

MIL-P-81997B
30 September 1983

Superseding
MIL P-81997A
31 August 1977

MILITARY SPECIFICATION

POUCHES, CUSHIONED, FLEXIBLE, ELECTROSTATIC-FREE RECLOSABLE, TRANSPARENT

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

1. SCOPE

1.1 Scope. This specification covers the requirements for flexible, electrostatic-free, reclosable, transparent pouches designed for packaging, and storing static-sensitive electronic devices.

1.2 Classification. The pouches shall be furnished in the following types as specified (see 6.2).

Type I Three-ply wall: Two outerplies - barrier, electrostatic-free, transparent inner ply - cushioning, electrostatic-free, transparent

Type II Single-ply: Cushioning - electrostatic-free, transparent.

1.2.1 Sizes. Pouches shall be of the size specified in the contract or order (see 6.2).

1.3 Part number. Specification part number for items described in this specification will be formulated as shown in 3.9.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. Unless otherwise specified, the following specifications and standards of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DODISS) specified in the solicitations form a part of this specification to the extent specified herein.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Engineering Specifications and Standards Department (Code 93), Naval Air Engineering Center, Lakehurst, NJ 08733, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FSC 8105

MIL-P-819978

SPECIFICATIONS

Federal

PPP-B-601	Boxes, Wood, Cleated Plywood
PPP-B-621	Boxes, Wood, Nailed and Lock Corner
PPP-B-636	Boxes, Shipping, Fiberboard
PPP-B-640	Boxes, Fiberboard, Corrugated Triple-Wall
PPP-C-1842	Cushioning Material, Plastic, Open Cell (For Packaging Applications)
PPP-F-320	Fiberboard, Corrugated and Solid, Sheet Stock (Container Grade) and Cut Shapes
PPP-T-60	Tape, Packaging, Waterproof
PPP-T-76	Tape, Packaging, Paper (For Carton Sealing)

Military

MIL-B-81705	Barrier Materials, Flexible, Electrostatic-Free, Heat Sealable
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STANDARDS

Federal

FED-STD-101	Test Procedures For Packaging Materials
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Military

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	Marking for Shipment and Storage

(Copies of specifications, standards, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DOD adopted shall be the issue listed in the current DODISS and supplement thereto, if applicable.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3951 - Standard Practice For Commercial Packaging

(Applications for copies should be addressed to the American Society for Testing and Materials, 916 Race Street, Philadelphia, PA 19103.)

MIL-P-8199/3

(Industry association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 Material.

3.1.1 Type I. Type I pouches shall consist of barrier material conforming to MIL-B-81705, type II and cushioning material conforming to PPP-C-1842, type III, styles A or B.

3.1.2 Type II. Type II pouches shall consist of cushioning material conforming to PPP-C-1842, type III, styles A or B.

3.2 Construction.

3.2.1 General requirements for pouches. Pouches shall be formed with panels consisting of three-ply walls or single-ply walls. A three-ply wall shall consist of two films of barrier material separated by cushioning material; single-ply wall shall consist of cushioning material without the barrier material. Pouches shall be constructed either by placing heat-sealable surfaces of two formed panels together and heat sealing the seams along the two sides and bottom edge, or using one formed panel, folding in half, and heat sealing the two side seams. Side seams shall be parallel to each other and at right angles to the outer edge of the pouch. Closure shall be across the width of the pouch with an interlocking (zipper type) closure or heat-sealable lip, as specified, and shall be closable by applying finger pressure to the zipper closure or heat to the heat-sealable lip.

3.2.1.1 Type I pouches. Type I pouches, consisting of one or two three-ply panels (see 3.1.1), shall be combined or folded as specified in 3.2.1. Cushioning shall be a size that will ensure a snug fit between layers of barrier material and not extend beyond the barrier material. The finished pouch shall contain only one pocket for inserting the item.

3.2.1.1.1 Type I closure. Closure shall be a reclosable, interlocking (zipper type) fastener consisting of two strips. Strips shall be provided with a set of rib elements and complementary groove elements with a web for sealing the top of the pouch and a flange for separating the groove elements. A colored line, approximately 1/4 inch above and parallel to the zipper track, shall be provided to indicate where the flange may be pulled to open the zipper. Closure material shall be electrostatic-free and meet all requirements of MIL-B-81705, type II.

3.2.1.2 Type II pouches. Type II pouches, consisting of one or two single-ply panels (see 3.1.2), shall be combined or folded as specified in 3.2.1 to form a pouch with only one pocket for inserting the item.

3.2.1.2.1 Type II Closure. Type II pouches shall have a heat-sealable lip of sufficient material for two heat sealing operations (nominal width of 1-inch) and also be electrostatic-free.

MIL-P-819978

3.3 Dimensions and tolerances. The following dimensions and tolerances are applicable to types I and II. The dimensions specified shall apply to the inside width and length. Width of the pouches shall be measured between the inside corners of the reclosable seal when open. Length of pouch shall be measured from the inside bottom edge seam or fold to the inside edge of the reclosable seal when closed. Width tolerance shall be $- 1/8$ inch $+ 1/4$ inch. Length tolerance shall be $- 1/8$ inch $+ 1/4$ inch. Thickness of cushioning layer shall be either $1/4$ inch or $1/8$ inch, nominal, as specified (see 6.2). For quick shipment to maintain pouch stocks, common stock sizes are listed in table II.

3.4 Identification and marking.

3.4.1 Electrostatic-free material. The electrostatic-free material shall be identifiable as specified in MIL-B-81705, type II.

3.4.2 Pouch marking. When specified in the contract or work order (see 6.2), printed label(s) will be inserted between the plies or laminates of the pouch with the following cautionary markings: "REUSABLE - DO NOT DISCARD." "CAUTION - ELECTROSTATIC SENSITIVE DEVICE." "DO NOT OPEN EXCEPT AT APPROVED STATIC-FREE WORK STATION."

An appropriate sensitive electronic device symbol will be shown on the label(s). The label(s) shall not cover more than 50 percent of the pouch surface area.

3.5 Seam continuity. Pouches shall not leak when tested in accordance with 4.5.1.

3.6 Seam strength. Seam strength specimens shall withstand a static load of 2-1/2 pounds without separation. Specimens shall be 1 inch wide, cut perpendicularly to the seam (see 4.5.2).

3.7 Transparency. The transparency of the pouch shall be such that 10-point, all caps type, held 1 inch behind one panel of the pouch can be read (see 4.5.3).

3.8 Workmanship. Pouches shall be uniformly constructed, free from pinholes, tears, cuts, sharp creases, wrinkles, or other imperfections which might impair their usefulness. There shall be no blocking to the extent that will cause tearing of material when pouch is opened (see 4.4.1.1).

3.9 Definitive specification part number. The specification part number is a definitive part number which will be formulated to identify each item covered by this specification. The part number will be formulated by selecting from the requirement options available in this specification as follows:

Definitive specification part number	M81997-X XX
Military specification number	_____
Type designator (see 3.9.1)	_____
Size designator (see 3.9.2)	_____

3.9.1 Type designator. A one position field used to designate the required type of pouch (see table I).

MIL-P-81997B

TABLE I. Pouch type designator.

Type designator	Remarks
1	Three-ply wall
2	Single-ply wall

3.9.2 Size designator. A two-position field used to designate the required size of pouch (see table II).

TABLE II. Pouch size designator.

Size Designator	Inside dimensions in inches 1/
01	2 1/2 x 3
02	2 1/2 x 6
03	3 x 5
04	4 x 6
05	4 x 8
06	4 x 12
07	6 x 6
08	6 x 8
09	8 x 12
10	10 x 10
11	10 x 12
12	10 x 13
13	12 x 12

1/ Dimensions are expressed in inches and fractions thereof with width first, length second, as follows: 6 x 8 inches.

3.9.3 Example. A pouch conforming to MIL-P-81997, type II (single-ply), with dimensions of 6" x 6" would be designated as follows:

M81997-2 07

Military specification number

Type designator (see 3.9.1)

Size designator (see 3.9.2)

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 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 the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

MIL-P-81997B

4.2 Inspection lot. As far as is practicable, each lot shall consist of production units of single type, manufactured under essentially the same conditions and at the same time.

4.3 Sampling. Sampling shall be performed in accordance with the provisions set forth in MIL-STD-105.

4.4 Quality conformance inspection. Quality conformance inspection shall consist of the examinations listed in 4.4.1 and the tests listed in 4.4.2.

4.4.1 Examination. The end item shall be examined in accordance with the inspection levels and acceptance quality levels (AQL's) as specified in 4.4.1.5. A random sample shall be drawn from each lot offered for visual and dimensional characteristics. The lot size for determining sample size in accordance with MIL-STD-105 will be expressed in units of pouches for examination under 4.4.1.3 and in units of shipping containers for examination under 4.4.1.4.

4.4.1.1 Examination of the end item for defects in appearance, construction, workmanship, and marking. The sample unit for this examination shall be one pouch from the sample drawn for examination in accordance with 4.4.1.

DEFECTS

Material	-	Pouches not fabricated from material specified.
Workmanship	-	Not uniformly constructed: Tear, cut, split, slits, holes (including pinholes) sharp creases, wrinkles, or folds; pouches stick together to the extent that opening causes tearing or injury to any surface.
Construction	-	Required manufacturer's seams not sealed along the two sides and bottom of pouches, when applicable, or not sealed the entire length of both sides of sleeves; seams not completely heat sealed throughout their respective lengths; edges of pouch side seams not parallel to each other; outer edge of pouch or the bottom seam not at right angle to side seam; and bottom seam of pouch made from tubing not completely sealed throughout its length; and pouch is not constructed of the proper number of panels.
Identification Marking	-	Marking of pouches illegible, incorrect, incomplete, omitted or does not comply with the specified contract requirements.

4.4.1.2 Examination of the end item for dimensional defects. The sample unit for this examination shall be one pouch taken from the sample drawn for examination in 4.4.1.

MIL-P-81997B

DEFECTS

Size of pouches - Dimensions width or length varies more than tolerances specified in 3.3.

4.4.1.3 Examination of the end item count per unit pack. The sample unit for this examination shall be one unit pack. The average count of pouches per unit pack shall not be less than the specified quantity.

4.4.1.4 Inspection of packaging. An examination shall be made to determine that preservation, packing and marking comply with the requirements of Section 5 of this specification. The sample unit shall be one shipping container, fully packed, selected just prior to the closing operation. Shipping containers fully prepared for delivery shall be examined for closure defects.

DEFECTS

Preservation	-	<p>Preservation level not as specified.</p> <p>Not preserved in units of multiples specified.</p> <p>Unit packs not preserved as specified.</p> <p>Mixed types or sizes in same unit pack.</p> <p>Unit containers, when required, not snugly packed; contains fillers or waste space.</p> <p>Packaging material not as specified; closures not accomplished by specified or required methods or materials.</p>
Packing	-	<p>Packing levels not as specified.</p> <p>Shipping containers have excess weight or cube of applicable specification.</p> <p>Mixed types or sizes packed in the same container.</p> <p>Container not as specified; closure not in accordance with the appendix to the applicable container specification.</p> <p>Tension too great, i.e., strapping tears or cuts through facings of container.</p>
Marking	-	<p>Unit and exterior container marking (as applicable) illegible, incorrect, incomplete, omitted, or not as specified (see 5.3).</p>

4.4.1.5 Inspection levels and acceptable quality levels (AQL's) for examination. The inspection levels for determining the sample size and the acceptable quality levels (AQL's), expressed as percent defective, shall be as indicated in table III.

MIL-P-81997B

TABLE III. Inspection levels and AQL's for examination.

Examination paragraph	Inspection levels	AQL's
4.4.1.1	I	4.0
4.4.1.2	I	4.0
4.4.1.3	I	-
4.4.1.4	I	4.0

4.4.2 Test methods.

4.4.2.1 Inspection level and acceptable quality level (AQL) for test methods. The inspection level for determining the sample size shall be S-1. The acceptable quality level (AQL), expressed as percent defective, shall be 4.0.

4.4.2.2 Seam continuity test. A sufficient quantity of a solution of isopropyl alcohol containing an alcohol soluble dye such as methyl violet shall be poured into the pouch in order that the alcohol solution will cover the entire side, when the pouch is laid on its side. The pouch shall be sealed and laid on its side on a paper towel for a period of two minutes and checked for leakage as evidenced by the transfer of dye. The pouch shall be turned over and checked for leakage as described above after two additional minutes. Any evidence of leakage through or at the manufacturer's seams shall be considered cause for rejection (see 3.5).

4.4.2.3 Heat-sealed seam test. Heat-sealed seam tests shall be conducted in accordance with Test Method 2024 of FED Test Method STD No. 101 (see 3.6). The number of specimens to be tested from each pouch may be reduced when the pouch size precludes testing the number of specimens specified in Method 2024.

4.4.2.4 Transparency test. Transparency test shall be conducted in accordance with Test Method 4034 of FED Test Method STD No. 101. (See 3.7).

5. PACKAGING

5.1 Preservation. Preservation shall be levels A, B or Commercial (see 6.2).

5.1.1 Level A. Pouches of the same size and class only shall be stacked flat and bundled into unit packs of 50 or 100. The pouches shall be sandwiched between two fiberboard pads conforming to PPP-F-320. The unit pack shall be wrapped in kraft paper and secured with tape conforming to PPP-T-76 or PPP-T-60. The fiberboard pads shall be of a size commensurate with the size of the pouches so as to prevent damage to the pouches during bundling. Pouches of extra large size may be folded, provided dunnage material is placed at the line of folds to prevent damage prior to wrapping and securing.

5.1.2 Level B. Pouches of the same size and class shall be preserved in the same manner as level A.

MIL-P-81997J

5.1.3 Commercial. Pouches in unit pack quantity of 50 or 100 shall be preserved in accordance with ASTM D 3951.

5.2 Packing. Packing shall be Levels A, B or Commercial (see 6.2).

5.2.1 Level A. Pouches of one size and type only, unit packed as specified in 5.1, shall be packed in containers conforming to PPP-B-621, class 2 or PPP-B-601, overseas type. Closure shall be in accordance with the appendix to the applicable specification. Insofar as practicable, containers shall be of uniform shape and size of minimum cube and tare and shall contain identical quantities.

5.2.2 Level B. Pouches of one size and type only, unit packed as specified in 5.1, shall be packed as in Level A, except that containers conforming to the following specifications may be used: PPP-B-636, class weather resistant; PPP-B-621, class 1; PPP-B-640, class 2 or PPP-B-601, domestic.

5.2.3 Commercial. Pouches, unit packed as specified in 5.1, shall be packed in accordance with ASTM D 3951.

5.3 Marking. In addition to any special marking required by the contract or order (see 6.2), unit pack and exterior shipping containers shall be marked in accordance with MIL-STD-129 for Levels A or B or ASTM D 3951 for Commercial shipments.

6. NOTES

6.1 Intended use. Pouches covered by the requirements of this specification are intended for the packaging of electronic components, circuit boards, and assemblies sensitive to the damaging effect of electrostatic force and also intended for packaging electro-explosive devices, ignitors, actuators and propellants. The pouches are designed for use as interior packages directly in contact with the contained part. Where additional cushioning, electro-magnetic radiation shielding, or watervaporproof barriers are required, they shall be used only outside the pouches, not inside them. The pouches may be used during assembly, handling, storage, and shipment of any static-sensitive item.

6.2 Ordering data. Acquisition documents should specify the following:

- a. Title, number and date of this specification.
- b. Type of bag (see 1.2).
- c. Quantity per unit pack (see 5.1.1).
- d. Size of bag (inside dimensions) (see 1.2.1 and table II).
- e. Thickness (cushioning layer) (see 3.3).
- f. Level of preservation and packing desired (see 5.1 and 5.2).
- g. If pouch marking is required (see 3.4.2).
- h. If special markings for unit pack and exterior container are required (see 5.3).

MIL-2-319978

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

Custodians:

Navy - AS
Army - GI.
Air Force - 69

Preparing Activity:

Navy - AS
(Project No. 8105-0298)

Review Activities:

Navy - SA, OS, SH
Army - AV, CR
Air Force - 99, 43

User Activities:

Army - ER, SM

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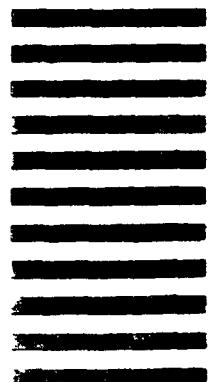
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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1 DOCUMENT NUMBER MIL P-81997B		2 DOCUMENT TITLE Pouches, Cushioned, Flexible, Electrostatic-Free Reclosable, Transparent	
3a NAME OF SUBMITTING ORGANIZATION		4 TYPE OF ORGANIZATION (Mark one)	
		<input type="checkbox"/> VENDOR <input type="checkbox"/> USER <input type="checkbox"/> MANUFACTURER <input type="checkbox"/> OTHER (Specify) _____	
b ADDRESS (Street City State ZIP Code)			
5 PROBLEM AREAS			
a Paragraph Number and Wording			
b Recommended Wording			
c Reason/Rationale for Recommendation			
6 REMARKS			
7a NAME OF SUBMITTER (Last First MI) - Optional		b WORK TELEPHONE NUMBER (Include Area Code) - Optional	
c MAILING ADDRESS (Street City State ZIP Code) - Optional		8 DATE OF SUBMISSION (YYMMDD)	