

5100-608D  
February 11, 2020  
Supersedes  
5100-608C  
April 16, 2009

**U.S. DEPARTMENT OF AGRICULTURE  
FOREST SERVICE  
SPECIFICATION  
POLYVINYL CHLORIDE BAG, FIRE SHELTER, M-2002**

---

Beneficial comments (recommendations, additions, deletions) and any pertinent data that may be used in improving this document should be addressed: via electronic mail <[wo\\_mtdc\\_webmaster@fs.fed.us](mailto:wo_mtdc_webmaster@fs.fed.us)> or U.S. mail to the U.S. Department of Agriculture, Forest Service, National Technology and Development Program, 5785 Highway 10 West, MT 59808.

---

FSC 8465

Distribution Statement A: Approved for public release; distribution is unlimited.

**RECORD OF REVISIONS**

This is a complete revision. Numbered sections and appendixes may no longer correspond to those in the previous revision. Major changes are listed below. Minor changes that do not modify the intent of the specification are not listed.

Change	Reason
Reformat for Section 508 compliance	To enable reading by document readers
Correct grammatical errors	Ease of reading
Add slit at end of pull tab	Improve ease of use

<b>1. SCOPE AND CLASSIFICATION</b>	<b>5</b>
1.1. Scope	5
1.2. Classification	5
1.3. Interpretation	5
1.4. Definitions	5
<b>2. APPLICABLE DOCUMENTS</b>	<b>5</b>
2.1. Government documents	5
2.1.1. Specifications, standards, and handbooks	5
2.1.2. Other Government documents, drawings, and publications	5
2.2. Non-Government publications	6
2.3. Order of precedence	6
<b>3. REQUIREMENTS</b>	<b>6</b>
3.1. First article	6
3.2. Materials and components	6
3.2.1. Material	6
3.3. Patterns	7
3.4. Construction	7
3.4.1. Polyvinyl chloride bag	7
3.4.2. Sealing	7
3.4.3. Slit	7
3.5. Opening	7
3.6. Marking	7
3.7. Deviations and waivers	8
3.8. Workmanship	8
3.9. Metric products	8
<b>4. QUALITY ASSURANCE PROVISIONS</b>	<b>8</b>

## 5100-608D

<b>4.1. Responsibility for inspection.....</b>	<b>8</b>
4.1.1. Responsibility for compliance. ....	8
4.1.2. Responsibility for dimensional requirements. ....	8
4.1.3. Certification of compliance. ....	9
<b>4.2. Sampling for inspections and tests.....</b>	<b>9</b>
<b>4.3. Quality conformance inspection. ....</b>	<b>9</b>
4.3.1. Component and material inspection. ....	9
4.3.2. Certification.....	9
4.3.3. In-process inspection. ....	9
4.3.4. End item examination. ....	10
<b>4.4. Polyvinyl chloride bag opening test.....</b>	<b>11</b>
4.4.1. First article tests.....	11
4.4.2. In-Production tests. ....	12
4.4.3. Opening test. ....	12
<b>5. PREPARATION FOR DELIVERY .....</b>	<b>12</b>
<b>5.1. Preparation for delivery. ....</b>	<b>12</b>
<b>6. 6. NOTES .....</b>	<b>12</b>
<b>6.1. Intended use. ....</b>	<b>12</b>
<b>6.2. Ordering data.....</b>	<b>12</b>
<b>6.3. First article. ....</b>	<b>12</b>
<b>6.4. L-P-375.....</b>	<b>13</b>
<b>6.5. Required sources.....</b>	<b>13</b>
<b>6.6. Notice.....</b>	<b>13</b>
<b>6.7. Preparing Activity. ....</b>	<b>13</b>
<b>6.8. Patent.....</b>	<b>13</b>

## 1. SCOPE AND CLASSIFICATION

### 1.1. Scope.

This specification covers the requirements for a quick-opening polyvinyl chloride bag for the fire shelter specified by 5100-606.

### 1.2. Classification.

The polyvinyl chloride bag shall be one of the following sizes in accordance with the size of the fire shelter it is to be used with:

Regular

Large

### 1.3. Interpretation.

To carry out the provisions of this document, the word "shall" is to be understood as mandatory.

### 1.4. Definitions.

Nonconformity: A departure of a quality characteristic from its intended level or state that occurs with severity sufficient to cause an associated product or service not to meet a specification requirement (per ANSI/ASQ Z1.4).

## 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 in effect on the date of the invitation for bids or request for proposals (see 6.2).

#### SPECIFICATIONS

##### FEDERAL

L-P-375 - Plastic Film, Flexible, Vinyl Chloride (see 6.4)

##### USDA FOREST SERVICE

5100-606 - Shelter, Fire, M-2002

#### 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 of these documents shall be those in effect on the date of the invitation for bids or request for proposals (see 6.2).

#### DRAWINGS

**USDA FOREST SERVICE**

MTDC-1001 - Polyvinyl Chloride Bag, Fire Shelter, M-2002

(Copies are available from the preparing activity, see 6.7.)

**2.2. Non-Government publications.**

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents are those in effect on the date of the invitation for bids or request for proposals (see 6.2).

**AMERICAN SOCIETY FOR QUALITY (ASQ)**

Z1.4 - Sampling Procedures and Tables for Inspection by Attributes

(Copies are available from the American Society for Quality, PO Box 3005, Milwaukee, WI 53201-3005.)

**AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)**

SI-10 - Standard For Use of the International System of Units(SI): The Modern Metric System (IEEE/ASTM Standard available from ASTM)

(Copies are available from ASTM, 100 Barr Harbor Dr., West Conshohocken, PA 19428-2959.)

(Non-Government standards and other publications normally are available from the organizations that prepare and distribute the documents. These documents also may be available in or through libraries or other informational services.)

**2.3. Order of precedence.**

In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

**3. REQUIREMENTS**

**3.1. First article.**

The polyvinyl chloride (PVC) fire shelter bag will be subjected to first article inspection (see 6.3) in accordance with 4.3.

**3.2. Materials and components.**

The Regular size polyvinyl chloride bag shall be Freedom Manufacturing part number FS103, the Large size polyvinyl chloride bag shall be Freedom Manufacturing part number FS105 (see 6.5). The materials and components shall be as specified herein and in the corresponding sizes of drawing, MTDC-1001.

**3.2.1. Material.**

**3.2.1.1. Polyvinyl chloride film.**

The film used to fabricate the bag shall be Achilles USA stock number KFC040-1.5S or KBC040-1.5S, 0.010 inch ( $\pm 0.001$  inch) thickness. The film shall be clear.

3.2.1.2. Pull tab strip.

The pull tab strip shall be fabricated from film meeting the requirements of L-P-375C, Type I, Class II, color Red, 25 mil thick minimum in a single layer (see 6.4). In exception to L-P-375C, delete the requirements for the following tests: Clark Stiffness, Extraction in soap water, Blocking, Volatility, Lacquer lifting, and Crocking.

3.3. Patterns.

Standard patterns will be furnished by the preparing activity (see 6.7). The standard patterns shall not be altered in any way and shall be used only as a guide for cutting the contractor's working patterns. The contractor's working patterns shall be identical to the standard patterns.

3.4. Construction.

3.4.1. Polyvinyl chloride bag.

The polyvinyl chloride bag shall be constructed from a single piece of film with a tear strip embossed into the film. The polyvinyl chloride bag shall be oriented so the film machine direction is parallel to the length of the bag. The tear strip shall be centered in both length and width directions, and located as shown on MTDC-1001. The tear strip shall be scored to the depth necessary to assure uniform tearing of the strip when the pull tab strip (sealed to the tear strip) is pulled, but will not allow the tear strip to prematurely self-initiate.

3.4.2. Sealing.

The pull tab strip shall be heat sealed to the polyvinyl chloride bag within the score lines of the tear strip as shown on MTDC-1001. The film shall be folded in half and both edges sealed together along the entire length. The folded over ends shall be within 1/4 inch of each other when sealing is completed. In all heat seals, RF dielectric heat sealing is acceptable. In all heat seals, care shall be taken to ensure sufficient heat is used for a complete seal, and to prevent the use of excessive heat causing the area of the sealing to become brittle. The sealing of the pull tab strip to the polyvinyl chloride bag shall not touch or cross the score lines of the tear strip.

3.4.3. Slit.

At each end of the pull tab strip, there shall be a 1/4 inch slit through the film midway between the pull tab strip and the score line according to MTDC-1001.

3.5. Opening.

When the pull tab strips are pulled to open the polyvinyl chloride bag, each end of the tear strip shall separate its entire length to the bottom of the bag. The bag shall not tear in any other area except along the tear strip score lines and the red pull tab strip. The red pull tab strip shall not separate from the tear strip when tested in accordance with 4.4.

3.6. Marking.

The words "PULL RING TO OPEN" shall be permanently applied along the pull tab strip as shown on MTDC-1001, and shall be black. The marking orientation shown on MTDC-1001 may be reversed at the manufacturer's option. The words shall be in capital letters 1/4 inch (+1/4 - 1/16) in height.

**3.7. Deviations and waivers.**

Deviations and waivers to the materials or construction specified herein shall not be allowed unless authorized in writing by the administrative contracting officer.

**3.8. Workmanship.**

The polyvinyl chloride bag shall conform to the quality of product established by this specification. The occurrence of nonconformities shall not exceed the applicable acceptable quality levels.

**3.9. Metric products.**

Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch/pound units, provided they fall within the tolerances specified using conversion tables contained in the latest revision of IEEE/ASTM SI-10, and all other requirements of this specification are met.

**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/her 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 nonconforming material, either indicated or actual, nor does it commit the Government to accept nonconforming material.

**4.1.2. Responsibility for dimensional requirements.**

Unless otherwise specified in the contract or purchase order, the contractor is responsible for ensuring that all specified dimensions have been met. When dimensions cannot be examined on the end item, inspection shall be made at any point or at all points in the manufacturing process necessary to ensure compliance with all dimensional requirements.



4.1.3. Certification of compliance.

Unless otherwise specified, certificates of compliance supplied by the manufacturer of the components, listing the specified test method and test results obtained, may be furnished in lieu of actual lot by lot testing performed by the contractor (see 4.3.2). When certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certification. When certificates of conformance are submitted as a part of a first article inspection, copies of the test reports shall be submitted.

4.2. Sampling for inspections and tests.

Sampling for inspections and tests shall be made in accordance with ANSI/ASQ Z1.4. The inspection level and acceptable quality level (AQL) shall be as specified. All polyvinyl chloride bags manufactured at one time shall be considered a lot for purposes of acceptance inspection and test. A sample unit shall be one complete polyvinyl chloride bag.

4.3. Quality conformance inspection.

Each end item lot shall be sampled and inspected as specified in 4.3.4.1 and 4.3.4.2. First articles submitted in accordance with 3.1 shall be inspected as specified in 4.3.4.1 and 4.3.4.2. The presence of any nonconformity or failure to pass any test shall be cause for rejection of the first article.

4.3.1. Component and material inspection.

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

4.3.2. Certification.

As part of first article presentations and lot inspections, the contractor shall provide certificates of compliance for all materials and components in lieu of actual lot by lot testing. In addition, when the contractor changes component or material suppliers, a new certification based on actual test results shall be required. The following components require certificates of conformance:

Polyvinyl chloride film (3.2.1.1)

Pull tab strip (3.2.1.2)

All certificates shall include as a minimum:

Specification, type, class, form, etc. as applicable

Quantity purchased

Purchase source, address, and telephone number

Purchase date

Lot number traceable to materials used in production

Contract number

4.3.3. In-process inspection.

Inspection shall be made at any point or during any phase of the manufacturing process to determine whether cut lengths, cut parts, markings for location of components, and location of

**5100-608D**

assembled component parts are in accordance with specified requirements. Whenever nonconformance is noted, corrections shall be made to the parts affected and lot in process. Components that cannot be corrected shall be removed from production.

## 4.3.4. End item examination.

## 4.3.4.1. End item visual examination.

The end items shall be examined for the nonconformities list in table 1 on a lot by lot basis. The lot size shall be expressed in units of complete polyvinyl chloride bags. The inspection level shall be S-3, and the acceptable quality level (AQL), expressed in terms of nonconformities per hundred units, shall be 4.0 for major nonconformities and 15.0 for combined major and minor nonconformities. Unless otherwise specified, nonconformities shall be scored on an individual basis, i.e., each seam, each stitching end, each dimension, etc.

**TABLE 1. Classification of nonconformities**

Examine	Nonconformity	Classification Major	Classification Minor
Polyvinyl chloride bag	Not material specified (see 4.3.4.1.1)		
	More than one break of 1/8 inch or less in length per bag		X
	Break or tear more than 1/8 inch in length	X	
	1/4 inch opening slit extends into the score line	X	
	Evidence of brittle plastic around tear strip, outer edges, or top closing heat seal	X	
Note: The polyvinyl chloride bags shall be inspected for any signs of tears or cracks. Suspected areas should be flexed back and forth several times. Tears and cracks that increase in length shall be considered evidence of brittle plastic.			
Pull tab strip	Not material specified (see 4.3.4.1.1)		
	Not fully welded entire length of pull strip.	X	
	Any evidence of cracking	X	
Marking	Omitted, incorrect, illegible, misplaced, or size of characters not as specified		X

**5100-608D**

Cleanness	Any noticeable grease or oil stains, dirt, or other visible impurities		X
-----------	--	--	---

**4.3.4.1.1. Material not as specified.**

Any evidence of non-conformance of material discovered before or after acceptance of first article shall fail the subject lot, and shall require re-submission of first article samples.

**4.3.4.1.2. End item dimensional examination**

End items shall be examined for the nonconformities listed in table 2 on a lot by lot basis. Only those dimensions that can be evaluated without damaging or disassembling the end items shall be examined. The inspection level shall be S-3. An AQL, expressed in terms of nonconformities per hundred units, shall be 6.5 major nonconformities and 15.0 for combined major and minor nonconformities.

**TABLE 2. End item dimensional nonconformities**

Examine	Nonconformities	Classification Major	Classification Minor
Dimensions (overall)	Smaller than nominal dimensions less applicable minus tolerance indicated on drawings, but not smaller than nominal dimensions less twice the applicable minus tolerances		X
	Smaller than nominal dimensions less twice the applicable minus tolerance	X	
	Larger than nominal dimensions and applicable plus tolerance		X
Component and location dimensions (not otherwise classified herein)	Not within specified tolerance		X
Stitch margin and gauge	Not within specified tolerance		X

**4.4. Polyvinyl chloride bag opening test.****4.4.1. First article tests.**

As a part of first article testing, 50 bags shall be fabricated and supplied to the preparing activity (see 6.7) for opening tests. The test shall be performed as described in 4.4.3. Failure of any opening test shall fail the first article. The test bags shall be in the form they would be just

## 5100-608D

prior to insertion of the fire shelter, with the film scored, pull tab strip sealed on, and side edges sealed together.

### 4.4.2. In-Production tests.

During the production of the polyvinyl chloride bags, 1 out of every 50 bags shall be pulled from the production line, inspected for dimensional conformance, and opening tested as specified by 4.4.3. A copy of these test reports shall be made available upon request by the administrative contract officer or their representative.

### 4.4.3. Opening test.

The opening test shall require pulling down on first one end of the red pull tab strip and then the other to completely release the tear strip from the polyvinyl chloride bag. The test shall be conducted in the following manner:

The selected pull tab strip shall be grasped and with the open end of the polyvinyl chloride bag secured to a table top, the pull tab strip pulled briskly towards folded end of the bag, separating the tear strip from the polyvinyl chloride bag along the score line to the folded end of the bag. The other end of the pull tab strip shall then be pulled in a similar manner until the tear strip completely separates from the bag. When a pull tab strip is pulled, if the tear strip does not open along the scored lines, or if the tear strip separates from the pull tab strip, or the bag tears in any place other than the embossed lines, then a failure has occurred. Since there are two ends to the pull tab strip per bag, there can be up to two opening failures per bag.

## 5. PREPARATION FOR DELIVERY

### 5.1. Preparation for delivery.

As this is a component to the Fire Shelter (5100-606), there are no specific packaging or marking requirements beyond what is specified by section 3.

## 6. NOTES

### 6.1. Intended use.

The polyvinyl chloride bag is intended to be used to encase the fire shelter in a protective quick-opening bag that can be opened wearing heavy-duty gloves.

### 6.2. Ordering data.

Documents utilizing this material should specify the following:

- a. Title, number and date of this specification.

### 6.3. First article.

First articles shall be inspected and approved under the appropriate provisions of Federal Acquisition Regulation 52.209. The first article shall consist of 100 fabricated polyvinyl chloride fire shelter bags completely assembled without fire shelter or top sealing. In addition to sample

## **5100-608D**

inspection for dimensional compliance, the preparing activity will pull test enough sample bags in accordance with 4.4.2 to determine conformance to the requirements.

### **6.4. L-P-375.**

Federal Specification L-P-375C has been cancelled and replaced by ASTM D 1953. Due to the information contained in L-P-375C that is not a part of ASTM D 1953, L-P-375C remains the required document. Copies are available from the preparing activity (see 6.7).

### **6.5. Required sources.**

The following is the required source for the finished polyvinyl chloride bag.

Freedom Manufacturing LLC

22 Braim Road

Greenfield Center, NY 12833

518.361.0757

### **6.6. Notice.**

When Government drawings, specifications or other data are used for any other purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever.

### **6.7. Preparing Activity.**

USDA Forest Service, National Technology and Development Program, 5785 Highway 10 West, Missoula, Montana 59808.

### **6.8. Patent.**

This item has a patent – 7,128,207 B2. Contact the preparing activity for further details.