

INCH-POUND

MIL-B-3108K
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SUPERSEDING
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MILITARY SPECIFICATION

BAG, CLOTHING, WATERPROOF

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

1. SCOPE

1.1 Scope. This specification covers a waterproof clothing 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 listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: U.S. Army Natick Research, Development, and Engineering Center, Natick, MA 01760-5014 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 8465

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SPECIFICATIONS

FEDERAL

- V-T-285 - Thread, Polyester
- TT-N-97 - Naphtha, Aromatic
- DDD-L-20 - Label: For Clothing, Equipage, and Tentage
(General use)
- PPP-B-636 - Boxes, Shipping, Fiberboard

MILITARY

- MIL-B-371 - Braid, Textile, Tubular
- MIL-C-7350 - Cloth, Parachute, Nylon
- MIL-L-35078 - Loads, Unit: Preparation of Semiperishable
Subsistence Items; Clothing, Personnel Equipment
and Equipage; General Specification For

STANDARDS

FEDERAL

- FED-STD-191 - Textile Test Methods

MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection
by Attributes
- MIL-STD-129 - Marking for Shipment and Storage
- MIL-STD-147 - Palletized Unit Loads
- MIL-STD-731 - Quality of Wood Members For Containers and Pallets
- MIL-STD-1487 - Glossary of Cloth Coating Imperfections

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Avenue, 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 document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

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DRAWING

U.S. ARMY NATICK RESEARCH, DEVELOPMENT, AND ENGINEERING CENTER

8-1-14 - Bag, Clothing, Waterproof

(Copies of drawings are available from the U.S. Army Natick Research, Development, and Engineering Center, ATTN: STRNC-EMSS, Natick, MA 01760-5014.)

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- D 1424 - Tear Resistance of Woven Fabrics by Falling-Pendulum (Elmendorf) Apparatus
- D 3951 - Standard Practice for Commercial Packaging

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187.)

(Non-Government standards and other publications are normally available from 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. When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.3), in accordance with 4.3.

3.2 Sample. Guide samples, when furnished, are solely for guidance and information (see 6.4). Variation from the specification may appear in the sample, in which case the specification shall govern.

3.3 Material. It is encouraged that recycled material be used when practical as long as it meets the requirements of this specification.

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3.3.1 Base cloth. The base cloth shall be either of the following cloths:

a. Cloth, parachute, nylon conforming to type I of MIL-C-7350 in color Olive Green 106 (see 4.4.1.1), except that only the weight and texture requirements shall apply.

b. Cloth nylon, plain weave, semidull or bright filament nylon, 200 to 220 denier, 40 by 40 texture minimum, 2.2 ± 0.2 ounces per square yard, color Olive Green 106 (see 4.4.1.1).

3.3.2 Coating compound. The compound for coating the base cloth shall be synthetic rubber. The use of natural rubber is prohibited (see 4.4.1.1). The color of the coating compound shall be black.

3.3.3 Coated cloth. The coating compound shall be applied to only one side of the base cloth (see 6.6) and shall be cured after assembly into the bag (see 3.5.2). The coated side of the cloth shall be dusted with the dusting material specified in 3.3.4 to produce a uniform dull finish. The cured coated cloth shall show no softness or tackiness for the coating when tested for state of cure as specified in 4.4.4. The cured coated cloth shall meet the physical requirements in table I when tested as specified in 4.4.5.

3.3.3.1 Color, and finish. The uncoated side of the cured coated cloth shall match the standard sample in color, shade, and finish (see 6.4).

TABLE I. Physical requirements of the cured coated cloth

| Characteristic | Requirement | |
|--------------------------------|-------------|---------|
| | Minimum | Maximum |
| Weight, ounces per square yard | 7.0 | 9.0 |
| Breaking strength, pounds: | | |
| Warp | 125 | -- |
| Filling | 125 | -- |
| Tearing strength, grams: | | |
| Warp | 1200 | -- |
| Filling | 1200 | -- |
| Low temperature resistance | Pass | -- |
| Weather resistance | Pass | -- |
| Strength of coating | Pass | |

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TABLE I. Physical requirements of the cured coated cloth (cont'd)

| Characteristic | Requirement | |
|-------------------------------------------------------|----------------|----------------|
| | <u>Minimum</u> | <u>Maximum</u> |
| Hydrostatic resistance, pounds per square inch (psi): | | |
| Initial | 150 | -- |
| After low temperature resistance | 100 | -- |
| After weather resistance | 100 | -- |
| After strength of coating | 100 | -- |
| After solvent resistance | 100 | -- |
| Adhesion of coating, pounds per 2-inch width: | | |
| Dry | 8.0 | -- |
| Wet | 7.0 | -- |
| Accelerated aging | Pass | -- |
| Stiffness, centimeters (warp only): | | |
| At 70°F | -- | 10 |
| At 0°F | -- | 10 |
| After heat treatment | -- | 12 |
| Abrasion (warp direction only) | Pass | -- |
| Blocking, scale rating | -- | No. 2 |

3.3.4 Dusting material. The dusting material shall be whiting, talc, or other finely divided mineral material which does not support mildew growth (see 4.4.1.1). The use of asbestos-containing material is prohibited.

3.3.5 Cement and sealing compound. The cement and sealing compound shall be of synthetic rubber base (see 4.4.1.1). It shall be compounded to be heat curing and shall have the same curing characteristics as the coating compound specified in 3.3.2 and shall meet the seam performance requirements in 3.6. The color of the cement, when dry, shall approximate that of the coated cloth.

3.3.6 Braid, cotton or polyester. The braid for the tie cord shall be cotton conforming to type III, class 4 of MIL-B-371 except that the braid need not be water repellent treated. As an alternate, the braid may be made of polyester material provided the ends are fused to prevent raveling and the braid meets the requirements of type III, class 4 MIL-B-371 braid. The color shall be Olive Green 107.

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3.3.7 Thread. The thread used for bartacking shall conform to type I or type II, class 1, size B, Olive Drab S-1 (C.A. 66022) of V-T-285. The thread shall show good fastness to light.

3.4 Design. The bag shall conform to the design shown on Drawing 8-1-14. The coated side of the cloth shall be on the inside of the bag.

3.5 Construction.

3.5.1 Drill holes. The use of drill holes in construction of the bag is prohibited.

3.5.2 Assembly details. The bag shall be constructed from uncured coated cloth. All joining seams shall be cemented. The seam shall be single lapped a minimum of 1 inch in width and rolled after cementing. Pleats due to working in of excess material in the seam joining the bottom to the body of the bag are permissible. After assembly, the bag shall be thoroughly cured. In addition, after assembly, the cement shall not extend more than 1 inch on either side of the seam.

3.5.2.1 Hem. The hem shall be formed by turning the top of the bag $1/2$ inch and firmly cementing. The finished hem shall measure $1/2 \pm 1/4$ inch.

3.5.2.2 Tie cord. The ends of the cotton tie cord shall be tipped or resin treated. The ends of the polyester tie cord shall be evenly fused to prevent ravelling. The tie cord shall be made of the braid specified in 3.3.6 and may be attached by either of the two following methods:

a. Method A. The tie cord shall be bartacked in two places to the bag on the outside of the lapped seam as shown on Drawing 8-1-14. The bartacks shall be centered $1/2 \pm 1/8$ inch apart on the lapped seam and reinforced with a $2 \pm 1/8$ inch diameter piece of the coated cloth specified in 3.3.3. The reinforcement piece shall be fully cemented to the bag with the bartacks passing through the reinforcement piece. The bartacked areas shall be waterproofed with the sealing compound specified in 3.3.5. The attached tie cord shall not be less than 51 inches in length and the ends shall not be uneven in length by more than 3 inches.

b. Method B. The tie cord shall be centered and bartacked in two places to the uncoated side of a $2 \pm 1/8$ inch diameter patch of the coated cloth specified in 3.3.3. The bartacks shall be centered $1/2 \pm 1/8$ inch apart on the patch. The patch shall be fully cemented to the outside of the bag so that the position of the tie cord is as shown on Drawing 8-1-14. The adhesion of the patch to the outside of the bag shall be not less than 8 pounds when tested as specified in 4.4.5. The attached tie cord shall be not less than 51 inches in length and the ends shall not be uneven in length by more than 3 inches.

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3.5.2.3 Bartacking. Bartacks shall be $1/2 \pm 1/16$ inch long, $1/8 \pm 1/32$ inch wide, and shall contain a minimum of 28 stitches. Bartacks shall be free from thread breaks and loose or tight stitching.

3.6 Seam performance.

3.6.1 Hydrostatic resistance. The side and bottom joining seam and the sealed stitching where the tie cord is bartacked to the bag shall not show leakage under a hydrostatic pressure of 25 centimeters for 1 minute when tested as specified in 4.4.5.

3.6.2 Adhesion. The initial seam adhesion shall not be less than 4 pounds per inch and the seam adhesion after water immersion shall not be less than 3 pounds per inch when tested as specified in 4.4.5.

3.6.3 Blocking. Resistance of seams to blocking shall not exceed No. 3 when tested as specified in 4.4.5.

3.7 Label. Each bag shall have an identification and instruction marking located on the outside of the bag adjacent to the tie cord (see Drawing 8-1-14). The markings shall conform to type III or IV, class 5 of DDD-L-20. The instruction marking size and content shall conform to figure 1. The instruction marking shall be printed below the identification marking.

3.8 Dimensions. The bag shall be $30 \pm 1/2$ inches in height and $50-1/2 \pm 1$ inches in circumference.

3.9 Repairs of the finished bag.

3.9.1 Defects. Defects in the coating not exceeding twelve in number may be repaired and the size of the repair shall not exceed $3/4$ inch in length and width.

3.9.2 Repair procedure. Each repairable area shall be coated with the coating compound specified in 3.3.2 and then fully air or heat cured. The repaired areas shall be lightly dusted with dusting material specified in 3.3.4. The cured repaired area shall show no evidence of separation, softening, or tackiness when wetted with naphtha or toluene and rubbed with the finger.

3.10 Workmanship. The finished bag shall conform to the quality of product established by this specification.

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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 and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in 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 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 Certificates of compliance. When certificates of compliance are submitted, the Government reserves the right to inspect such items to determine the validity of the certification.

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

- a. First article inspection (see 4.3)
- b. Quality conformance inspection (see 4.4)

4.3 First article inspection. When a first article is required (see 3.1 and 6.2), it shall be examined for the defects specified in 4.4.2 and 4.4.3, and tested for the characteristics specified in 4.4.4. and 4.4.5. Any nonconformance or test failure shall be cause for the rejection of the first article.

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4.4 Quality conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with MIL-STD-105.

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

4.4.1.1 Component and material certification. A certificate of compliance may be acceptable as evidence that the components listed below conform to the specified requirements.

| <u>Components</u> | <u>Requirement reference</u> |
|-------------------------------|------------------------------|
| Base cloth | 3.3.1 |
| Coating compound (each batch) | 3.3.2 |
| Dusting material | 3.3.4 |
| Cement and sealing compound | 3.3.5 |

4.4.2 End item visual examination. The end items shall be examined for the defects listed in table II. The lot size shall be expressed in units of bags. The sample unit shall be one bag. The inspection level shall be II and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 1.5 for major defects and 6.5 for total (major and minor combined) defects. The coated cloth defects shall be as defined in MIL-STD-1487.

TABLE II. End item visual defects

| <u>Examine</u> | <u>Defect</u> | <u>Classification</u> | |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------|
| | | <u>Major</u> | <u>Minor</u> |
| Design | Not as specified: | | |
| | -seriously affecting service-ability | 101 | |
| | -not seriously affecting service-ability | | 201 |
| Construction: | | | |
| Body of bag | Coated side of fabric on outside of bag | 102 | |
| | Any part of bag spliced, i.e., made with more than one piece of cloth | 103 | |
| Cemented seams | Cement extending more than 1 inch beyond raw edge of top hem or extending more than 1 inch on either side of side or bottom seams | | 202 |

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TABLE II. End item visual defects (cont'd)

| Examine | Defect | Classification | |
|------------------------------------------|------------------------------------------------------------------------------------|----------------|-------|
| | | Major | Minor |
| Construction: (cont'd) | | | |
| Cemented seams (cont'd) | Width of side or bottom seam at any point: | | |
| | -1/2 inch or less | 104 | |
| | -more than 1/2 inch but less than 1 inch | | 203 |
| | Any portion of side or bottom seam unsealed or not securely cemented <u>1</u> /: | | |
| | -1/16 to 1/4 inch in depth not over 1 inch in length | | 204 |
| | -more than 1/4 inch in depth or more than 1 inch in length | 105 | |
| | Any unsealed area on cemented hem more than 1/4 inch in depth and 1 inch in length | | 205 |
| Tie cord | Missing, cut, torn, frayed, or spliced | 106 | |
| | Reinforcing patch missing | 107 | |
| | Ends not tipped or resin coated | | 206 |
| | Polyester cord ends not smoothly fused to prevent ravelling | | 207 |
| Bartacks | Number of stitches or length of stitches less than specified | | 208 |
| | Not waterproofed | 108 | |
| | Stitching loose, skipped, or broken | 109 | |
| | Tie cord bartack not positioned vertically on seam | | 209 |
| | Any tie cord bartack missing | 110 | |
| Bag for material defects in coated cloth | Any hole, cut, or tear | 111 | |
| | Any peeled or blistered area | 112 | |
| | Fabric or coating defects: | | |
| | -seriously affecting serviceability | 113 | |
| | -not seriously affecting serviceability or appearance | | 210 |
| | Coating is tacky | 114 | |
| | Any visual area where coating has been scraped from base cloth | 115 | |

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TABLE II. End item visual defects (cont'd)

| Examine | Defect | Classification | |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|
| | | Major | Minor |
| Bag for material defects in coated cloth (cont'd) | | | |
| | NOTE: The bag shall be examined from the coated side of the material | | |
| Components and assembly | Any required operation or component omitted or not as specified | 116 | |
| | Any part of body adjacent to seam pleated or badly creased | | 211 |
| | Location of any component not as shown on Drawing 8-1-14: | | |
| | -seriously affecting serviceability | 117 | |
| | -not seriously affecting serviceability | | 212 |
| Bag for workmanship defects | Any needle chew, mend, or patch | 118 | |
| | Peeled or blistered area on any seam | 119 | |
| | Any drill hole in fabric | 120 | |
| | Marking omitted, incorrect, illegible, or misplaced | | 213 |
| | Dusting powder omitted or improperly applied causing blocking | | 214 |
| | More than 12 defects repaired | | 215 |
| | Any defect repair exceeding 3/4 inch in length or width | | 216 |
| | Any repair area not dusted | | 217 |
| | Any repaired area showing evidence of separation, softening, or tackiness when wetting with toluene or naphtha | | 218 |
| | | 121 | |
| | NOTE: To determine whether the patched bag area is sufficiently cured, it shall be wetted with toluene or naphtha and rubbed with the index finger. There shall be no evidence of separation, softening, or tackiness. | | |

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1/ Condition is permissible within bottom seam pleats provided it does not exceed 1/16 inch in diameter, has no visible opening through the coated side, and at least 1/4 inch of cured overlap exists.

4.4.3 End item dimensional examination. The end items shall be examined for the defects listed below. The lot size shall be expressed in units of bags. The sample unit shall be one bag. The inspection level shall be S-3 and the (AQL), expressed in terms of defects per hundred units, shall be 4.0.

| Examine | Defect |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Height of bag | Less than 29-1/2 inches More than 30-1/2 inches |
| Circumference of bag <u>1/</u> | Less than 49-1/2 inches More than 51-1/2 inches |
| Top edge of bag | Hem less than 1/4 inch or more than 3/4 inch in width |
| Tie cord | Less than 51 inches when measured as described in <u>2/</u> Ends uneven by more than 3 inches Located less than 4 inches or more than 5 inches from top edge of bag |

1/ The circumference of the bag shall be measured by laying the bag out smooth and flat on a table and then measuring the width of the bag. The measurement is one half the circumference. Multiply this measurement by two for the full circumference measurement.

2/ The tie cord shall be measured in the following manner: The bag shall be laid out smooth and flat on the clean table with the tie cords fully extended. A weighted clamp weighing approximately 4 ounces shall be securely attached to one end of the tie cord. The tie cord shall be fully extended by grasping the other end of the tie cord with enough force to move the weighted clamp very slowly along the surface of the table. The tie cord shall be straight and parallel to the surface of the table while measuring when fully extended.

4.4.4 State of cure testing. The sample unit for this test shall be one completed bag. The inspection level shall be level II. The bag shall be spot tested on the coated side of the coated cloth with three drops of either toluene or naphtha (type I, grade B of TT-N-97) and immediately rubbed with the index finger and examined. The examination shall show no evidence of softness or tackiness of the coating. Tests shall be performed at ten locations on the bag as follows:

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a. Eight locations on the side of the bag. The bag shall be laid flat on a table with the seam of the bag along one lengthwise fold. Spot tests shall then be conducted at each of four locations approximately 8 inches and 22 inches from the hem of the bag and 6 inches from each fold. The flat bag shall then be turned over and spot tested on the reverse side at four similar locations.

b. Two separate locations on the bottom of the bag. The bottom of the bag shall be laid flat on a table. Spot tests shall be conducted at two separate locations 4 ± 1 inches from the bottom seam and on a line through the center of the circular area of the bag bottom.

If softness or tackiness is evident at any of the ten locations on the bag, the coated fabric shall be tested for hydrostatic resistance after solvent resistance as specified in 4.5.9, except that only one specimen from an area immediately adjacent to any soft or tacky spot test shall be tested from any one bag, and any failure shall reject the lot.

4.4.5 End item testing. The end items shall be tested for the characteristics indicated in table III. The methods of testing specified in FED-STD-191, wherever applicable, and as listed in table III shall be followed. The requirement for each characteristic in table III is applicable to the sample unit, except that for weight which is applicable to the lot average. The lot size shall be expressed in units of one bag. The sample unit shall be six bags. The inspection level shall be S-1.

TABLE III. End item tests

| Characteristic | Require- ment refer- ence | Test method | No. deter- minations per sample unit | Results reported as | |
|-----------------------------------|------------------------------------|----------------|-----------------------------------------------|---------------------|---------------------------|
| | | | | Pass or fail | Numerically to nearest |
| Weight, ounces per square yard | 3.3.3 | 5041 | 5 | - | 0.1 oz. |
| Breaking strength | 3.3.3 | 5100 | 5 | - | 1 lb. |
| Tearing strength | 3.3.3 | ASTM D 1424 | 5 | - | 10 grams |
| Low temperature resistance | 3.3.3 | 4.5.2 | 1 | X | - |
| Weather resistance | 3.3.3 | 4.5.3 | 1 | X | - |
| Strength of coating | 3.3.3 | 4.5.4 | 1 | X | - |

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TABLE III. End item tests (cont'd)

| Characteristic | Require- ment refer- ence | Test method | No. deter- minations per sample unit | Results reported as | |
|---------------------------------------------------------------------|------------------------------------|--------------------|-----------------------------------------------|---------------------|--------------------------------|
| | | | | Pass or fail | Numerically to nearest |
| Hydrostatic resistance: | | | | | |
| Initial | 3.3.3 | 4.5.5 | 5 | - | 1 psi |
| After low temperature resistance to low temperature | 3.3.3 | 4.5.6 | 5 | - | 1 psi |
| After weather resistance | 3.3.3 | 4.5.7 | 5 | - | 1 psi |
| After strength of coating | 3.3.3 | 4.5.8 | 5 | - | 1 psi |
| After solvent resistance | 3.3.3 | 4.5.9 | 5 | - | 1 psi |
| Adhesion of coating: | | | | | |
| Dry | 3.3.3 | 4.5.18 | 3 | - | 0.1 lb. per 2-inch width |
| Wet | 3.3.3 | 4.5.18 | 3 | - | 0.1 lb. per 2-inch width |
| Accelerated aging | 3.3.3 | 4.5.10 | 1 | X | - |
| Stiffness: | | | | | |
| At 70°F | 3.3.3 | 5204 | 5 | - | 0.1 cm |
| At 0°F | 3.3.3 | 5204 | 5 | - | 0.1 cm |
| After heat treatment | 3.3.3 | 4.5.11 | 5 | - | 0.1 cm |
| Abrasion | 3.3.3 | 4.5.12 | 3 | X | - |
| Blocking | 3.3.3 | 5872 | 1 | - | scale reading |
| Color | 3.3.3.1 | 4.5.13 | 1 | X | - |
| Adhesion of tie cord loop patch (applicable only to method B) | 3.5.2.2.b. | 5950 and 4.5.19 | 1 | - | 0.1 lb. |

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TABLE III. End item tests (cont'd)

| Characteristic | Require- ment refer- ence | Test method | No. deter- minations per sample unit | Results reported as | |
|----------------------------------------------------------------------------|------------------------------------|----------------|-----------------------------------------------|---------------------|---------------------------|
| | | | | Pass or fail | Numerically to nearest |
| Side and bottom seam, and bartack hydro- static resistance <u>1/</u> | 3.6.1 | 4.5.14 | 4 <u>2/</u> <u>3/</u> | X | - |
| Seam adhesion | 3.6.2 | 4.5.15 | 3 | - | 0.1 lb. per inch |
| Seam adhesion after water immersion | 3.6.2 | 4.5.16 | 3 | - | 0.1 lb. per inch |
| Seam blocking | 3.6.3 | 4.5.17 | 1 | - | scale reading |

1/ Not applicable to method B attachment of tie cord.

2/ All determinations shall be made on one bag in the location specified in 4.5.14a.

3/ A failure of the bag is defined as a hydrostatic failure in two or more of the four determinations.

4.4.6 Packaging examination. The fully packaged end items shall be examined for the defects listed below. The lot size shall be expressed in units of shipping containers. The sample unit shall be one shipping container fully packaged. The inspection level shall be S-2 and the (AQL), expressed in terms of defects per hundred units, shall be 2.5.

ExamineDefect

Marking (exterior
and interior)

Omitted; incorrect; illegible; of improper
size, location, sequence, or method of
application

Materials

Any component missing, damaged, or not as
specified

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| | |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Workmanship | Inadequate application of components, such as: incomplete sealing or closure of flap, improper taping, loose strapping or inadequate stapling Bulged or distorted container |
| Content | Number per container is more or less than required |

4.4.7 Palletization examination. The fully packaged and palletized end items shall be examined for the defects listed below. The lot size shall be expressed in units of palletized unit loads. The sample unit shall be one palletized unit load, fully packaged. The inspection level shall be S-1 and the (AQL), expressed in terms of defects per hundred units, shall be 6.5.

| <u>Examine</u> | <u>Defect</u> |
|---------------------|-----------------------------------------------------------------------------------------------|
| Finished dimensions | Length, width, or height exceeds specified maximum requirement |
| Palletization | Pallet pattern not as specified Load not bonded as specified |
| Weight | Exceeds maximum load limits |
| Marking | Omitted; incorrect; illegible; of improper size, location, sequence, or method of application |

4.5 Methods of inspection.

4.5.1 Low temperature resistance test. A 4- by 4-inch test specimen shall be exposed at a temperature of minus 20°F for 5 hours as specified in Method 5874 of FED-STD-191 and tested for resistance to cracking and flaking only. Any cracking or flaking shall be considered a test failure.

4.5.2 Weather resistance test. A 4- by 4-inch test specimen shall be subjected to the weather resistance test specified in Method 5804 of FED-STD-191. The coated side of the test specimen shall be exposed for a period of 100 hours with filters. After exposure, the test specimen shall be examined only to determine if the coating has become stiff, brittle, soft, or tacky. If the test specimen becomes stiff, brittle, soft, or tacky, it shall be considered a test failure.

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4.5.3 Strength of coating test. The test specimen shall be tested as specified in Method 5972 of FED-STD-191 except that the test for loss in water resistance does not apply. The test specimen shall be examined for any break or crack in the coating. Any break or crack in the coating shall be considered a test failure.

4.5.4 Hydrostatic resistance test. The hydrostatic resistance test shall be conducted as specified in Method 5512 of FED-STD-191. The results shall be reported as the average of the highest four specimens of the five tested per sample unit. Water pressure shall be applied to the coated side of the fabric only.

4.5.5 Hydrostatic resistance after resistance to low temperature test. Five test specimens that have been subjected to the test specified in 4.5.2 shall be tested for hydrostatic resistance as specified in 4.5.5.

4.5.6 Hydrostatic resistance after weather resistance test. Five test specimens that have been subjected to the test specified in 4.5.3 shall be tested for hydrostatic resistance as specified in 4.5.5.

4.5.7 Hydrostatic resistance after strength of coating test. Five test specimens that have been subjected to the test specified in 4.5.4 shall be tested for hydrostatic resistance as specified in 4.5.5.

4.5.8 Hydrostatic resistance after solvent resistance test. Five 10- by 10-inch test specimens shall be attached (with the coated side up) to the opening of five 600-mL beakers with rubber bands in such a manner that a pocket capable of containing 100 mL is formed. One hundred milliliters of reagent grade naphtha shall be poured into each pocket, with the naphtha contacting the coated surface, and held in this position for 15 minutes. At the end of this time, the naphtha shall be poured off and the specimens shall be removed and allowed to dry flat, at room temperature for 5 minutes. Test for hydrostatic resistance shall be made as specified in 4.5.5.

4.5.9 Accelerated aging test. One test specimen shall be subjected to the accelerated aging test specified in Method 5852 of FED-STD-191. After testing, the specimen shall be examined to determine if it has become stiff and brittle or soft and tacky. Breaking strength tests are not applicable. If the test specimen becomes stiff and brittle or soft and tacky, it shall be considered a test failure.

4.5.10 Stiffness after heat treat test. Specimens that have been tested for stiffness at 70°F shall be placed in a well ventilated oven at 220°F \pm 5°F for 5 hours, then removed and conditioned at 70°F \pm 5°F and 65 \pm 5 percent relative humidity for 5 hours and the stiffness tested, in only the warp direction, in accordance with Method 5204 of FED-STD-191.

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4.5.11 Abrasion resistance test. The abrasion resistance shall be determined as specified in Method 5304 of FED-STD-191 with the following exceptions:

- a. The coated side of the fabric (only) shall be tested using fine emery cloth as the abradant.
- b. Three test specimens shall be subjected to 25 continuous cycles under a tension of 6 pounds and a pressure of 3 pounds.
- c. Breaking strength determinations shall not be made.
- d. The test specimens shall be abraded in the warp direction only and after abrading there shall be no visual loose fibers on the base fabric exposed in the center 1 inch of the abraded portion. All specimens shall pass.

4.5.12 Matching. The color of the finished cloth shall match the standard sample when viewed under filtered tungsten lamps that approximate artificial daylight and that have a correlated color temperature of 7500 ± 200 K, with illumination of 100 ± 20 foot candles, and shall be a good match to the standard sample under incandescent lamplight at 2300 ± 200 K.

4.5.13 Hydrostatic resistance of side and bottom seams and bartacked side seam. The side and bottom seams, and bartacked side seam hydrostatic resistance shall be determined as specified in Method 5514 of FED-STD-191 with the following exceptions:

- a. The bag shall be tested without cutting and one test shall be made on the side seam, one where the tie cord is bartacked to the bag, and two in the peripheral bottom seam.
- b. When testing the seam, the seam shall be positioned in the center of the 4-1/2 inch diameter test area with the outside of the seam (uncoated side of the bag) contacting the water.
- c. When testing the bartacked tie cord, the bartack shall be positioned in the center of the 4-1/2 inch diameter test area with the water contacting the uncoated side of the bag. The water shall contact the uncoated side of the bag.
- d. The water pressure shall be raised to 25 centimeters and held for 1 minute.
- e. Leakage shall be defined as the appearance of water in any portion of the 4-1/2 inch diameter test area.

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4.5.14 Seam adhesion test. The seam adhesion test shall be conducted as specified in Method 5960 of FED-STD-191 except that tests shall be made on a finished bag and three determinations shall be made on each bag. One determination shall be made on the side seam and two on the peripheral bottom seam.

4.5.15 Seam adhesion after water immersion test. The seam adhesion test shall be conducted as specified in Method 5964 of FED-STD-191 except that the tests shall be made on a finished bag and three determinations shall be made on the bag. One determination shall be made on the side seam and two on the bottom seam. In addition, the results shall be reported as indicated in table III.

4.5.16 Seam blocking test. The bag shall be tested for resistance to blocking by Method 5872 of FED-STD-191 except that the test specimen shall be prepared by folding the bag so that sealed seam surface is superimposed with the coated side of the fabric on the inside of the bag and with the seam positioned in the center of the glass plate.

4.5.17 Adhesion of coating (dry and wet) test. The adhesion of coating shall be determined by Method 5970 of FED-STD-191. The original dry adhesion separation shall be stopped after a 3-inch separation. The specimens shall be immersed in distilled water at room temperature for 24 hours, blotted dry, and the wet adhesion shall be determined on the remainder of the specimen.

4.5.18 Tie cord patch adhesion test. The adhesion of the tie cord patch shall be determined as specified in Method 5950 of FED-STD-191, except that the 2-inch diameter patch shall be separated by hand for 1 inch, and a ply placed in each clamp of the machine. The remaining 1 inch of adhered patch shall be separated by machine, and the adhesion of the patch shall be the single high peak reading recorded during complete patch removal.

5. PACKAGING

5.1 Preservation. Preservation shall be level A or Commercial as specified (see 6.2).

5.1.1 Level A preservation. Each bag shall be smoothed out flat with the tie cord tucked inside. Each side of the bag shall be folded over approximately 6-1/2 inches. The bottom shall be folded up on the wall of the bag, then folded once again to measure approximately 12-1/2 by 15 inches. Thirty folded bags, alternating one on top of another, shall be packed in a fiberboard box conforming to style RSC, grade 200 of PPP-B-636. Inside dimensions of each box shall be approximately 15 inches in length, 12-1/2 inches in width, and 8 inches in depth. Each box shall be closed in accordance with the appendix of PPP-B-636.

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5.1.2 Commercial preservation. Bags shall be preserved in accordance with ASTM D 3951.

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

5.2.1 Level A packing. Sixty bags, preserved as specified in 5.1, shall be packed in a snug-fitting fiberboard shipping container conforming to style RSC, grade V2s of PPP-B-636. Inside dimensions of each container shall approximate 25-1/2 inches in length, 15-1/4 inches in width, and 8-1/4 inches in depth. Each shipping container shall be closed in accordance with method III, waterproofed in accordance with method V, and reinforced as specified in the appendix of PPP-B-636, except the inspection shall be in accordance with 4.4.6. Shipping containers shall be arranged in unit loads in accordance with MIL-L-35078 for the type and class of load specified (see 6.2). Strapping shall be limited to nonmetallic strapping, except for type II, class F loads.

5.2.2 Level B packing. Sixty bags, preserved as specified in 5.1, shall be packed in a snug-fitting fiberboard shipping container conforming to style RSC, type CF (variety SW) or SF, class domestic, grade 275 of PPP-B-636. Inside dimensions of each container shall approximate 25-1/2 inches in length, 15-1/4 inches in width, and 8-1/4 inches in depth. Each shipping container shall be closed in accordance with method II as specified in the appendix of PPP-B-636, except that the inspection shall be in accordance with 4.4.6.

5.2.2.1 Weather-resistant fiberboard containers. When specified (see 6.2), the shipping container shall be grade V3c, V3s, or V4s fiberboard box fabricated in accordance with PPP-B-636 and closed in accordance with method III, as specified in the appendix of PPP-B-636 except that the inspection shall be in accordance with 4.4.6.

5.2.3 Commercial packing. Bags preserved as specified in 5.1, shall be packed in accordance with ASTM D 3951.

5.3 Palletization. When specified (see 6.2), bags packed as specified in 5.2.2 or 5.2.3 shall be palletized on a 4-way entry pallet in accordance with load type Ia of MIL-STD-147. Pallet types shall be type I (4-way entry), type IV, or type V in accordance with MIL-STD-147. Pallets shall be fabricated from wood groups I, II, III, or IV of MIL-STD-731. Each prepared load shall be bonded with primary and secondary straps in accordance with bonding means C and D or film bonding means F or G. Pallet pattern shall be number 6 in accordance with appendix of MIL-STD-147.

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5.4 Marking. In addition to any special marking required by the contract or purchase order, intermediate containers, shipping containers and palletized unit loads shall be marked in accordance with MIL-STD-129 or ASTM D 3951, as applicable.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. This item is used as a carrying bag providing waterproof protection for rations, extra clothing, personal effects, and the intermediate cold and extreme cold sleeping bags. It is not constructed to withstand rough use or handling. Should the area of operation or assigned function involve rough handling and waterproofing is required, the waterproof bag should be placed inside a bag of more rugged construction such as the duffel bag to protect the waterproof bag from damage that would result in leakage.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this specification.
- b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
- c. When first article is required (see 3.1, 4.3, and 6.3).
- d. Levels of preservation and packing (see 5.1 and 5.2).
- e. Type and class of unit load (see 5.2.1).
- f. When weather-resistant grade fiberboard shipping containers are required for level B packing (see 5.2.2.1).
- g. When palletization is required (see 5.3).

6.3 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of FAR 52.209. The first article should be a preproduction sample. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should also include specific instructions in acquisition documents regarding arrangements for selection, inspection, and approval of the first article.

6.4 Sample. For access to samples, address the contracting activity issuing the invitation for bids or request for proposal.

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6.5 Coated cloth (see 3.3.3). To assure a coated cloth with sufficient bulk to permit proper fabrication, calendar coating application is recommended. To assure proper performance of the coated cloth after fabrication, a base coat applied by spreader coating prior to calendaring is recommended.

6.6 Subject term (key word) listing.

Individual equipment
Protective covers

6.7 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:

Army - GL
Navy - NU
Air Force - 99

Preparing activity:

Army - GL
(Project 8465-0030)

Review activities:

Army - MD
Air Force - 82
DLA - CT

User activities:

Navy - MC
Air Force - 45

[illegible]

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