

INCH-POUND

MIL-F-44405

24 April 1990

MILITARY SPECIFICATION

FELT SHEET, POLYESTER, NEEDLE PUNCHED

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

1. SCOPE

1.1 Scope. This specification covers one type of needle punched polyester felt.

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).

SPECIFICATIONS

FEDERAL

PPP-P-1133 - Packaging of Synthetic Fiber Fabrics

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 Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 8305

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STANDARDS

FEDERAL

FED-STD-191- Textile Test Methods

MILITARY

MIL-STD-105- Sampling Procedures and Tables for Inspection by Attributes

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 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.

FEDERAL TRADE COMMISSION

Rules and Regulations Under the Textile Fiber Products Identification Act

(Copies are available from the Federal Trade Commission, Pennsylvania Avenue at Sixth Street, N.W., Washington, DC 20580—0001.)

2.2 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 Material.

3.2.1 Polyester. The polyester fiber shall be of first quality in a denier and staple length necessary to meet the requirements specified in table I when tested as specified in 4.4.1.1. Reprocessed polyester shall not be used.

3.2.2 Fiber blend. The felt shall be manufactured by using a blend of 75 percent 6 denier, 3 inch staple length, natural polyester and 25 percent 3 denier, 2 inch staple length, black polyester. Testing shall be as specified in 4.4.1.1.

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3.3 Finish. The felt shall have a urethane coating applied evenly to one side adding 3.0 to 4.0 oz./sq. yd. to the finished felt,

3.4 Physical requirements. The physical requirements for the finished felt shall be as specified in table I when tested as specified in 4.4.3.

TABLE I. Physical requirements

Characteristic	Requirement Mm	Max	—
Weight, oz./sq. yd.	33.0	40.0	
Thickness, (inches)	0.265	0.335	
Breaking strength, (pounds)			
Machine direction	390		
Cross machine direction	580	—	
Splitting resistance (pounds)			
Machine direction	29		
Cross machine direction	33		
Fuzzing resistance 1/	Good		

1/ Fuzzing is considered to be a hairy effect on protruding the fabric caused by broken fibers or filament,

3.4.1 Width. The felt shall be trimmed and the minimum width after trimming shall be as specified (see 6.2).

3.5 Color. The color of the finished felt shall be grey, resulting from the fiber blend specified in 3.2.2, when examined on the urethane finished side,

3.6 Length and put—up. For Government procurements only, unless otherwise specified (see 6.2), the felt shall be furnished in rolls of not less than 26 yards and not greater than 55 yards. Each roll shall contain not more than two pieces and no piece shall be less than 3 yards in length.

3.7 Identification tickets. Unless otherwise specified (see 6.2) each roll of felt shall have a ticket attached to the edge at the inner end of the felt with not finer than 5 ply cotton string doubled to not less than 8 inches long. The ticket shall be made of not less than 20 point paper stock and the color shall be white or light in intensity to permit easy reading of printed, stamped, or typed markings. Entries on tickets shall be printed, stamped or typed. Handwritten entries are prohibited. The ticket shall have a reinforced eyelet for attaching the tying cord and shall be legibly marked with water—insoluble ink with the following information:

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Nomenclature, thickness
Color
Federal stock number
Supplier
Contract number and date
Specification number and date
Name of contracting office
Supplier's piece number
Gross yards
Net yards

3.8 Fiber identification. Each roll or felt shall be labeled and ticketed for fiber content in accordance with the Rules and Regulations Under the Textile Fiber Products Identification Act.

3.9 Workmanship. The end item shall conform to the quality of product established by this specification and the occurrence of defects shall not exceed the applicable acceptable quality levels,

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 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:

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- 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 through 4.4.2.3 and tested for the characteristics specified in 4.4.3.

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 characteristics listed below conform to the specified requirements.

<u>Characteristics</u>	<u>Requirement paragraph</u>
Polyester identification	3.2.1
Fiber blend	3.2.2
Denier	3.2.2
Staple lengths	3.2.2

4.4.2 End item examination.

4.4.2.1 Yard-by-yard examination. Each roll shall be examined on the urethane coated side for the defects listed below. All defects found shall be counted regardless of their proximity to each other, except where two or more defects represent a single local condition of the felt, in which case only the more serious defect shall be counted. A continuous defect shall be counted as one for every lengthwise yard or fraction thereof in which it occurs.

Defects 1/

Any spot, stain, or streak
 Crease or wrinkle, hard embedded
 Any hole, cut, or tear
 Thin spots, or thin edges
 Broken needles embedded in felt
 Coating omitted from any area on the felt

1/ Clearly visible at normal inspection distance (approximately 3 feet)

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The lot size shall be expressed in units of yards. The sample unit shall be 1 linear yard of felt. The inspection level shall be II and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 6.5 for total defects. The sample yardage shall be apportioned equally among the selected rolls. The number of rolls from which the sample yardage is to be selected shall be in accordance with the following:

<u>Lot size (yards)</u>	<u>Sample size (rolls)</u>
1200 or less 1/	3
1201 up to and including 3,200	5
3,201 up to and including 10,000	7
10,001 up to and including 35,000	10
35,001 up to and including 150,000	15
150,000 and over	25

1/ If a lot contains fewer than three rolls, each roll in the lot shall be examined.

4.4.2.2 Overall examination. During the yard-by-yard examination each defect listed below shall be counted not more than once in each roll examined. The lot shall not be considered acceptable if one or more defects are found in the sample.

Overall defects

Color not as specified
Width less than specified
Objectionable odor
Fiber identification marking omitted from any roll

4.4.2.3 Length examination. During the yard—by—yard examination each roll in the sample shall be examined for length. Any length found to be less than the minimum or more than the maximum specified or more than 2 yards less than the length marked on the ticket shall be considered a defect with respect to length. The lot shall be unacceptable if two or more rolls in the sample are defective with respect to length or if the total of the actual lengths of the rolls in the sample is less than the total of the lengths marked on the tickets.

4.4.3 End item testing. The felt shall be tested for the characteristics listed in table II. The methods of testing specified in FED-STD-191, wherever applicable and as specified in table II shall be followed. The physical and chemical values specified in section 3 apply to the results of the determinations made on a sample unit for test purposes, as specified in the applicable test method. The sample unit shall be 1/2 yard full width for felt 40 inches wide or more and 1 yard full width for felt under 40 inches wide.

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All test reports shall contain the individual values utilized in expressing the final result. The lot shall be unacceptable if one or more sample units fail to meet any requirement specified. The sample size shall be in accordance with the following:

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

TABLE II. End item tests

Characteristic	Requirement paragraph	Test method
Urethane coating, oz./sq, yd.	3.3	1/
Weight, oz./sq, yd.	3.4	4.5.1
Thickness, inch	3.4	5030
Breaking strength, lbs.		
Machine direction	3.4	5100
Cross machine direction	3.4	5100
Splitting resistance, lbs.		
Machine direction	3.4	4.5.2
Cross machine direction	3.4	4.5.2
Fuzzing resistance	3.4	5320

1/ A certificate of compliance shall be submitted and will be acceptable for the stated requirement.

4.4.4 Packaging inspection. The sampling and inspection of the packaging shall be in accordance with the requirements of PPP-P-1133.

4.5 Methods of inspection.

4.5.1 Weight test. Three specimens shall be conditioned, accurately measured, and then weighed on a balance sensitive to 0.1 percent of the total weight. The average weight and area shall be used in calculating the weight in pounds per square yard or ounces per square yard, as applicable.

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4.5.2 Splitting resistance test. The splitting resistance shall be determined using the apparatus as specified in Method 5100 of FED-STD-191. Ten 2-inch by 6-inch specimens shall be cut with a die from each sample unit, five taken with the 6.0inch dimension parallel to the length and five perpendicular to the length. Split the conditioned specimens within the middle third of the thickness for a distance of approximately 2 inches from one end only. Clamp one of the lips in each jaw of the testing machine. Start the machine and record, as the splitting resistance in pounds, the average load in pounds necessary to pull the two sections of the felt wholly apart. Average the test results on the five specimens cut lengthwise and the five specimens cut crosswise, respectively, and report separately as the splitting resistance in pounds per 2 inches of width,

5. PACKAGING

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

5.1.1 Level A and Commercial. The felt shall be preserved in accordance with the applicable requirements of PPP-P-1133.

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

5.2.1 Levels A, B and Commercial. The felt shall be packed in accordance with the applicable requirements of PPP-P-1133.

5.3 Marking. In addition to any special marking required by the contract or purchase order, shipments shall be marked in accordance with the applicable requirements of PPP-P-1133.

6. NOTES

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

6.1 Intended use. The felt is intended for use in the manufacture of Individual Airborne Weapons Cases.

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).
- c. When a first article is required (see 3.1, 4.3, and 6.3).
- d. Width required (see 3.4.1).
- e. Length required, if other than specified (see 3.6).
- f. Identification required, if other than specified (see 3.7).
- g. Levels of preservation and packing required (see 5.1 and 5.2).

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.

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6.4 Subject term (key word) listing.

Ammunition felt
Needlepunch felt
Nonwovens

Custodians:

Army - GL
Navy - NU
Air Force — 99

Preparing activity:

Army — GL

(Project 8305—0316)

Review activities:

Army - MD
Air Force — 82
DLA - CT

User activities:

Navy - MC, OS