

**U.S. DEPARTMENT OF AGRICULTURE  
FOREST SERVICE**

**SPECIFICATION FOR  
MESSAGE DROPPER, PLASTIC**

1. SCOPE

1.1 Scope. This specification covers the requirements for a message pouch with streamer to drop messages out of airplanes.

2. APPLICABLE DOCUMENTS

2.1 Issues of documents. The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

STANDARDS

FEDERAL

FED-STD-123 - Marking for Shipment (Civil Agencies)  
FED-STD-191 - Textile Test Methods  
FED-STD-376 - Preferred Metric Units for General Use By the Federal Government

(Unless otherwise indicated, copies of federal standards are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Ave., Philadelphia, PA 19111-5094.)

2.2 Non-Government publications. The following documents 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.

AMERICAN SOCIETY FOR QUALITY CONTROL (ASQC)

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

(Copies are available from the American Society for Quality Control, 611 East Wisconsin Avenue, Milwaukee, WI 53202.)

Beneficial comments (recommendations, additions, deletions) and any pertinent data that may be used in improving this document should be addressed to: USDA Forest Service, Missoula Technology and Development Center, Building 1, Fort Missoula, Missoula, MT 59804-7294 by using the Specification Comment Sheet at the end of this document or by letter.

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

- D 882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting
- D 1203 - Standard Test Method for Volatile Loss from Plastics Using Activated Carbon Methods
- D 1974 - Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Shipping Containers
- D 5118 - Standard Practice for Fabrication of Fiberboard Shipping Boxes

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

### NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

#### National Motor Freight Classification

(Copies are available from the American Trucking Association, Inc., Traffic Department, 1616 P St. NW, Washington, DC 20036.)

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

### 3. REQUIREMENTS

3.1 General. Materials and construction shall be as specified by this specification.

3.2 Message pouch. The design of the pouch shall be in accordance with figure 1. The message pouch shall be made of a polyvinyl plastic film having a wall thickness of  $0.0080 \pm 0.0008$  inch and be in accordance with 3.4. Fabrication shall be by heat or electronic sealing. The pouch shall have a reusable closure device. Adhesives shall not be used in the fabrication of the pouch.

3.3 Streamer. The design of the streamer shall be in accordance with figure 1. The pouch streamer shall be made of a polyvinyl plastic film with a thickness between 0.0040 and 0.0070 inch and be in accordance with 3.4. The streamer shall be colored international orange or bright yellow. The streamer shall have a matte finish. The streamer shall be marked with the Forest Service Pine Tree shield symbol as shown on the drawing.

3.4 Plastic film. The polyvinyl films used to fabricate the pouch and the streamer shall be single layer formed from chlorine-bearing vinyl resin. The film shall be intended for use in a temperature range that includes 0°F to 130°F. Only phosphate, phthalate, or both, plasticizers shall be used. The use of water soluble compounding ingredients is prohibited. The polyvinyl films shall meet the requirements of table I.

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Table I. Physical requirements of Polyvinyl film for pouch

Characteristic	Pouch Requirements	Streamer Requirements	Test
Thickness (inch)	0.0080 ±0.0008	0.0040 ±0.0004	Direct measurement
Tensile strength (minimum)	2300 psi	2300 psi	ASTM D 882 <u>1/</u>
Ultimate elongation			
- machine direction (min)	200%	150%	ASTM D 882 <u>1/</u>
- transdirection (min)	200%	200%	ASTM D 882 <u>1/</u>
Clark Stiffness at 34°F ±2°F	11	8	FED-STD-191, Method 5204
Extraction in soapy water (max)	2.0%	4.0%	4.4.1.1
Blocking at 158°F (max)	No. 2	No. 2	FED-STD-191, Method 5872 <u>2/</u>
Volatility (max)	4%	8%	ASTM D 1203
Resistance to weathering	3.4.1	3.4.1	FED-STD-191, Method 5670 <u>3/</u>
Cold crack at 0° ±2°F	3.4.2	3.4.2	FED-STD-191, Method 5874
Dimensional stability (max chg)	7%	7%	4.4.1.2

1/ 1 inch wide specimen.

2/ Test shall be performed at 158° ±2°F for a period of 48 hours.

3/ For 100 hours.

3.4.1 Resistance to weathering. When tested as specified in table I, the polyvinyl film shall show no appreciable stiffening, cracking, crazing, discoloration, tackiness, or exudation of plasticizer from the film. Appreciable shall mean a change that is immediately noticeable in comparing the tested specimen with the original.

3.4.2 Cold crack. When tested as specified in table I, the polyvinyl film shall show no evidence of cracking.

3.5 Sand bag. The sandbag shall be made of polyethylene plastic having a thickness of 0.0030 ±0.0005 inch. Fabrication shall be by heat or electronic sealing, adhesives shall not be used.

3.6 Rubberband. The rubberbands shall be any good quality commercial, size 16 or equivalent.

3.7 Message form. The message form shall be good quality ruled or unruled yellow colored writing paper printed as shown by figure 1 in letters 1/8 to 1/4 inches high. The size shall be such that folding it once in each direction will allow it to be inserted into the pouch.

3.8 Instruction sheet. The instruction sheet shall be made of waterproof paper and shall be imprinted with waterproof ink as follows (actual layout to be determined by required paper and letter size):

**U.S. FOREST SERVICE  
MESSAGE DROPPER**

MANUFACTURED BY: 1/  
DATE OF MANUFACTURE: MM/YY 1/  
CONTRACT NUMBER: 1/

USE INSTRUCTIONS

A. [manufacturer's instructions for opening and closing closure device.] 1/

B. SANDBAG SHALL BE IN BOTTOM OF MESSAGE POUCH. IF NECESSARY, FILL SANDBAG WITH 3 OUNCES OF SAND, ROLL CLOSED, AND PLACE IN BOTTOM OF POUCH.

C. STARTING AT FREE END OF STREAMER, ACCORDION FOLD STREAMER IN APPROXIMATELY 10 INCH FOLDS TO WITHIN ABOUT 12 INCHES OF MESSAGE POUCH. ROLL MESSAGE POUCH WITH SANDBAG INTO FOLDED STREAMER. SECURE WITH RUBBERBAND UNTIL READY FOR USE.

1/ Insert applicable information.

3.9 Assembly. The streamer shall be attached to the message pouch by heat or electronic sealing, adhesives shall not be used.

3.10 Workmanship. All items shall conform to the quality of product established by this document. The occurrence of defects shall not exceed the applicable acceptable quality levels. There shall be no defects that affect use, appearance, or serviceability.

3.11 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 FED-STD-376, and all other requirements of this specification are met.

3.12 Recovered materials. The contractor/offeror is encouraged to use recovered materials to the maximum extent possible in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

#### 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 or 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 this specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection as part of manufacturing operations is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.1.2 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 item, component, or material, 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 4.4). When certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certification.

4.2 Sampling for inspections and tests. Sampling for inspections and tests shall be made in accordance with ANSI/ASQC Z1.4. The inspection level shall be S-3, the acceptable quality level (AQL) shall be 4.0 defects per hundred units. All message droppers manufactured at one time shall be considered a lot for purposes of acceptance inspection and test. A sample unit shall be one complete message dropper. Sample message dropper shall be inspected for the defects in Table II.

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Table II. End item visual and dimensional defects

Examine	Defect
Materials	Pouch not clear. Streamer not color specified. Streamer not matte finish
Construction	Finished dimensions not as specified. Adhesives used in construction. Message pouch closure device faulty or inoperable. Streamer not sealed to pouch across entire width. Instruction sheet missing or not as specified. Message form missing or not as specified. Sand bag missing or not as specified. Rubberbands missing or not as specified. Not assembled as specified.

4.3 Packaging inspection. An examination shall be made to determine that packing and marking comply with the section 5 requirements. Defects shall be scored in accordance with the list below. The sample unit shall be one shipping container fully packaged except that it shall not be palletized and it need not be closed. Shipping containers fully packaged that have not been palletized shall be examined for defects in closure. The lot size shall be the number of shipping containers in the end item inspection lot. The inspection level shall be S-2 and the AQL shall be 2.5 defects per hundred units.

<u>Examine</u>	<u>Defect</u>
Markings	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application.
Materials	Any component missing or not as specified. Any component damaged, affecting serviceability.
Workmanship	Inadequate application of components, such as: incomplete closure of container flaps, improper taping, loose strapping, inadequate stapling.
Contents	Bulged or distorted container. Number per container is more or less than required.

4.4 Tests

4.4.1. Component testing of the polyvinyl chloride film. The physical and chemical values specified in 3.4 and Table I, except where otherwise specified, apply to the results of the determinations made on the sample unit for test purposes as specified in the applicable test methods. All test reports shall contain the individual values utilized in expressing the final result. The lot size shall be expressed in units of 1 yard. Two samples for test purposes, of sufficient size for necessary testing, shall be obtained from the material being tested. The samples shall be one from the beginning and one from the end of the film run. The lot shall be unacceptable if any sample unit fails to meet any of the test requirements specified.

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4.4.1.1 Extraction in soapy water. The extraction test shall be performed by immersing a weighed sample of film, 4 inches square, in 400 cc of 1 percent soap solution for 24 hours at  $122^{\circ} \pm 2^{\circ}\text{F}$  and determining weight loss. The sample shall be conditioned for 3 hours at  $122^{\circ} \pm 2^{\circ}\text{F}$ , cooled to room temperature in a dessicator, immediately weighed and placed in the test solution. The sample shall be held in such a manner that the entire surface is exposed to the test solution. Upon removal from the test solution the sample shall be wiped dry, reconditioned and weighed as done initially. The soap shall be neutral toilet soap. All weighings shall be made to the nearest 0.0005 gram.

4.4.1.2 Dimensional stability. Dimensional stability shall be determined by exposing a 10" x 10" sample of film to  $212^{\circ} \pm 2^{\circ}\text{F}$  for 30 minutes in a circulating air oven. The sample shall be cut from the center of the film sheet with an accuracy of  $\pm 0.02$  inches in all directions. The sample shall be placed between 2 sheets of heavy wrapping paper lightly dusted with talc, the sheets shall have the edges secured in a way that does not restrict the sample. The prepared sample shall be exposed in the oven in a horizontal manner. After the oven exposure the sample shall be cooled to room temperature and measured to the nearest 0.01 inch along both axis.

## 5. PREPARATION FOR DELIVERY

### 5.1 Packaging, packing and marking.

5.1.1 Assembly. The sandbag (3.5) shall have 3 ounces of clean, dry common sand inserted. The bag shall be rolled and secured with a rubberband (3.6). The sandbag shall be placed in the message pouch. A message form (3.7) shall be neatly folded as necessary and placed in the message pouch so that the printing on the form is visible. The pouch closure device shall be closed. The streamer shall be accordion folded in folds approximately 10 inches long, then the closed pouch rolled into the streamer. The instruction sheet shall be tightly rolled around the pouch and streamer, and the entire unit secured with another rubberband (3.6).

5.1.2 Packaging. Twenty-five (25) assembled units shall be packaged in a close-fitting fiberboard boxes, minimum burst strength 125 psi, meeting the requirements of the latest version of ASTM D 5118.

5.1.3 Packing. Four (4) boxes of message droppers, packaged as specified in 5.1.2 shall be packed in a close-fitting fiberboard boxes, minimum burst strength 125 psi, meeting the requirements of the latest version of ASTM D 5118. Boxes shall be in compliance with the National Motor Freight Classification. Each box shall be closed in accordance with the latest version of ASTM D 1974, except that the inspection shall be in accordance with 4.3.

5.2 Marking. In addition to any special marking required by the contract or purchase order, shipping containers and unit packs shall be marked in accordance with FED-STD-123. Bar code marking is required.

## 6. NOTES

6.1 Intended use. The message droppers are intended to pass messages from aircraft to ground personnel when radios are not available or cannot be used.

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6.2 Ordering data. Documents utilizing this material should specify the following:

- (a) Number and date of this specification.
- (b) When lot-by-lot inspection is necessary in lieu of certificates of conformance.
- (c) Packaging, packing and markings if different from specification requirements.

6.3 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.

6.4 Preparing Activity. USDA Forest Service, Missoula Technology and Development Center (MTDC), Building 1, Fort Missoula, Missoula, Montana 59804-7294.



# Standardization Document Improvement Proposal

This form is provided to solicit beneficial comments that may improve this document and enhance its use. Contractors, government activities, manufacturers, vendors, and users are invited to submit comments to:

USDA Forest Service  
Missoula Technology and Development Center  
Building 1, Fort Missoula  
Missoula, MT 59804-7294

Attach any additional pertinent information that may be of use in improving this document to this form and mail in an envelope. A response will be provided when the submitter includes their name and address.

NOTE: This form shall not be used to submit requests for waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the document, or to amend contractual requirements.

Document Identification: **5100-110B - MESSAGE DROPPER, PLASTIC**

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