/YY [1/]
MFG BY [1/]

1/ - Insert the necessary information

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 flies shall conform to the quality of product established by this document and the occurrence of nonconformities 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 materials in accordance with Federal Acquisition Regulation (FAR) 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 the 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 nonconforming material, either indicated or actual, nor does it commit the Government to accept nonconforming 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. Quality conformance inspection.

Each end item lot shall be sampled and inspected as specified in 4.3.5.1 and 4.3.5.2. The packaging shall be sampled as specified in 4.5 Unless otherwise specified (see 6.2), first articles submitted in accordance with 3.1 shall be inspected as specified in 4.3.5.1 and 4.3.5.2 except that packaging and packing is not required when first articles are presented. The presence of any nonconformity or failure to pass any test shall be cause for non-acceptance of the first article.

4.3.2. Component and material inspection.

In accordance with 4.1, components and materials shall be inspected in accordance with all the requirements of referenced documents, drawings, and standards unless otherwise excluded, amended, modified, or qualified in this specification or applicable purchase document.

4.3.2.1. Certificates of conformance.

Unless otherwise specified (see 6.2), as part of first article presentations and lot inspections, it shall be acceptable for the contractor to provide certificates of conformance (COC) for all materials and components in lieu of actual lot by lot testing. When the contractor changes component or material suppliers, a new COC shall be required. When COCs are submitted, the Government reserves the right to check test such items to determine the validity of the certification. COCs shall be provided for the following components:

Basic fabric (3.2.1)
Flame resistance (3.2.1.13) (Either as separate certification or as a part of the basic cloth.)
Cloth, carrying case (3.2.2) (type 1 only)
Cord, polyester (3.2.3)
Reinforcement tape (3.2.4)
Thread, nylon (3.2.5)
Grommets. Metallic (3.2.6)
Lock, cord (3.2.7.1)
D ring (3.2.7.2)
Tent slip (3.2.8)
Guy lines (3.2.9)

No thread lubricant (3.3.1.4)

4.3.2.2. COC content.

For items that are specified by part number or choice of part numbers (and not "or equal"), purchasing documents showing the part number are sufficient as a COC. Otherwise the COC shall include as a minimum:

Specification, type, class, form, etc. as applicable
Quantity purchased
Purchase source, address, and telephone number
Purchase date
Lot number traceable to materials used in production
Contract number

4.3.3. Thread Lube.

The contractor shall furnish a certificate of compliance for the requirement of 4.3.2.1 prohibiting use of thread lubricants prior to or during sewing and the requirements of 3.3.1.4 for flame resistance.

4.3.4. In-process inspection.

Inspection shall be made at any point or during any phase of the manufacturing process to determine whether cut lengths, cut parts, markings for location of components, and location of assembled component parts are in accordance with specified requirements. Inspection shall be made to determine that holes drilled for location marking do not exceed 0.076 inch diameter and are placed in such a manner that each shall be covered in the finished item Whenever nonconformance is noted, corrections shall be made to the parts affected and lot in process. Components that cannot be corrected shall be removed from production.

4.3.5. End item examination.

4.3.5.1. End item visual examination.

The end items shall be examined for the nonconformities list in table 3 on a lot by lot basis. The lot size shall be expressed in units of complete field packs. The inspection level shall be S-3, and the acceptable quality level (AQL), expressed in terms of nonconformities per hundred units, shall be 4.0 for major nonconformities and 15.0 for combined major and minor nonconformities. Unless otherwise specified, nonconformities shall be scored on an individual basis, i.e., each stitching end, each dimension, etc.

TABLE 3. End item visual nonconformities			
Examine	**Nonconformities**	**Major classification**	**Minor classification**
Basic fabrics 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	-
Basic fabrics 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 or resulting in doubling or adhesion of surface	X	-
	Any spot, stain, or streak more than 1 inch in its longest dimension clearly visible at normal inspection distance (approximately 3 feet).	X	-
	Any embedded foreign matter	X	-
	Any 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 clearly visible at normal inspection distance (approximately 3 feet).	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 lines (type 1)	Cut, chafed, or abraded	X	-
	Not threaded through grommets tent slips or knotted as specified	-	X
	Wrong type or size	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
Tape (type 2)	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 loosely, allowing grommet to rotate in hole but not to degree that it can be expected to become detached during use	-	X

	Washer installed on incorrect side of material	-	X
	Eyelet barrel split	-	X
D 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 1)	Not hardwood	X	-
	Not finished smooth	X	-
Open Seam	1/2 inch or less	-	X
	More than 1/2 inch	X	-
	NOTE: 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.		
Raw edge (edge required to be finished	More than 1/2 inch when securely caught in stitching	-	X
	NOTE: Raw edge not securely caught in stitching shall be classified as open seam		
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 per inch	Up to 2 less than minimum	-	X
	3 or more less than minimum	X	-
	2 or more in excess of maximum	-	X
	NOTE: 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 nonconformity classification - no nonconformity; (b) Within the major nonconformity classification - minor nonconformity. Nonconformities noted shall be scored only when the conditions exist for 3 inches or more in several areas with an accumulated distance of 5 inches or more, applicable to individual seams.		
Stitching gage	Not as specified	-	X
Stitching ends	Not secured as specified	-	X
Thread breaks, skipped stitches or runoffs	Not overstitched as specified	-	X
	NOTE: Thread breaks or two or more consecutive skipped or runoff stitches not overstitched shall be classified as open seams.		
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	-
Components and assembly	Any component part omitted or not as specified, or any operation omitted or not as specified (unless otherwise classified herein)	X	-
	Needle chews	X	-
	Any 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

4.3.5.2. End item dimensional examination.

End items shall be examined for the nonconformities listed in table 4 on a lot by lot basis. Only those dimensions that can be evaluated without damaging or disassembling the end items shall be examined. The inspection level shall be S-3. An AQL, expressed in terms of nonconformities per hundred units, shall be 6.5 major nonconformities and 15.0 for combined major and minor nonconformities.

TABLE 4. End item dimensional examination

Examine	Nonconformities	Major classification	Minor classification
Overall dimensions	Smaller than specified dimensions	X	—
	Larger than specified	—	X
Tent slip	Incorrect size	—	X
Components	Not within the specified tolerances	—	X
Grommets	Set off center on hems by more than 1/4 inch on type 1 and 1/8 inch on type 2	—	X

4.4. Tests.

4.4.1. Component testing of the basic fabric.

The methods of testing specified in FED-STD-191 or equivalent testing wherever applicable, and as listed in Table 5 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 lot 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 to 22,000	3

22,001 and over	5

TABLE 5. Test Methods		
Characteristic	Paragraph	Test method FED-STD-191
Fiber	3.2.1.1	COC
Yarn (fly material)	3.2.1.2	COC
Yarn (carrying case)	3.2.2.1	COC
Colorfastness to Accelerated weathering	3.2.1.3.2	5671 (40 hrs)
Crocking	3.2.1.3.2	5651
Coated Weight	3.2.1.4	5041
Uncoated Weight	3.2.1.4	COC
Thickness	3.2.1.4	5030
Warp Yarns per inch	3.2.1.4	5050
Filling Yarns per inch	3.2.1.4	5050
Warp Breaking strength	3.2.1.4	5100
Filling Breaking strength	3.2.1.4	5100
Warp Tear strength	3.2.1.4	5134
Filling Tear strength	3.2.1.4	5134
Blocking	3.2.1.4	5872
Initial Water repellency	3.2.1.4	5500
After one laundering Water repellency	3.2.1.4	5500
Weave	3.2.1.6	Visual
Finish	3.2.1.7	COC
Water repellency	3.2.1.7.1	COC
Polyurethane coating	3.2.1.7.2	COC

Plasticizers	3.2.1.7.2	COC
Resistance to low temperature	3.2.1.8	5874
Spray rating	3.2.1.9	5526
Resistance to organic liquid	3.2.1.10	(See 4.4.2)
pH	3.2.1.11	2811
Dimensional stability	3.2.1.12	5556
Flame resistance	3.2.1.13	CPIA-84 (COC)

4.4.2. 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.

4.4.3. Wicking of sewing thread (cup test).

The tent flies shall be tested in two areas on the joining seam(s).

4.4.3.1. Procedure.

Suspend the seamed section of the test fabric in the center of a 6 $\pm$ 1/8 inch diameter hoop and form a depression with the seamed fabric in the hoop to a depth of 1 $\pm$ 1/4 inch. Slowly pour 500 ml of water at 77 $\pm$ 4ºF into 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.

4.5. Packaging inspection.

An examination shall be made to determine that packing and marking comply with the section 5 requirements. Nonconformities shall be scored in accordance with Table 6. The sample unit shall be one shipping container fully packaged except that it shall not be palletized, and it need not be closed. Shipping containers fully packaged that have not been palletized shall be examined for nonconformities in closure. 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 shall be 2.5 nonconformities per hundred units.

Table 6. Packaging Examination

Examine	Nonconformity
Markings	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application.
Materials	Any component missing or not as specified.
	Any component damaged, affecting serviceability.
Workmanship	Inadequate application of components, such as incomplete closure of container flaps, improper taping, loose strapping, or inadequate stapling.
	Bulged or distorted container.
Contents	Number of items per container is more or less than required.

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 1.

One (1) complete type 1 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 2

Twenty (20) type 2 tent flys, packaged as specified, shall be packed into a 20”L X 20”W X 12”D fiberboard box, minimum burst strength 275 psi (ECT 44) meeting the requirements of the latest version of ASTM D 5118. Boxes shall be in compliance with the National Motor Freight Classification. Each box shall be closed in accordance with the latest version of ASTM D 1974.

5.2. Packing.

5.2.1. Type 1.

One (1) type 1 tent fly, packaged as specified, shall be packed into a 24”L X 12”W X 12”D fiberboard box, minimum burst strength 275 psi (ECT 44) meeting the requirements of the latest version of ASTM D 5118. Boxes shall be in compliance with the National Motor Freight Classification. Each box shall be closed in accordance with the latest version of ASTM D 1974.

5.2.2. Type 2.

Twenty (20) type 2 tent flies, packaged as specified, shall be packed into a 20”L X 20”W X 12”D fiberboard box, minimum burst strength 275 psi (ECT 44) meeting the requirements of the latest version of ASTM D 5118. Boxes shall be in compliance with the National Motor

Freight Classification. Each box shall be closed in accordance with the latest version of ASTM D 1974.

5.3. Marking.

Shipments to the Department of Defense (DOD) shall be marked in accordance with MIL-STD-129.

5.3.1. Special Marking

The National Fire Equipment System (NFES) number appearing below the National Stock Number (NSN) of this Item Purchase Description shall be marked on the shipping container below the NSN. The NFES number shall be preceded by “NFES”.

6. **NOTES**

6.1. Intended use.

Type 1 tent fly is intended for use in wildland firefighting camps. Type 2 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. Ordering data.

Procurement documents should specify the following:

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 shade sample.

Color shade samples for the tent flys and carrying case may be obtained from the preparing activity (see 6.8) and will be provided only to the contractor.

6.4. First article.

When first articles are required, they shall be inspected and approved under the appropriate provisions of FAR 52.209. First articles shall be preproduction samples. The contracting officer should include specific instructions in all acquisition documents regarding arrangements for selection, inspection, and approval of the first articles.

6.5. Suggest Sources

6.5.1. 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.

6.5.2. 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.

6.6. Bidder information.

For bidding purposes, 11" X 17" drawings will be furnished upon request. They will contain sufficient information regarding size, shape, and quantity of material for bidding purposes. It is the bidder's responsibility to determine yield and waste from the provided 11" X 17" drawings and no further direction or clarification will be provided by the government. Color shade samples, full-size drawings and full-size patterns will be furnished only to successful bidders upon contract award.

6.7. Notice.

When Government drawings, specifications or other data are 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, National Technology and Development Program, 5785 Highway 10 West, Missoula, Montana 59808.