

INCH-POUND

MIL-PRF-85036B(AS)  
26 February 1999  
SUPERSEDING  
MIL-B-85036A(AS)  
29 October 1991

## PERFORMANCE SPECIFICATION

### BARRIER MATERIALS, HEAVY DUTY, FOR FLEXIBLE ENGINE CONTAINERS

This specification is approved for use by the Naval Air Systems Command, Department of Navy, and is available for use by all Departments and Agencies of the Department of Defense.

#### 1. SCOPE

1.1 Scope. This specification establishes the requirements for an opaque, heavy duty barrier material, having a low water vapor transmission rate, and capable of being heat-sealed on both surfaces for use in military packaging (see 6.1).

#### 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

##### 2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified,

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Air Warfare Center Aircraft Division, Code 414100B120-3, Highway 547, Lakehurst, NJ 08733-5100, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 8135

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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).

### STANDARDS

#### FEDERAL

- FED-STD-101 - Test Procedures for Packaging Materials.
- FED-STD-191 - Textile Test Methods.
- FED-STD-595 - Colors Used in Government Procurement.

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

2.3 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 QUALITY CONTROL (ASQC)

- ASQC-Z1.4 - Procedures, Sampling and Tables for Inspection by Attributes. (DoD adopted)

(Application for copies should be addressed to the American Society for Quality Control, P.O. Box 3005, 611 East Wisconsin Ave., Milwaukee, WI 53201-4606.)

2.4 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 inspection. When specified (see 6.2), samples shall be subjected to first article inspection in accordance with 4.2.

3.2 Material. Barrier materials shall be made from such materials and by such processes as to ensure compliance with the requirements of this specification.

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3.3 Construction. Barrier materials shall be constructed of one or more plies in any manner that meets the requirements of this specification. Butting of component materials or the finished product shall not be permitted except in the direction perpendicular to the rolling direction.

3.3.1 Splices. A roll shall not contain more than 3 splices (4 pieces) and each piece shall be not less than 45 yards in length. Splices within rolls shall be even the entire width of the roll material and shall not come apart during unwinding of the roll. Splices within rolls shall be flagged at both ends of each splice with colored markers. Barrier material in flat cut sheets shall not contain splices (see 4.3.2.1).

3.4 Form. The barrier material shall be furnished in rolls or flat cut sheets as specified in the contract or delivery order (see 6.2).

3.4.1 Rolls. Unless otherwise specified (see 6.2), the width of roll material shall be 36 inches, with a tolerance of plus 1/4 inch or minus 1/8 inch. The average length of roll material shall be not less than 200 yards. The length of any individual roll shall be not less than 195 yards. The roll material shall be uniformly wound on nonreturnable cores. The core's inside diameter shall be not less than 3 inches, with a tolerance of plus 1/8 inch. The length of the core shall be equal to the width of the roll material, with a tolerance of plus 1/8 inch. The core shall be rigid to prevent distortion of the roll during use and shipment conditions. Each roll shall be restrained to prevent unwinding (see 4.3.2.1).

3.4.2 Sheets. When flat cut sheets are specified, the length and width shall be as specified by the acquiring activity (see 6.2). If the length and width tolerances are not specified, the tolerance for each shall be plus 1/4 inch or minus 1/8 inch. Flat cut sheets shall be evenly stacked (see 4.3.2.1).

3.5 Sealing. The material shall exhibit no delamination of the heat-sealed area when sealed according to the manufacturer's recommended conditions (see 4.5). Each roll or package (flat cuts) of barrier material shall include a tag secured to the core of rolls, or sheet inserted in the package of sheets with the sealing instructions for heat-sealing on rotary, band, and jaw-type sealing equipment. The tag or sheet shall be visible upon opening the unit package (see 4.3.2.1).

3.6 Identification of material. The specification number, manufacturer's name, manufacturer's designation, month and year of manufacture, and lot number shall be clearly and legibly marked using water-resistant ink on the backing surface of the material. The color of the markings shall conform to the lusterless black of FED-STD-595, Color No. 37038. The complete markings shall be continuous lengthwise and the distance between groups of markings shall be not greater than 2 inches. A complete group of markings shall appear once in each 2 1/2 inches of width of the roll. The letters and figures shall be not less than 1/8 inch high (see 4.3.2.1).

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3.7 Workmanship. Barrier material surfaces shall be free from any foreign matter. The barrier material edges shall be cut and trimmed of any selvage. Barrier material shall be free from holes, tears, cuts, sharp creases, wrinkles, or other imperfections (see 4.3.2.1).

3.8 Performance requirements. The performance of the barrier materials shall meet the requirements specified in table I, when tested in accordance with 4.6.

TABLE I. Performance requirements.

CHARACTERISTICS	REQUIREMENTS	TEST PARAGRAPH
Seam strength (face to face seal) 1. Sealed as received: a. At room temperature (separation-inches) b. At 100 °F and 160 °F (separation-inches) 2. Sealed, then aged 12 days at 160 °F: a. At room temperature (separation-inches) b. At 100 °F and 160 °F (separation-inches) 3. Aged 12 days at 160 °F, then sealed: a. At room temperature (separation-inches) b. At 100 °F and 160 °F (separation-inches)	No separation 1/4 max  No separation 1/4 max  No separation 1/4 max	4.6.2
Seam strength (face to back seal) 1. Sealed as received: a. At room temperature (separation-inches) b. At 100 °F and 160 °F (separation-inches) 2. Sealed, then aged 12 days at 160 °F: a. At room temperature (separation-inches) b. At 100 °F and 160 °F (separation-inches) 3. Aged 12 days at 160 °F, then sealed: a. At room temperature (separation-inches) b. At 100 °F and 160 °F (separation-inches)	No separation 1/4 max  No separation 1/4 max  No separation 1/4 max	4.6.3
Seam fabrication (face to face seal)	No leakage at double seam junction	4.6.4
Aging resistance	No delamination	4.6.5
Oil resistance (delamination)	No leakage, swelling, delamination, or embrittlement	4.6.6

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TABLE I. Performance requirements - Continued.

CHARACTERISTICS	REQUIREMENTS	TEST PARAGRAPH
Blocking resistance	No blocking, delamination, or rupture	4.6.1
Contact corrosivity	No corrosion, etching, or pitting	4.6.1
Puncture resistance	80 lbs min	4.6.1
Resistance to curl	Shall not curl in excess of 5 percent or curl back upon itself	4.6.1
Watervapor transmission rate (WVTR) <ol style="list-style-type: none"> <li>1. As received, after room temperature flexing: (gm/100 sq in/24 hrs)               <ol style="list-style-type: none"> <li>a. Flexed machine direction</li> <li>b. Flexed cross-machine direction</li> </ol> </li> <li>2. Aged, after room temperature flexing: (gm/100 sq in/24 hrs)               <ol style="list-style-type: none"> <li>a. Flexed machine direction</li> <li>b. Flexed cross-machine direction</li> </ol> </li> <li>3. After low temperature flexing: As received (gm/100 sq in/24 hrs)</li> </ol>	0.02 max 0.02 max  0.02 max 0.02 max  0.03 max	4.6.1
Breaking strength (grab method) <ol style="list-style-type: none"> <li>1. As received:               <ol style="list-style-type: none"> <li>a. Machine direction (lb)</li> <li>b. Cross direction (lb)</li> </ol> </li> <li>2. After aging:               <ol style="list-style-type: none"> <li>a. Machine direction (lb)</li> <li>b. Cross direction (lb)</li> </ol> </li> </ol>	200 min 200 min  200 min 200 min	4.6.1

## 4. VERIFICATION

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

- a. First article inspection (see 4.2).
- b. Conformance inspection (see 4.3).

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4.2 First article inspection. First article inspection shall include all examinations and tests of this specification.

4.3 Conformance inspection. Conformance inspections shall consist of the required examinations specified in 4.3.2.1 and the tests listed in table II.

TABLE II. Conformance tests.

Characteristics	Paragraph Reference
Seam strength at room temperature (face to face seam)	--
As received	4.6.2.2
Sealed then aged 12 days at 160° F	4.6.2.4
Seam strength at room temperature (face to back seam)	--
As received	4.6.3.2
Sealed then aged 12 days at 160° F	4.6.3.4
Seam fabrication (fin seal)	4.6.4
Water vapor transmission rate	--
As received; flexed in each direction	4.6.1
Puncture resistance	4.6.1
Resistance to curl	4.6.1
Oil resistance (delamination)	4.6.6

4.3.1 Sampling for conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with the provisions specified in ASQC-Z1.4.

4.3.2 Examination of the end item. For the purpose of determining the sample size in accordance with ASQC-Z1.4, the lot size shall be expressed in units of rolls or packages of sheets, as applicable, for examinations specified in 4.3.2.1.

4.3.2.1 Examination of the end item for construction, form, identification, sealing and workmanship. The sample unit for the end item inspection shall be one roll or package of sheets. The sample unit shall be visually inspected and measured to ensure it meets the requirements specified in 3.3 through 3.7.

4.4 Test conditions. Unless otherwise specified in the test methods herein, the physical tests contained in this specification shall be made with an atmosphere having a relative humidity of  $50 \pm 5$  percent and at room temperature which shall have a range from 70 to 76 °F. Material shall be considered in equilibrium after exposure to the above conditions for a minimum of 24 hours.

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4.5 Sealing instructions for conformance and first article testing.

a. All seals for test purposes shall be not less than 1/2-inch wide and shall be effected on a jaw-type heat-sealer or equivalent utilizing the sealing conditions recommended by the manufacturer. A temperature setting of 525 °F, a 3-second dwell time, and a pressure of 60 pounds per square inch shall be used for all test seals (see 6.3).

b. In securing the three 1-inch seam strength specimens from their respective samples (see 4.6.2.2.1), specimens shall not be removed:

- (1) From points in the sealed sample where seal overlapping has occurred.
- (2) From points in the sealed sample that were within 1-inch of either end of the sealer jaw during the sealing operation.

4.6 Verification of performance requirements.

4.6.1 Test methods. Unless otherwise specified, the tests in table III shall be in accordance with the identified methods of FED-STD-101.

TABLE III. Test methods.

TESTS	FED-STD-101 TEST METHOD NO.	SPECIAL REQUIREMENT OR EXCEPTION NOTE
Water vapor transmission rate (WVTR) After room temperature flexing (as received and aged)	2017	<u>1/</u>
Transmission rate procedure	3030 procedure A(1)	--
Water vapor transmission rate (WVTR) After low temperature flexing (as received only)	2017	<u>2/</u>
Transmission rate procedure	3030 procedure A(1)	--
Breaking strength (grab method)	see <u>3/</u>	<u>3/</u>
Puncture resistance	2065	
Blocking resistance	3003 procedure D	
Resistance to curl	2015	<u>4/</u>
Contact corrosivity	3005	

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- 1/ As received and aged, specimens shall be flexed (maximum flexing – 6 inches) in accordance with FED-STD-101, Method 2017, prior to conducting the WVTR test. The specimen shall be aged by exposure to an atmosphere of 80 to 85 percent relative humidity and  $160 \pm 2$  °F for 72 consecutive hours.
- 2/ Conduct tests as specified in FED-STD-101, Method 2017, except that only as received specimens shall be tested. Prior to flexing, test specimens shall be conditioned for at least 30 minutes at  $-20 \pm 2$  °F and the flexing operation shall be conducted at  $-20 \pm 2$  °F.
- 3/ Breaking strength tests shall be conducted in accordance with FED-STD-191, Method 5100. Tests shall be conducted and the average breaking strength recorded for all as received and aged specimens in both the machine and cross directions. Aged material shall be material that has been exposed to an atmosphere of 80 to 85 percent relative humidity and  $160 \pm 2$  °F for 72 consecutive hours. Individual test specimens shall then be cut from the aged sheet.
- 4/ Three specimens shall be tested. Specimens shall not be suspended but shall be placed on a horizontal surface.

#### 4.6.2 Seam strength (face to face seal).

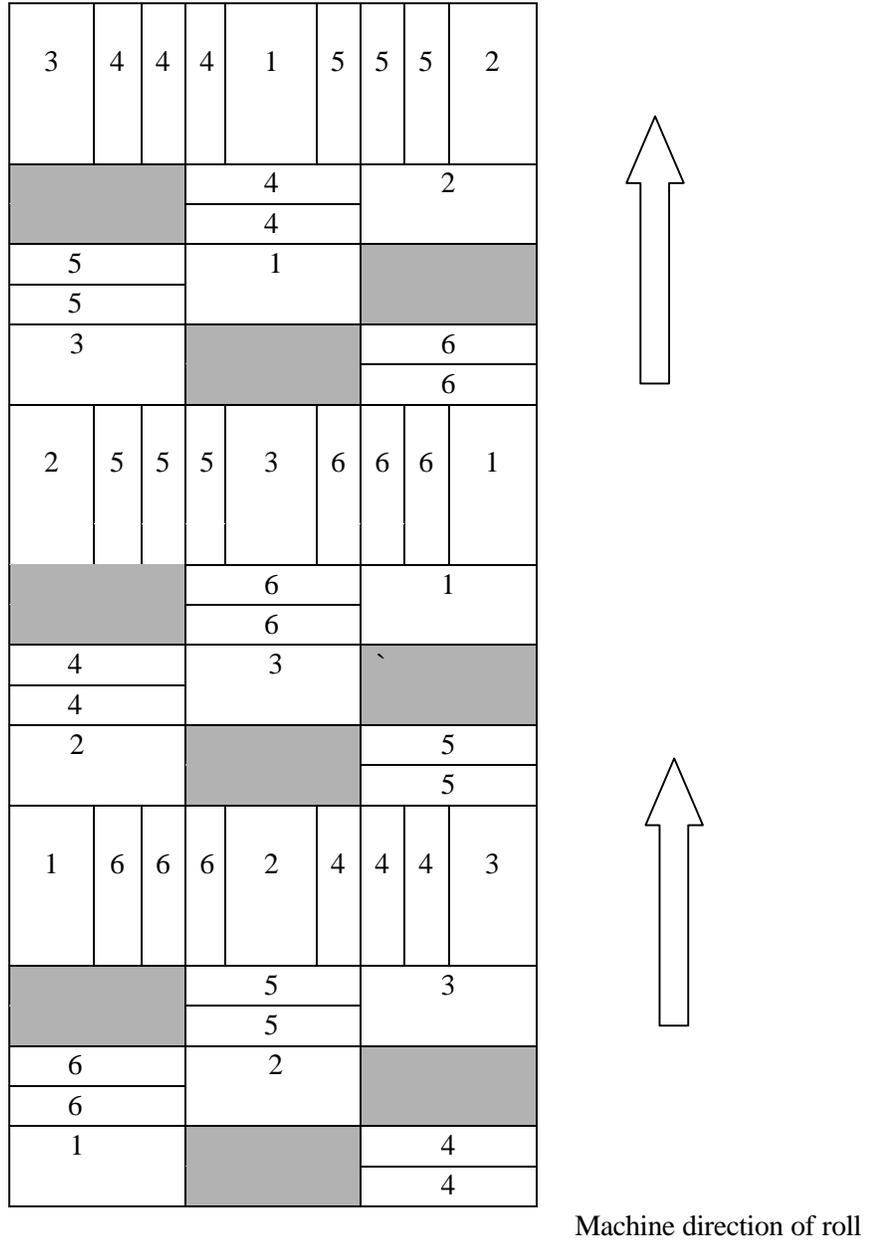
4.6.2.1 Seam strength sampling. Samples measuring 6 by 12 inches shall be selected from the test material as shown on figure 1 (key 1, 2, 3).

#### 4.6.2.2 Seam strength as received.

4.6.2.2.1 Preparation of test specimen. The six sections for this test (see figure 1) shall be folded in half with the crease parallel to the long axis. The open or unfolded length shall be heat-sealed by clamping in the sealer and simultaneously drawing a sharp penciled line on the backing along the edge of the sealer jaw. The folded length shall be cut off 1/2 inch from the end. From each of the six sections, three adjacent 1-inch-wide specimens shall be cut perpendicular to the seam (see 4.5). One of the specimens from each section shall be tested at room temperature, (see 4.4) one from each section tested at 100 °F, and the remaining one from each section tested at 160 °F. After heat-sealing and prior to the application of the specified weights, the specimens in all cases shall be exposed for one hour to the test conditions specified in 4.4.

4.6.2.2.2 Test at room temperature. The six 1-inch-wide specimens selected for this test (see 4.6.2.2.1) shall be opened and one end of each specimen shall be clamped so that the other end of the specimen hangs freely. A 3 1/2 pound weight shall then be carefully attached to the free end of the specimen so as not to impact load the seal. The weight shall be allowed to act for 5 minutes, whereupon the weight shall be removed and the specimen examined for separation of the heat-sealed faces. Any evidence of delamination of one ply away from the other in the heat-sealed area shall be cause for rejection. The evaluation shall be limited to the heat-sealed area specified in 4.6.2.2.1.

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**KEY**

- 1 - 6 inch by 12 inch sample for "As Received" testing (face to face seal)
- 2 - 6 inch by 12 inch sample for "Sealed before Aging" testing (face to face seal)
- 3 - 6 inch by 12 inch sample for "Sealed after Aging" testing (face to face seal)
- 4 - 3 inch by 12 inch sample for "As Received" testing (face to back seal)
- 5 - 3 inch by 12 inch sample for "Sealed before Aging" testing (face to back seal)
- 6 - 3 inch by 12 inch sample for "Sealed after Aging" testing (face to back seal)

FIGURE 1. Sampling method for seam strength test.

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4.6.2.2.3 Test at 100 °F. The six 1-inch-wide specimens selected for this test (see 4.6.2.2.1) shall be tested the same as those specimens tested at room temperature (see 4.6.2.2.2) except that specimens shall be clamped in a forced draft circulating air oven maintained at  $100 \pm 2$  °F with a weight of 2 pounds  $\pm$  1/2 ounce acting on the free end of the specimen for 1 hour. The rate of air circulation shall be held to the minimum required to maintain uniform temperature throughout the oven. In no case shall the rate of air circulation cause any movement of the weighted specimens. The weights shall be attached after the specimens and test clamp fixtures have been placed in the oven. The weights shall be removed prior to taking the specimen from the oven in order to avoid excessive loading due to swaying action. After one hour, the weights shall be removed and the specimen examined for separation of the heat-seal faces. Any evidence of delamination of one ply away from the other in the heat-sealed area specified in 4.6.2.2.1 shall be cause for rejection.

4.6.2.2.4 Test at 160 °F. The six 1-inch-wide specimens selected for this test (see 4.6.2.2.1) shall be tested the same as those at 100 °F (see 4.6.2.2.3) except that the weight shall be 10 ounces  $\pm$  1/2 ounce and the temperature in the forced draft circulating air oven shall be  $160 \pm 2$  °F. The rate of air circulation shall be held to the minimum required to maintain uniform temperature throughout the oven. In no case shall the rate of air circulation cause any movement of the weighted specimens.

4.6.2.3 Seam strength (sealed before aging).

4.6.2.3.1 Test specimens. The six sections for this test (see figure 1) shall be folded in half with the crease parallel to the long axis. The open or unfolded length shall be heat-sealed by clamping in the sealer and simultaneously drawing a sharp penciled line on the backing along the edge of the sealer jaw. The line shall indicate the actual seam separation. The folded length of the test section shall then be cut off 1/2 inch from the end. After heat-sealing, the samples shall be aged in a circulating air oven maintained at  $160 \pm 2$  °F for 12 consecutive days (288 hours). After aging, 1-inch-wide specimens, as specified in 4.6.2.2.1, shall be cut from the sections for test at room temperature, 100 °F, and 160 °F.

4.6.2.3.2 Test at room temperature. The six 1-inch-wide specimens selected for this test (see 4.6.2.3.1) shall be tested as specified in 4.6.2.2.2.

4.6.2.3.3 Test at 100 °F. The six 1-inch-wide specimens selected for this test (see 4.6.2.3.1) shall be tested as specified in 4.6.2.2.3.

4.6.2.3.4 Test at 160 °F. The six 1-inch-wide specimens selected for this test (see 4.6.2.3.1) shall be tested as specified in 4.6.2.2.4.

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4.6.2.4 Seam strength (sealed after aging).

4.6.2.4.1 Test specimens. The six sections for this test (see figure 1), in the flat unsealed condition as taken from the sample roll shall be aged in a circulating air oven maintained at  $160 \pm 2$  °F for 12 consecutive days (288 hours). After removal from the oven, the unsealed sections shall return to room temperature. Test specimens shall then be obtained as specified in 4.6.2.2.1.

4.6.2.4.2 Test at room temperature. The six 1-inch-wide specimens selected for this test (see 4.6.2.4.1) shall be tested as specified in 4.6.2.2.2.

4.6.2.4.3 Test at 100 °F. The six 1-inch-wide specimens selected for this test (see 4.6.2.4.1) shall be tested as specified in 4.6.2.2.3.

4.6.2.4.4 Test at 160 °F. The six 1-inch-wide specimens selected for this test (see 4.6.2.4.1) shall be tested as specified in 4.6.2.2.4.

4.6.3 Seam strength (face to back seal).

4.6.3.1 Seam strength sampling. Samples measuring 3 by 12 inches shall be selected from the test material as shown on figure 1 (key 4, 5, 6).

4.6.3.2 Seam strength as received.

4.6.3.2.1 Preparation of test specimens. From the twelve sections selected for this test (see figure 1), place the face film of one section of material down on a flat surface. Place the face film of another piece of material over the top of the first piece. Heat-seal with a 1/2 inch seal. From each of the six sections so prepared, three adjacent one-inch wide specimens shall be cut perpendicular to the seam (see 4.6.2.2.1). One of the specimens from each section shall be tested at room temperature, one from each section tested at 100 °F, and the remaining one from each section tested at 160 °F. After heat-sealing and prior to the application of the specified weights, the specimens in all cases shall be exposed for one hour at the test conditions specified in 4.4.

4.6.3.2.2 Test at room temperature. The six 1-inch-wide specimens selected for this test (see 4.6.3.2.1) shall be tested as specified in 4.6.2.2.2.

4.6.3.2.3 Test at 100 °F. The six 1-inch-wide specimens selected for this test (see 4.6.3.2.1) shall be tested as specified in 4.6.2.2.3.

4.6.3.2.4 Test at 160 °F. The six 1-inch-wide specimens selected for this test (see 4.6.3.2.1) shall be tested as specified in 4.6.2.2.4.

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4.6.3.3 Seam strength (sealed before aging).

4.6.3.3.1 Test specimens. The twelve sections for this test (see figure 1) shall be heat-sealed as specified in 4.6.3.2.1. After heat-sealing, the samples shall be aged in a circulating air oven maintained at  $160 \pm 2$  °F for 12 consecutive days (288 hours). After aging, 1-inch-wide specimens (see 4.6.3.2.1) shall be cut from the sections for test at room temperature, 100 °F, and 160 °F.

4.6.3.3.2 Test at room temperature. The six 1-inch-wide specimens selected for this test (see 4.6.3.3.1) shall be tested as specified in 4.6.2.2.2.

4.6.3.3.3 Test at 100 °F. The six 1-inch-wide specimens selected for this test (see 4.6.3.3.1) shall be tested as specified in 4.6.2.2.3.

4.6.3.3.4 Test at 160 °F. The six 1-inch-wide specimens for this test (see 4.6.3.3.1) shall be tested as specified in 4.6.2.2.4.

4.6.3.4 Seam strength (sealed after aging).

4.6.3.4.1 Test specimens. The twelve sections for this test (see figure 1) in the flat unsealed condition as taken from the sample roll, shall be aged in a circulating air oven maintained at  $160 \pm 2$  °F for 12 consecutive days (288 hours). After removal from the oven the unsealed pieces shall be allowed to come to room temperature. Test specimens shall then be prepared as specified in 4.6.3.2.1.

4.6.3.4.2 Test at room temperature. The six 1-inch-wide specimens selected for this test (see 4.6.3.4.1) shall be tested as specified in 4.6.2.2.2.

4.6.3.4.3 Test at 100 °F. The six 1-inch-wide specimens selected for this test (see 4.6.3.4.1) shall be tested as specified in 4.6.2.2.3.

4.6.3.4.4 Test at 160 °F. The six 1-inch-wide specimens selected for this test (see 4.6.3.4.1) shall be tested as specified in 4.6.2.2.4.

4.6.4 Seam fabrication.

4.6.4.1 Preparation of test specimens. Four pouches sealed in accordance with the manufacturer's recommended sealing conditions, shall be fabricated from the barrier material. Each pouch shall be prepared by cutting four specimens, two 2 1/2 by 5 1/2 inches and two 5 1/2 by 5 1/2 inches. The pouch shall be fabricated by sealing as shown on figure 2. The butt seals projecting at 1/2-inch seams perpendicular to the faces shall be made prior to sealing the

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bottom. The butt seams shall be folded flat at the point of juncture with the bottom seams before the bottom seals are made.

4.6.4.2 Procedure. A water solution, containing dye and a 1 percent aerosol OT (Dioctyl Sodium Sulfosuccinate) or equivalent shall be made to produce a distinct color. The solution shall be poured into each sealed pouch to a level of two inches above the top of the bottom seam. The pouches shall then be suspended vertically. After a period of 15 minutes at room temperature, the pouches shall be examined for dye leakage at all seams and especially at the double seam junctions (the points where the vertical seams intersect the bottom seam at points other than at the corners of the pouch).

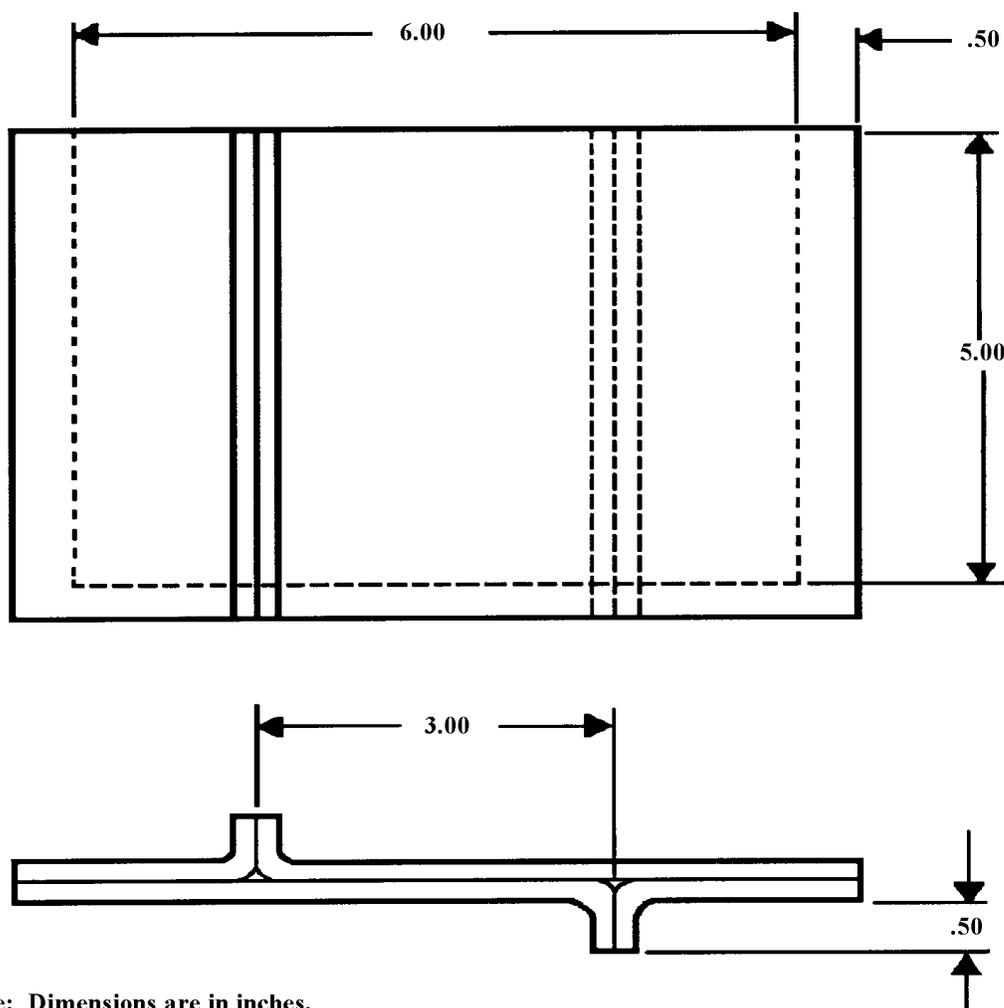


FIGURE 2. Pouch for seam fabrication test.

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4.6.5 Aging resistance. Three specimens, 36 by 6 inches, cut from across the roll of material, at points which shall be not less than 1 yard apart, shall be used for this test.

4.6.5.1 Procedure. The specimens shall be subjected to the following aging cycle:

8 hours in a humidity chamber of  $100 \pm 2$  °F and 90 to 95 percent relative humidity.  
16 hours in a circulating air oven at  $160 \pm 2$  °F.

The aging cycle shall be repeated every weekday for five consecutive days. The specimens shall remain in the circulating air oven and maintained at the conditions described above on Saturday, Sunday and holidays, except that holidays shall not exceed a total of two days over the entire aging period. The aging procedure shall continue for fourteen consecutive days. The specimens shall be folded loosely, hung, rolled loosely, or laid flat in the test chamber during the aging period. At the conclusion of the aging period the specimens shall be returned to room temperature and examined, particularly at all edges, for delamination brought about by the aging exposure. There shall be no prying or picking of the plies when examining the amount of ply separation. For purposes of this test, delamination shall occur if ply separation at any one given point extends in more than 1/2 inch from the edge with an edge length separation greater than 1-inch.

4.6.6 Oil resistance.

4.6.6.1 Preparation of test pouch. Eight 3 by 6 inch samples of the material shall be folded in half. A sharp crease shall be made in each sample by placing the folded sample between two smooth flat surfaces and applying a weight on the sample equal to 6 pounds per inch of crease, on top of the fold for 30 seconds, so as to act on the sample only. Each sample shall then be unfolded and recreated in a similar manner at right angles to the first crease. The samples shall be made into a 3 by 3 inch pouch by folding the sample in half and sealing the two sides.

4.6.6.2 Procedure. Four of the pouches shall be sealed with 0.17 ounces (5 milliliters) of petroleum base oil. In the remaining four pouches place 0.17 ounces (5 milliliters) of di-2 ethylhexylsebacate synthetic base oil and seal the pouch. Care shall be exercised to exclude oil from the heat-sealing area. The pouch shall be suspended in an oven maintained at  $160 \pm 2$  °F for 24 hours. Provisions shall be made to catch any possible oil seepage. The pouch shall be removed, allowed to come to room temperature, and examined for oil leakage. The three sealed edges shall then be cut off and the oil removed. The sheet shall then be pulled taut and examined for swelling, delamination, or other visible defects. A test for delamination of the face film shall be conducted by placing the test specimen between the thumbs and forefingers so that the thumbs rest on the heat-seal face. The thumbs shall then be thrust forward and outward in a finger-snapping motion in such a manner that the heat-seal face will delaminate if it is loosely bonded.

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## 5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

## 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 barrier materials covered by this specification are intended for use in specialized military methods of preservation. The combination of all performance characteristics of MIL-PRF-85036; seam fabrication and strength (face to face and face to back seal); water vapor transmission rate; breaking strength; aging, puncture, blocking and curl resistance; contact corrosivity; and delamination provide the necessary requirements for protection from exposure to the extremes of the naval aviation environment. Naval aviation items are exposed to high moisture, high salt concentration, transfer at sea, rough handling, and minimal storage conditions. There are no commercial equivalents that meet the physical, mechanical, and corrosion requirements necessary to protect jet engines that are exposed to the operational naval aviation environment.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of the specification.
- b. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1).
- c. If first article inspection is required (see 3.1).
- d. Form (rolls or flat cut sheets) and size required (see 3.4).
- e. Packaging requirements (see 5.1).

6.3 Heat-seal equipment. In the interest of standardization and for ease of manipulation, all seals for test under this specification should be effected on a jaw-type heat-sealer. This, however, should not be construed as an indication of Governmental preference in regard to sealing

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equipment. It is not intended that the operating temperature of heat-sealing equipment be limited to 525 °F or less. While equipment may be operated at temperatures exceeding 525 °F to accomplish a satisfactory seal, the barrier material should also be capable of being heat-sealed at temperatures of 525 °F or less.

6.4 First article test samples. Samples for first article inspection should consist of a sample of the barrier material which has been produced by the contractor using the same production process, procedures, and equipment that is going to be used in fulfilling the contract.

6.5 Conformance inspection lot. For purposes of sampling, an inspection lot for examinations and tests should consist of all material made by the same process from the same components by one manufacturer and submitted for delivery at one time.

6.6 Subject term (key word) listing.

Heat-seal  
Opaque  
Packaging  
Preservation  
Water vapor transmission

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 extent of the changes.

## CONCLUDING MATERIAL

Custodian:  
Navy - AS

Preparing activity:  
Navy – AS

(Project 8135-0720)

# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

## INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.  
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### I RECOMMEND A CHANGE:

1. DOCUMENT NUMBER  
MIL-PRF-85036B(AS)

2. DOCUMENT DATE (YYMMDD)  
990226

3. DOCUMENT TITLE

**BARRIER MATERIALS, HEAVY DUTY, FOR FLEXIBLE ENGINE CONTAINERS**

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME *(Last, First, Middle Initial)*

b. ORGANIZATION

c. ADDRESS *(Include Zip Code)*

d. TELEPHONE  
*(Include Area Code)*  
(1) Commercial:

7. DATE SUBMITTED  
(YYMMDD)

(2) DSN:  
*(If Applicable)*

8. PREPARING ACTIVITY

a. NAME  
COMMANDER  
NAVAL AIR WARFARE CENTER  
AIRCRAFT DIVISION

b. TELEPHONE NUMBER *(Include Area Code)*  
(1) Commercial (732) 323-2947 (2) DSN 624-2947

c. ADDRESS *(Include Zip Code)*  
CODE 414100B120-3  
HIGHWAY 547  
LAKEHURST, NJ 08733-5100

IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:  
Defense Logistics Agency (DLSC-LM),  
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8725 John J. Kingman Road, Ste 2533  
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