

INCH-POUND

MIL-B-22020D  
 2 MAY 1990  
 SUPERSEDING  
 MIL-B-22020C  
 20 March 1975

## MILITARY SPECIFICATION

### BAGS, TRANSPARENT, FLEXIBLE, SEALABLE, VOLATILE CORROSION INHIBITOR TREATED

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, sealable, transparent bags, treated with volatile corrosion inhibitor (VCI) (see 6.1)

1.2 Classification. The treated bags shall be furnished in the following classes, as specified (see 6.1.1 and 6.1.2):

Class 1 - Heat sealable  
 Class 2 - Pressure (cold) sealable.

1.3 Part number. Part numbers, for catalog purposes, of material covered by this specification are coded as follows:

M22020	-	X
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Specification identifier		Class designator (see 1.3.1)

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commanding Officer, Naval Air Engineering Center, Systems Engineering and Standardization Department (Code 53), 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 8105

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1.3.1 Class designator. This is a one position field, designating the required class of VCI-treated bag (see Table I).

TABLE I. Class designator.

Class designator	Remarks
1	Heat sealable
2	Pressure (cold) sealable

## 2 APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be 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-B-601	Boxes, Wood, Cleated-Plywood
PPP-B-621	Boxes, Wood, Nailed and Lock-Corner
PPP-B-636	Boxes, Shipping, Fiberboard
PPP-B-640	Box, Fiberboard, Corrugated Triple-Wall
PPP-F-320	Fiberboard, Corrugated and Solid, Sheet Stock (Container Grade) and Cut Shapes

## MILITARY

MIL-B-117	Bag, Sleeves and Tubing
MIL-I-8574	Inhibitors, Corrosion, Volatile, Utilization of
MIL-B-22019	Barrier Materials, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated

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## STANDARDS

## FEDERAL

FED-STD-101	Test Procedures for Packaging Materials
FED-STD-313	Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities

## MILITARY

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

(Unless otherwise specified, copies of Federal and Military specifications and standards are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094).

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for related associated detail specifications, specification sheets or MS standards), the text of this specification takes precedence. Nothing in this specification, however, supersedes applicable laws and regulations, unless a specific exemption has been obtained.

## 3. REQUIREMENTS

3.1 Material. The bags shall be fabricated from barrier material qualified under MIL-B-22019 and in accordance with MIL-I-8574.

3.1.1 Class 1. Class 1 bags shall be fabricated from Type I material of MIL-B-22019.

3.1.2 Class 2. Class 2 bags shall be fabricated from Type II material of MIL-B-22019.

3.2 Construction.

3.2.1 Class 1. Class 1 bags shall be formed, using two sheets or folding one sheet, by placing heat sealable surfaces of the specified material together and then heat sealing seams along the two sides and bottom edges. Bags fabricated from tubing shall consist of a bottom seam and do not require a lip. The side seams shall be parallel to each other and the outer edge of the bag. The bottom seam shall be at a right angle to the side seam. Bags 12 inches (304.8 mm) or less in length, with a mouth opening of 10 inches (254.0 mm) or less shall be provided with a lip by extending one edge of the mouth 1/8 inch (3.18 mm), plus or minus 1/16 inch (1.59 mm) tolerance, beyond and parallel to the outer edge. The length of the lip shall not be included in the dimensions of the bag.

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**3.2.2 Class 2.** Class 2 bags shall be furnished with a non-blocking interleaf in the bag. After the item to be packaged is placed in the bag, the interleaf shall be withdrawn from the bag and the final seal made. Cold seal bag seams shall be a minimum of 1/2 inch (12.70 cm) wide and shall be effected between two sets of rubber coated pull-wheels or other system capable of creating seals strong enough to withstand the seam continuity test specified in 4.5 1.

**3.3 Dimensions and tolerances.** The dimensions specified shall apply to the inside width and length. Width of the bags shall be measured between the inside edges of the side seams and the length shall be measured from the inside edge of the bottom seam to the edge of the opening (exclusive of lip). Dimensions and tolerances for seal widths, exclusive of side weld (dielectric, impulse or ultra-sonic processes, see note on Table II), shall be as indicated in Table II. Common bag stock sizes are listed in 6.3.

TABLE II. Bags.

Area of Bag (one side)	Seal Width <sup>1/</sup>	Tolerance (Width & Length of Bag)
25 sq in. or less (161.26 sq cm or less)	1/2 ± 1/8 in. (12.70 ± 3.18 mm)	-1/16, + 1/8 in. (-1.59, +3.18 mm)
Over 25 to 200 sq in. (161.26 to 1290 sq cm)	1/2 ± 1/8 in. (12.70 ± 3.18 mm)	-1/8, + 1/4 in. (-3.18, +6.35 mm)
Over 200 to 500 sq in. (1290 to 3226 sq cm)	1/2 ± 1/8 in. (12.70 ± 3.18 mm)	-1/4, + 3/8 in. (-6.35, +9.53 mm)
Over 500 sq in. (Over 3226 sq cm)	1/2 ± 1/8 in. (12.70 ± 3.18 mm)	-1/4, + 1/2 in. (-6.35, +12.70 mm)

- <sup>1/</sup> Seams fabricated by the dielectric, impulse or ultra-sonic process shall have a minimum 1/32 inch (0.80 mm) heat seal. Seams of bags fabricated from homogeneous plastic sheets (i.e., polyethylene) shall be required to meet the seam strength test specified in 3.5, with no minimum seal width required

**3.4 Identification.**

**3.4.1 Material.** Each bag shall be marked or printed on one surface only, in capital letters or numbers, with the following information: specification part number, bag fabricator's name or trademark, material designation, month and year of fabrication.

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3.4.2 Identification sheets. Identification sheets shall accompany each unit package and shall contain the following markings (printed in green ink): specification part number, class, lot number, manufacturer's name, manufacturer's product designation, manufacturer's sealing procedure, and month and year of manufacture. Identification sheets of class 2 bags shall contain detailed information regarding the packaging of items in cold sealed bags.

3.5 Continuity of seam and sealed seam strength. The manufacturer's seams shall not leak when tested as specified in 4.5.1 and 4.5.2.

3.6 Workmanship. Bags shall be uniformly constructed, free from pinholes, channeling, tears, cuts, sharp creases, wrinkles, or other imperfections which might impair their usefulness. The bags shall be non-blocking to the extent that tearing of the material or injury to the surface will result when opening the bag. The terms "pinholes, channeling, tears, cuts, sharp creases and wrinkles" shall be considered defects only if the area in question fails the test specified in 4.5.1. The finished product shall conform to the levels of quality established herein.

#### 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 inspections 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 in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.2 Lot. The term lot shall mean "inspection lot," a collection of units of product from which a sample is to be drawn and inspected to determine conformance with the acceptability criteria. Each lot shall, insofar as practicable, consist of units of product of a single class, manufactured under essentially the same conditions and at essentially the same time.

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

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**4.4 Quality conformance inspection.**

**4.4.1 Inspection of end item.** The end item shall be examined in accordance with the classification of defects. Inspection levels and acceptable quality levels (AQLs) are as specified in 4.4.1.4. A random sample of bags shall be drawn from each lot of bags and offered for acceptance for visual and dimensional characteristics. The lot size, for purposes of determining sample size in accordance with MIL-STD-105, shall be expressed in units of bags for examination under 4.4.1.1, in units of packages for 4.4.1.2, and in units of shipping containers for 4.4.1.3.

**4.4.1.1 Inspection for defects in end item.** The sample unit for this examination shall be one bag and the sample shall be drawn from the lot in accordance with 4.4.1 and 4.4.1.4. The sample unit shall be examined for the following defects.

Inspection	Defect
Material construction	Bags not fabricated from material specified.
Workmanship	Not uniformly constructed. Tears, cuts, split, slits, channels, holes (including pinholes), sharp creases, wrinkles or folds Bags stick together to the extent that opening causes tearing or injury to any surface.
Construction	Required manufacturer's seams not sealed along the sides and bottom of bags. Seams not completely sealed throughout their respective lengths. Edges of bag side seams not parallel to each other and outer edge of bag or the bottom seam not at right angle to the side seam
Identification	Incorrect, incomplete, illegible or omitted. Improper size, location, sequence or method of application. Color not as specified in material specification.
Size of bags	Inside width or length varies more than tolerances specified in Table I, as applicable.
Size of seams	Seam width less than specified in Table I.

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4.4.1.2 Examination of the end item for count per package. The sample unit for this examination shall be one unit package. The number of sample units drawn for the examination shall be in accordance with level I with an AQL of 4.0. The average count of bags per unit package in the sample thus drawn shall be not less than the specified quantity (6.2(c)).

4.4.1.3 Examination of packaging. An examination shall be made to determine that preservation, packing and identification 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. In addition, the fully packed shipping container shall be examined for the following defects:

Examine	Defect
Preservation	Preservation level not as specified; not in accordance with contract requirements. Mixed classes or sizes in same unit package. Not packaged in units of multiples specified. Unit containers, when required, not snugly packed; contains filler or waste space. Material not as specified; closures not accomplished by specified or required methods or materials.
Packing	Packing levels not as specified; not in accordance with contract requirements. Shipping containers have excess weight or cube of applicable specification. Mixed classes or sizes packed in same container. Container not as specified; closure not in accordance with the appendix to the container specification.
Identification	Unit packages do not contain identification sheets (see 3 4.2). Unit and exterior container markings (as applicable) illegible, incorrect, incomplete, omitted, or not as specified (see 5.3). Precautionary markings omitted or not as specified (see 5.3.1).

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**4.4.1.4 Inspection levels and acceptable quality levels (AQLs) for examinations** 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.

TABLE III

Examination Paragraph	Inspection Levels	AQLs
4.4.1.1	I	4.0
4.4.1.2	See paragraph 4.4.1.2	See 4.4.1.2
4.4.1.3	I	4.0

**4.5 Test methods.**

**4.5.1 Continuity of seam.** An examination shall be made to ensure seam continuity. This examination shall be made using a solution of isopropyl alcohol containing an alcohol soluble dye (such as methyl violet). A sufficient quantity of solution shall be poured into the bag, such that it covers the entire side of the bag. The bag shall be sealed and laid on its side for a period of two minutes. The bag shall then be checked for leakage, as evidenced by the transfer of dye. The bag shall be turned over and again checked for leakage as described above. Any evidence of leakage through or at the manufacturer's seams shall be considered cause for rejection.

**4.5.2 Sealed seam test.** Sealed seam tests shall be conducted in accordance with Method 2024 of FED-STD-101. Cold sealed seams shall be made in accordance with 3.2.2. Continuity of seam requirements shall comply with 4.5.1.

**5. PACKAGING**

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

**5.1.1 Level A.** Bags of the same class and size shall be bundled in the quantity specified by the contracting activity (see 6.2), by sandwiching between two fiberboard pads, conforming to PPP-F-320 and heat sealed in bags conforming to MIL-B-117, Type I, Class E, Style 1. Unless otherwise specified, bundles shall be individually packed in fiberboard boxes conforming to PPP-B-636, Type SF, class weather-resistant. Box closure shall conform to the Appendix of PPP-B-636, class domestic. An identification sheet shall accompany each bundle (see 3.4.2).

**5.1.2 Level C.** Bags shall be preserved as specified in 5.1.1, with the exception that bundles shall be individually packed in fiberboard boxes conforming to PPP-B-636, class domestic. An identification sheet shall accompany each bundle (see 3.4.2).



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5.2 Packing. Packing shall be Level A, B, or C, as specified (see 6.2).

5.2.1 Level A. Bags, preserved as specified in 5.1, shall be packed for shipment in containers conforming to PPP-B-601, overseas type or PPP-B-621, class 2. Insofar as practicable, containers shall be of uniform shape and size, of minimum cube and tare, and contain identical quantities. The gross weight of each shipping container shall not exceed 200 pounds (90.72 Kg).

5.2.2 Level B. Bags, preserved as specified in 5.1, shall be packed in containers conforming to PPP-B-636, class weather-resistant, or PPP-B-640, class 2. 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 contain identical quantities. Weight of contents shall not exceed 65 pounds (29.49 Kg) for boxes conforming to PPP-B-636, and 150 pounds (68.04 Kg) for boxes conforming to PPP-B-640.

5.2.3 Level C. Bags, preserved as specified in 5.1, shall be packed in containers conforming to PPP-B-636, class domestic, or PPP-B-640, class 1. 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 contain identical quantities. Weight of the contents shall not exceed 65 pounds (29.49 Kg) for boxes conforming to PPP-B-636, and 150 pounds (68.04 Kg) for boxes conforming to PPP-B-640.

5.3 Marking. In addition to any special markings required by the contract or order, unit and shipping containers shall be marked in accordance with MIL-STD-129 and with the following information.

Bags, Transparent, Sealable, Volatile  
 Corrosion Inhibitor Treated  
 Specification MIL-B-22020D  
 Class \_\_\_\_\_  
 Size \_\_\_\_\_  
 Month and Year  
 of Fabrication \_\_\_\_\_

5.3.1 Precautionary marking. The following marking shall appear on at least one side and, wherever practicable, on two opposite sides of each exterior container, in letters not less than 3/4 inch (19.05 mm) in height:

KEEP COOL AND DRY.  
 CAUTION: DO NOT OPEN UNTIL READY FOR USE.

5.3.1.1 Handling marking. By a separate set of markings, the following shall appear on unit and shipping containers:

## HANDLING PRECAUTIONS

DO NOT RUB OR WIPE EYES WHILE HANDLING THIS PRODUCT.  
 AFTER HANDLING, WASH HANDS THOROUGHLY WITH SOAP AND WATER.  
 (This product contains materials which may be an irritant to eyes and skin).

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## 5. NOTES

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

6.1 Intended use. The bags covered by this specification are intended for use in the packaging of items requiring protection by volatile corrosion inhibitors (VCI).

6.1.1 Class 1. Class 1 bags are intended for use where heat sealable, transparent, VCI-treated bags are required.

6.1.2 Class 2. Class 2 bags are intended for use where pressure cold sealable, transparent, VCI-treated bags are required.

6.2 Ordering data. Requests, requisitions, schedules, contracts or orders should 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. Class of bag (see 1.2).
- d. Total quantity and quantity per unit package.
- e. Size of bag (inside dimensions) (see 3.3).
- f. Level of preservation and packing required (see 5.1 and 5.2).
- g. Addresses for submission of Material Safety Data Sheets (see 6.6).

6.2.1 Identification. For a period of one year from the date of this revision, the Government will accept material marked in accordance with the previous revision.

6.3 Common size bags.

Size Designation	Inside Dimension	
	in Inches <sup>1/</sup>	in Centimeters
1	2-1/2 x 3	6.35 x 7.62
2	2-1/2 x 6	6.35 x 15.24
3	3 x 5	7.62 x 12.70
4	4 x 6	10.16 x 15.24
5	4 x 8	10.16 x 20.32
6	4 x 12	10.16 x 30.48
7	6 x 6	15.24 x 15.24
8	6 x 8	15.24 x 20.32
9	8 x 12	20.32 x 30.48
10	10 x 10	25.40 x 25.40
11	10 x 13	25.40 x 33.02

<sup>1/</sup> Dimensions are expressed in inches and fractions thereof with width first, length second, as follows: 6 by 6 inches.

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6.4 Equipment source. The sealer for accomplishing the seals of Class 2 bags (see 3.2.2) may be obtained from:

Alloy Packaging Systems  
901 Sentry Drive  
Waukesha, WI 53186  
(414) 542-0330

or

Systems Packaging  
Division of Hammill Manufacturing Company  
P.O. Box 6680  
Toledo, OH 43612  
(419) 476-7100

6.5 Subject term (keyword) listing.

Bags  
Barrier  
Flexible  
Packaging material  
Sealable  
Transparent  
Volatile Corrosion Inhibitor

6.6 Material Safety Data Sheets. Contracting officers will identify those activities requiring copies of completed Material Safety Data Sheets prepared in accordance with FED-STD-313. The pertinent government mailing addresses for submission of data are listed in Appendix B of FED-STD-313.

6.6.1 Effect on personnel. Questions pertinent to the effect of volatile corrosion inhibitor treated bags when used for its intended purpose shall be referred by the contracting activity to the appropriate medical service who will act as advisor to the contracting activity.

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 - AS  
Air Force - 69

Preparing Activity:

Navy - AS  
(Project 8105-0320)

Review Activities:

Army - ME, AT, SM  
Navy - SH, YD, SA, OS  
Air Force - 71, 84  
DLA - ES

User Activities:

Army - GM, MI  
Navy - MC, CG  
DLA - CS

# 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.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

<b>1. RECOMMEND A CHANGE:</b>		1. DOCUMENT NUMBER MIL-B-22020D	2. DOCUMENT DATE (YYMMDD) 2 MAY 1990
2. DOCUMENT TITLE			
3. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)			
4. REASON FOR RECOMMENDATION			
5. SUBMITTER			
a. NAME (Last, First, Middle Initial)		b. ORGANIZATION	
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		(1) Commercial (2) AUTOVON (if applicable)	
		e. DATE SUBMITTED (YYMMDD)	
6. PREPARING ACTIVITY			
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Commanding Officer NAEC, SESD Code 53		(1) Commercial (201) 323-2326 (2) AUTOVON 624-2326	
c. ADDRESS (Include Zip Code)		IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3455 Telephone (703) 756-2340 AUTOVON 289-2340	
Lakehurst, NJ 03733-5100			