

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

SPECIFICATION

SLEEPING BAG, WARM WEATHER

1. SCOPE

1.1 Scope. This specification covers the requirements for one type and size of polyester fiber filled sleeping bag.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those in effect on the date of invitation for bids or request for proposals (see 6.2).

SPECIFICATIONS

FEDERAL

A-A-50199 - Thread, Polyester Core: Cotton- or Polyester-Covered
A-A-55127 - Batting, Synthetic Fibers, Polyester (Quilted and Unquilted)
DDD-L-20 - Label: For Clothing, Equipage, and Tentage (General Use)

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

Beneficial comments (recommendations, additions, deletions) and any pertinent data that may be of use in improving this document should be addressed to: USDA Forest Service, Missoula Technology and Development Center, Building 1, Fort Missoula, Missoula, MT 59801-7294, by using the Specification Comment Sheet at the end of this document or by letter.

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Ave., Philadelphia, PA 19111-5094.)

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this specification to the extent specified herein. Unless otherwise specified, the issues in effect on the date of the invitation for bids or request for proposal shall apply.

DRAWINGS

USDA FOREST SERVICE

MTDC-927 - Sleeping Bag, Warm Weather

(Address request for copies to 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 a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents are those in effect on the date of the invitation for bids or request for proposals.

AMERICAN SOCIETY FOR QUALITY CONTROL (ASQC)

ANSI/ASQC Z1.4 - Sampling Procedures and Tables for Inspection
By Attributes

(Address requests for copies to American Society for Quality Control, 611 East Wisconsin Ave., Milwaukee, WI 53202.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D 1424 - Tear Resistance of Woven Fabrics By Falling Pendulum
(Elmendorf) Method
D 1974 - Standard Practice for Methods of Closing, Sealing, and
Reinforcing Fiberboard Shipping Containers
D 3951 - Standard Practice for Commercial Packaging
D 5118 - Standard Practice for Fabrication of Fiberboard
Shipping Boxes

(Address requests for copies to American Society for Testing and Materials, 1916 Race St., Philadelphia, PA 19103-1187.)

INDUSTRIAL FABRICS ASSOCIATION INTERNATIONAL

CPAI-75 - Rate-of-Burn Standard for Sleeping Bags

(Address requests for copies to Industrial Fabrics Association International, 345 Cedar St., Suite 800, 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.)

(Non-Government standards and other publications normally are available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a 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), a sample shall be subjected to first article inspection (see 6.3) in accordance with 4.3.

3.2 Materials and components. The sleeping bag shall conform in all respects to the design, details, dimensions, and materials specified herein and in the referenced drawing, MTDC-927. Should there be a conflict between the text of this document and the drawing, this document takes precedence unless otherwise specified in the contract or purchase order.

3.2.1 Cloth. The cloth for the inner and outer panels shall be nylon taffeta, 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 420°F.

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

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

3.2.1.4 Color. The color of the dyed cloth for the outer panel shall be royal blue and shall match the standard sample (see 6.4). The color of the dyed cloth for the inner panel shall be dark grey and shall match the standard sample (see 6.4).

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

TABLE I. Physical requirements

<u>Characteristic</u>	
Weave	(plain)
Weight oz/sq yd	1.90 $\pm$.15
Yarns per inch, (minimum)	
Warp	104
Filling	86
Breaking Strength, lbs (minimum)	
Warp	110
Filling	95
Tearing Strength, lbs (minimum)	
Warp	3.6
Filling	2.9

3.2.1.4.2 Colorfastness. The finished cloth shall show fastness to light, laundering, and crocking equal to or better than the standard sample. When no standard sample is available, the cloth shall show a minimum of "good" fastness to light and laundering and a Munsell value for crocking not lower than 8.5 when tested as specified in 4.5.1.

3.2.1.5 Finish. The cloth shall be scoured and heat set and shall not be calendered.

3.2.1.5.1 Heat treating. The cloth shall be fully heat set at a minimum temperature of 400°F. The cloth shall show no appreciable change in color, distortion, or puckering and not more than 2.0 percent dimensional change in either the warp or the filling when tested as specified in 4.5.1.

3.2.2 Polyester batting. The polyester batting shall conform to type I, class 7 of A-A-55127.

3.2.3 Thread

3.2.3.1 Core spun thread. All thread, except quilt stitching, shall be type I or type II, sizes 30 and 50 of A-A-50199, as specified in drawing MTDC-927. The color shall be royal blue.

3.2.3.2 Quilting thread. The thread for quilt stitching shall consist of a 2-ply, 70 denier nylon top thread, minimum 2.2 pounds tensile strength, and a bobbin thread of 2-ply, 60 denier nylon, minimum 1.8 pounds tensile strength. The color shall be royal blue.

3.2.4 Tape. The tape used to fabricate the head ties shall be cotton, polyester, nylon, or blends of polyester/cotton or nylon/cotton. The tape shall be woven with two selvages. Split tapes shall not be acceptable. The width of the tape shall be from 5/8 to 1 inch, with a minimum breaking strength in the warp direction of 50 pounds when tested as specified in 4.5.4. The color shall be black.

3.2.5 Labels. The combination label for the instructions for use, identification, and laundry instructions shall be sewn-on. The label shall conform to DDD-L-20 in the types and classes specified herein. The combination label shall be printed on one continuous length of cloth and located as shown in drawing MTDC-927. The width of the label shall be a maximum of 5 inches and the length shall be governed by the contents.

3.2.5.1 Instructions for use. The instructions for use portion of the label shall conform to type VI, class 3 in characters 3/32 to 1/8 inch high. All words shown in capital letters shall be 3/16 inch high minimum. Instructions for use shall be as follows:

INSTRUCTION FOR USE

1. Safety:
 - (a) Locate sites for bedding in a safe area away from fire, falling trees or snags, rolling rocks, moving vehicles, pack stock, and airdrop zones.
 - (b) This bag is NOT FIREPROOF. Do not smoke in bag.
2. To keep bag dry:
 - (a) Sleep with FACE OUT of bag to prevent breath from dampening bag.
 - (b) Use ground cloth UNDER bag to protect from ground moisture.
 - (c) Keep out of rain.
 - (d) Air thoroughly each day.
3. To keep warm:
 - (a) Put padding UNDER bag as cold is conducted from below. Use foam pad, air mattress, cardboard, packboard, etc.
 - (b) Do not wear all your clothes in bag.
 - (c) During colder weather, wear a knitted hat.
4. Keep bag CLEAN.

3.2.5.2 Identification. The identification portion of the label shall conform to type VI, class 5. The label shall be coated as specified for class 3 labels. It shall be optional to substitute date of manufacture (month/year) for the contract number.

3.2.5.3 Laundry instructions. The laundry instruction portion of the label shall conform to type VI, class 3. The size of the print shall be 3/32 to 1/8 inch in height. All words shown in capital letters shall be 3/16 inch high minimum. The laundry instructions shall be as follows:

LAUNDRY INSTRUCTIONS

1. Use large capacity (25-30 lbs) FRONT loading machine.
2. Wash in WARM water GENTLE cycle.
3. Tumble dry in large capacity dryer only. Drying temperature must NOT exceed 130°F

DO NOT DRY CLEAN

3.2.6 Markings. The "FSS" shall be in the location and of the size and type indicated in drawing MTDC-927 (see 6.5). The "FSS" marking shall be permanently marked with a black marking medium in accordance with type III or 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.

3.3 Design. The design shall conform in all respects to drawing MTDC-927 and as specified herein. The sleeping bag shall be of a single layer quilted construction.

3.4 Construction. The construction shall conform to drawing MTDC-927 and as specified herein.

3.4.1 Stitches, seams, and stitching. Stitch, seam, and stitching types as specified in drawing MTDC-927 shall conform to FED-STD-751. When stitch type 401 is used, the looper thread shall lie on the inside surfaces of the bag. In all sewing operations, the smallest practical needle size shall be used in order to prevent damage to the fabric.

3.4.1.1 Type 301 stitching. End of all stitching shall be backstitched or overstitched 1 inch minimum except where ends are turned under in a hem or held down by other stitching. Thread tension 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 embedded in the materials sewn.

3.4.1.1.1 Repairs of type 301, 401, 508, 515, and 516 stitching. All repairs of type 301, 401, 508, 515, and 516 stitching shall be as follows:

- a. When thread breaks or bobbin run-outs occur during sewing, the stitching shall be repaired by restarting the stitching a minimum of 1 inch back of the end of the existing stitching.

b. 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 1 inch in back of the defective area, continue over the defective area, and continue a minimum of 1 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.

(When making the above repairs, the ends of the stitching are not required to be backstitched.)

3.4.1.2 Types 401, 508, 515, and 516 stitching. Thread tension shall be maintained so that there will be no loose stitching. All repairs shall be in accordance with 3.4.1.1.1 a and 3.4.1.1.1 b. Repairs of 401 stitching may be performed using 301 stitching.

3.4.1.2.1 Type 508, 515, and 516 stitching. The guides and knives shall be set to trim up to a maximum of 1/8 inch of fabric edges. The gauge of the 401 stitching shall be 3/8 inch. The gauge of the overedge portion of stitching shall be 3/16 to 1/4 inch. Tolerance for gauged stitching shall be $\pm 1/32$ inch.

3.4.1.3 Bartacks. The bartacks used to secure the tie straps to the bag shall be 5/8 $\pm 1/16$ inch long by 1/8 $\pm 1/32$ wide and shall contain 28 ± 2 stitches. Thread size shall be 30/2. Bartacking shall be free from thread breaks and loose stitching.

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

3.4.1.5. Thread ends. All thread ends shall be trimmed to a maximum length of 1/2 inch.

3.4.2 Repairs of open seams. Open seams found on quilted stitching or on inner or outer panel joining seams that cannot be repaired in accordance with 3.4.1.1.1 or 3.4.1.2 due to inaccessibility of the seam may be repaired as specified in 3.4.2.1 and 3.4.2.2.

3.4.2.1 Quilted stitching. On the quilted stitching, one repair may be made to each sleeping bag for an open seam that is 2 inches or less in length. Using a single strand of 50-2 thread, hand stitch the open seam area using stitch type 202 of FED-STD-751 with 7 to 12 stitches per inch. Stitching shall begin and end a minimum of 1/2 inch beyond the ends of the open seam. At both the beginning and ending of the hand stitching, the ends of the open seam stitching shall be secured by encircling (tacking) the needle and the bobbin (or looper) thread of the seam with two turns of stitching. No more than a 1/8 inch wide bite of the fabric shall be encircled in the stitching ends. Both ends of the thread shall be knotted with an overhand knot firmly tied against the material.

3.4.2.2 Joining seams. Along joining seams, one repair may be made to each sleeping bag to repair an open seam that is 3 inches or less in length. The open seam shall be repaired using seam type SSc-1, stitch type 301, size 50-2 thread with 10 to 14 stitches per inch. The stitching shall start and stop a minimum of 1 inch beyond the ends of the open seam. Stitch margin shall be 1/16 to 1/8 inch. Ends of stitching shall be secured as specified in 3.4.1.1.

3.4.3 Piecing. There shall be no piecing or splicing of components except as specified herein.

3.4.3.1 Basic cloth. Each inner and outer panel of the basic cloth may be pieced once in either length or width direction. Pieced cloth shall be seamed with seam type SSa-2, with the raw edges on the inside. Stitch type, stitches per inch, and thread size shall be as specified in drawing MTDC-927.

3.4.3.2 Batting. There shall be no piecing of the batting.

3.4.4 Repairs. Repairing the sleeping bag by mending, patching, or darning is not allowed.

3.4.5 Replacement of defective components. During the spreading, cutting, and manufacturing process, components having material defects or damages that are classified as defects in 4.3.4 shall be removed from production and replaced with non-defective and properly matched components.

3.4.6 Batting. The batting shall completely fill the casing, finishing less than 1/2 inch from all casing edges.

3.5 Rate of burn. The completed sleeping bag shall conform to the performance requirements of CPAI-75 (see 4.5.3).

3.6 Location marks. Location marks shall not be drilled.

3.7 Fusing or treatment of tie tapes. Ends of thermosetting tape shall be fused with sufficient heat to provide a smooth edge with ends of all yarns fused together. Ends of other tapes shall be treated to prevent raveling and fraying.

3.8 Workmanship. The finished sleeping bags shall conform to the quality of product established by this specification. The occurrence of defects shall not exceed the applicable acceptable quality levels.

3.9 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 using conversion tables contained in the latest revision of FED-STD-376, and all other requirements of this specification are met.

3.10 Recovered materials. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

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 supplied by the manufacturer of the item, component, or material, listing the specified test method and test results obtained, may be furnished in lieu of actual lot by lot testing performed by the contractor (see 4.3.2). Where certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certification.

4.2 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. All sleeping bags manufactured at one time shall be considered a lot for purposes of acceptance inspection and test. A sample unit shall be one complete sleeping bag.

4.3 Quality conformance inspection. Each end item lot shall be sampled and inspected as specified in 4.3.4 and 4.3.5. Each end item lot shall be sample and tested as specified in 4.5. As part of quality conformance inspections, test results shall be submitted to determine compliance of the basic cloth as specified in 4.5.1, polyester batting as specified in 4.5.2, rate of burn as specified in 4.5.3, and head tie tape as specified in 4.5.4. The packaging shall be sampled as specified in 4.4. Packaging is not required when first articles are presented. Unless otherwise specified (see 6.2), the first articles submitted in accordance with 3.1 shall be inspected as specified in 4.3.4 and 4.3.5. The presence of any defect or failure to pass any test shall be cause for rejection of the first article.

4.3.1 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 Certification. 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 compliance for all materials and components in lieu of actual lot by lot testing (see 4.1.3). All certificates shall include as a minimum:

- Product description, including specification, type, class, and form when applicable
- Quantity purchased
- Purchase source, address, and telephone number
- Purchase date
- Lot number traceable to materials used in production
- Contract number

In addition, for the polyester batting, the certificate of compliance shall also include:

- Denier
- Length of staple
- Percent void
- Crimps per inch
- Melting point

4.3.3 In-process inspection. Inspection shall be made at any point or during any phase of the manufacturing process to determine whether cut lengths and cut parts, markings for location of components, and location of assembled component parts are in accordance with specified requirements. Components that cannot be corrected shall be removed from production.

4.3.3.1 Polyester batting. The polyester batting weight shall be tested in process as specified in 4.5.2.

4.3.4 End item visual examination. The end item shall be examined for the applicable defects listed in table II. The lot size shall be expressed in units of sleeping bags. The sample unit shall be one sleeping bag. The inspection level shall be II and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 2.5 for major defects and 25.0 for major and minor defects combined. Unless otherwise specified, defects shall be scored on an individual basis, i.e., each seam, each stitching end, each dimension, etc.

TABLE II. End item visual defects

Examine	Defect	Classification	
		Major	Minor
Fabric	Hole, cut, or tear	X	
	Any abrasion mark, smash, large slub, broken, or missing yarn, multiple float, or open place, clearly visible at normal inspection distance (3 feet)	X	
	Any mend, darn, patch, or unauthorized splice	X	
	Needle chews	X	
	NOTE: Needle holes visible as the result of broken or skipped stitching or stitching that has been removed shall not be considered as needle chews, providing the holes are spaced as in normal stitching.		
	Color not as specified	X	
Open seams:	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.		
On quilted stitching (applicable to inner and outer panels individual seams)	More than 1/2 inch		X
On all seams other than above	1/2 inch or less		X
	More than 1/2 inch	X	
	Any open seam on both rows of double stitched seams	X	

TABLE II. End item visual defects - Continued

Examine	Defect	Classification	
		Major	Minor
Raw edges (when securely caught in stitching):			
Along head opening	1/2 inch or more	X	
On all other parts of bag	1 inch or more	X	
NOTE:	Raw edges not securely caught in stitching shall be classified as open seams.		
Seam and stitch type	Wrong seam or stitch type	X	
Stitch tension	Loose tension, resulting in a loose top or bottom thread	X	
	Excessively tight tension, resulting in puckering of material	X	
NOTE:	Defects to be scored only when the condition exists for 4 inches or more or in several areas with an accumulated distance of 8 inches or more. Applicable to individual seams.		
Stitches per inch	One less than minimum specified		X
	Two or more less than minimum specified	X	
	One or more in excess of maximum specified		X
NOTES:	(1) Variation in the number of stitches per inch caused by operator speeding up the machine and pulling the material in order to sew over heavy places, 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		

TABLE II. End item visual defects - Continued

Examine	Defect	Classification	
		Major	Minor
Stitches (Con't) per inch	(2) Defect to be scored only when condition exists on any one seam for a length of 6 inches or more or when the combined length of several areas exceeds 10 inches.		
Rows of stitching	Any row omitted (unless otherwise classified herein)	X	
Stitching ends	Ends of stitching not secured as specified (except when caught in other seams or stitching)	X	
Thread breaks, skipped stitches, or run-offs (unless otherwise classified herein)	Overstitched less than 1 inch in each direction beyond the defective stitching area	X	
NOTE: Thread breaks, or two or more consecutive skipped or run-off stitches not overstitched shall be classified as open seams.			
Bartacks	Stitching loose, incomplete, or broken		X
	Any bartack omitted	X	
	Any bartack misplaced or not serving intended purpose	X	
	Not size specified		X
Components and assembly	Any component part omitted or not as specified or required operation omitted (unless otherwise classified)	X	
	Any seam badly puckered, twisted, or pleated	X	
	Repairs of open seams allowed by 3.4.2.		
	- not performed as specified		X
	- more than one of either type made per sleeping bag (applicable to each repair over amount allowed)	X	
	Any unrelated part of bag caught in a seam	X	
	Any unauthorized repair	X	

TABLE II. End item visual defects - Continued

Examine	Defect	Classification	
		Major	Minor
Batting	Any hole, cut, or break (tear)	X	
	Crease or wrinkle, embedded	X	
	Batting uneven, resulting in thin, thick, or weak place, clearly visible at normal inspection distance (3 feet)	X	
	Spot or stain clearly visible at normal inspection distance (3 feet)		X
	Batting not made from well-opened Fibers	X	
	Excessive breakage of fibers	X	
	Excessive neps and multiple fiber Ends	X	
Piecing	Inner or outer panel constructed with more than two pieces		X
	Sleeping bag constructed from more than one batting part	X	
Quilted channels	Badly twisted between rows of channel stitching	X	
	Excessive puckering or pleats	X	
Combination label	Omitted, misplaced, data not as specified, illegible	X	
	Smearing or bleeding of print, discoloration, or loss of coating on printed surface	X	
Markings: "FSS"	Omitted, illegible, misplaced, or not specified type		X
	Cloth color visible under "FSS" Marking		X
Cleanness	Spots or stains, clearly noticeable, thread ends not trimmed as specified	X	
Tie tapes	One or more ties omitted		X
	Width not as specified		X
	Color not as specified		X
	Length not as specified		X

4.3.5 End item dimensional examination. The end items shall be examined to determine compliance with the applicable dimensions specified in table III. Any nonconformance shall be considered a defect. The lot size shall be expressed in units of sleeping bags. The sample unit shall be one sleeping bag. The inspection level shall be S-3 and the AQL, expressed in terms of defects per hundred units, shall be 4.0 for major defects and 15.0 for major and minor defects combined.

TABLE II. End item dimensional defects

Examine	Defect	Classification	
		Major	Minor
Center opening	Top ends uneven by more than 5/8 inch		X
Quilted channels	Any channel width exceeds tolerance: -up to 1 inch -by more than 1 inch	X	X
	NOTE: Defects to be scored only when condition exists for 8 inches or more, or in several areas with an accumulated distance of 12 inches or more. Applicable to each individual seam.		
Stitch margin or gauge (not otherwise classified herein)	Exceeds specified tolerance		X
	NOTE: Defect to be scored only when condition exists on major portion of seam. Applicable to each individual seam.		
Component and location dimensions not otherwise classified herein	Not within specified tolerance		X
Batting	1/2 inch or more from casing edges	X	

4.4 Packaging inspection. An examination shall be made to determine that the 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 2.5.

<u>Examine</u>	<u>Defect</u>
Marking (exterior and unit pack)	Omitted; incorrect; illegible; of improper size, location, sequence, or method of 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 Incorrectly fabricated polyethylene bag
Content	Number per container is more or less than required

4.5 Tests.

4.5.1 Component testing of the basic cloth. The methods of testing specified in FED-STD-191 wherever applicable and as listed in table IV 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 lot size shall be expressed in units of 1 yard. The sample unit for test purposes shall be 2 continuous yards full width of the finished cloth. 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:

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

TABLE IV. Test methods

Characteristic	Requirement paragraph	Test method
Weave	3.2.1	Visual ^{1/}
Yarn Count (denier)	3.2.1.2	4021 ^{2/}
Weight (basic cloth)	3.2.1.3	5041
Yarns per inch		
Warp	3.2.1.3	5050
Filling	3.2.1.3	5050
Breaking Strength		
Warp	3.2.1.3	5100
Filling	3.2.1.3	5100
Tearing Strength		
Warp	3.2.1.3	ASTM D 1424
Filling	3.2.1.3	ASTM D 1424
Colorfastness to:		
Laundering	3.2.1.4.2	5614
Crocking	3.2.1.4.2	5651
Light	3.2.1.4.2	5660.1
Heat Treating	3.2.1.5.1	4.5.1.1

^{1/} One determination per sample unit and the result reported as "pass" or "fail."

^{2/} A certificate of compliance may be submitted in lieu of actual test values.

4.5.1.1 Heat resistance. The test specimen shall consist of a square of cloth at least 12 by 12 inches. It shall be laid flat without tension, and marked off with a square 10 by 10 inches, having sides parallel to the warp and filling directions of the cloth. The test specimen shall be arranged on a tray and placed in an oven maintained at 280°F $\pm$ 2°F for 2 hours. At the end of this period, the specimen shall be removed from the oven, and conditioned under standard atmospheric conditions. The specimen shall then be measured for dimensional changes at three points of the 10-inch square. The measurements shall be made at least 1 inch from the edge of the square and at the center of the square in the warp and filling direction. The specimen shall then be visually compared with the original unheated fabric for distortion, puckering, or color change. The change in color shall be evaluated in accordance with the evaluation specified in method 5662 of FED-STD-191. One specimen shall be tested from each sample unit. The dimensional change of the sample unit in the warp and filling direction shall be the average of the specimens tested from each direction, respectively, and shall be reported separately to the nearest 0.1 percent. Distortion and puckering shall be reported as "pass" or "fail."

4.5.2 In-process testing of batting.

4.5.2.1 Weight determination. The methods of testing specified in test method 5040 of FED-STD-191 shall be followed. All test reports shall contain the individual values used in expressing the final result. The lot size shall be expressed in units of 1 sleeping bag. The test specimen shall be one full length and width (84 by 70 inches) piece of batting. The weight shall be calculated by:

$$\text{ounces per square yard} = \frac{\text{Weight (g)} \times 45.72}{\text{Length (in)} \times \text{Width (in)}}$$

The lot shall be unacceptable if one or more sample units fail to meet any of the test requirements specified. The sample size (number of sample units) shall be in accordance with the following:

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

4.5.3 Rate of burn test. One sleeping bag shall be tested for flammability in accordance with CPAI-75. Results shall be reported as "pass" or "fail."

4.5.4 Component testing of head tie tape. Head tie tape warp breaking strength shall be tested using test method 4108 of FED-STD-191. Results shall be reported as "pass" or "fail" in accordance with requirements specified in 3.2.4. Either split drum or flat surface clamps may be used. When flat surface clamps are used, the pulling clamp shall have a uniform speed of 12 $\pm$ 0.5 inches per minute. The distance between jaws shall be 3 inches, and the test specimen shall be a minimum of 6 inches.

5. PACKAGING

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

5.1.1 Folding and rolling. Each sleeping bag shall be laid out flat, then folded in half with the fold running the length of the bag and the center opening to the inside. Each sleeping bag shall then be tightly rolled from head to foot.

5.1.2 Unit packaging. Each sleeping bag folded and rolled in accordance with 5.1.1 shall be inserted in a snug-fitting clear polyethylene film bag of 0.003 inch thickness (+ 20 percent tolerance). The open end of the bag shall be securely closed. If the plastic bag is not a ventilated type, excess air shall be expelled from the bag before closure.

5.2 Packing. Ten sleeping bags, preserved, folded, rolled, and packaged as specified shall be packed in a snug-fitting fiberboard box, minimum burst strength 275 psi meeting the requirements of the latest version of ASTM D 5118. Boxes shall be in compliance with the National Motor Freight Classification. Unit packs shall be packed in the most compacted manner (see 6.6). Each box shall be closed in accordance with the latest version of ASTM D 1974, except that the inspection shall be in accordance with 4.4.

5.3 Marking. In addition to any special marking required by the contract or purchase order, shipping containers and unit packs shall be marked in accordance with FED-STD-123. Item name nomenclature shall be: "SLEEPING BAG, WARM WEATHER". Bar coding is required.

5.3.1 Special box marking. In addition to the box markings specified above, each box shall be clearly marked with the item's National Fire Equipment System Number, "NFES 1062". This number shall appear on the box beside the item name.

5.3.2 Marking of unit packaging. The required identification information shall be legibly printed or stamped in black directly across the center face of the polyethylene bag or on a white paper label inserted within the bag so that it is readable through the plastic. The required information shall be as follows:

NSN 8465-00-081-0798
SLEEPING BAG, WARM WEATHER
[Contractor's name]
[Contract number]
[Month and year of manufacture]

6. NOTES

6.1 Intended use. The sleeping bag is for use in temperatures to +45°F.

6.2 Acquisition requirements. Acquisition requirements must specify:

- a. Title, number, and date of this specification.
- b. When first article samples are not required (see 3.1, 4.3, and 6.3).
- c. When actual lot by lot testing of materials and components is required (see 4.3.2).

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

6.4 Standard sample. Standard shade samples (see 3.2.1.4) may be obtained from the preparing activity.

6.5 Direct marking ink. Suggested ink for applying direct markings to the sleeping bag is Fabmaster black ink from Washington Color and Chemical Co., Seattle, WA.

6.6 Packing method. A suitable arrangement is one bag in each corner and one bag in the center.

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

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