

NOT MEASUREMENT  
SENSITIVE

MIL-L-3454G

19 March 1991

SUPERSEDING

MIL-L-3454F

19 August 1987

(See 6.8)

## MILITARY SPECIFICATION

### LIFE PRESERVERS; PACKAGING OF

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

#### 1. SCOPE

1.1 Scope. This specification establishes the requirements for packaging (preservation, packing, and marking) of filled and inflatable type life preservers for shipment, stowage and storage.

#### 1.2 Levels of protection.

##### 1.2.1 Preservation.

Level A (see 3.4.1).

Level C (see 3.4.2).

Commercial (see 3.4.3).

##### 1.2.2 Packing.

Level A (see 3.5.1 and 3.5.1.1).

Level B (see 3.5.1 and 3.5.1.1).

Level C (see 3.5.1 and 3.5.1.1).

Commercial (see 3.5.1.2).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Sea Systems Command, SEA 55Z3, Department of the Navy, Washington, DC 20362-5101 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

AREA PACK

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

MIL-L-3454G

## 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 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

- |            |   |
|------------|---|
| L-P-378    | - Plastic Sheet and Strip, Thin Gauge, Polyolefin.                                |
| UU-P-268   | - Paper, Kraft, Wrapping.   |
| MMM-A-260  | - Adhesive, Water-Resistant, (For Sealing Water-proofed Paper).                   |
| PPP-B-636  | - Boxes, Shipping, Fiberboard.  |
| PPP-B-1055 | - Barrier Material, Waterproofed, Flexible.                                       |
| PPP-F-320  | - Fiberboard: Corrugated and Solid, Sheet Stock (Container Grade) and Cut Shapes. |
| PPP-T-60   | - Tape: Packaging, Waterproof.  |

## MILITARY

- |             |  |
|-------------|--|
| MIL-B-17757 | - Boxes, Shipping, Fiberboard (Modular Sizes). |
| MIL-L-19140 | - Lumber and Plywood, Fire-Retardant Treated.  |

## STANDARDS

## MILITARY

- |                |  |
|----------------|--|
| MIL-STD-2073-1 | - DOD Materiel Procedures for Development and Application of Packaging Requirements. |
|----------------|--|

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

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 are those cited in the solicitation.

## DEPARTMENT OF TRANSPORTATION (DOT)

- |                                      |                                  |
|--------------------------------------|----------------------------------|
| Code of Federal Regulations (CFR) 49 | - Hazard Communication Standard. |
|--------------------------------------|----------------------------------|

(The Code of Federal Regulations (CFR) and the Federal Register (FR) are for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. When indicated, reprints of certain regulations may be obtained from the Federal agency responsible for issuance thereof.)

## MIL-L-3454G

2.2 Non-Government publications. The following document(s) 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 TESTING AND MATERIALS (ASTM)

D 3951 - Standard Practice for Commercial Packaging. (DOD adopted)

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1137.)

(Non-Government standards and other publications are normally available from the organizations that prepare or 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 Order of precedence. When material (see 1.1) is acquired in conformance with a commodity specification having detailed packaging or preparation for delivery requirements which differ from this specification, the packaging or preparation for delivery specified in the commodity specification shall apply.

3.2 Definitions or explanation of packaging terms. Definitions or explanation of packaging terms applicable to this specification shall be as stated in 6.5.

3.3 Materials. Packaging materials shall be as specified herein.

3.3.1 Recovered materials. Unless otherwise specified herein, all equipment, material, and articles incorporated in the products covered by this specification shall be new and may be fabricated using materials produced from recovered materials to the maximum extent practicable without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. Unless otherwise specified (see 6.2), none of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this specification.

3.3.2 New materials. The use of newly developed packaging materials or procedures are encouraged and recommended and will be permitted under the conditions specified herein, provided they are equal to or better than the specified materials or procedures (see 6.3 and 6.4).

## MIL-L-3454G

3.3.3 Asbestos.

3.3.3.1 Dusting material. Dusting material such as talc and talcum powder or soapstone used in the packaging process of items shall be free of asbestos (see 6.3).

3.3.4 Navy fire-retardant materials.

- (a) Treated lumber and plywood. When specified (see 6.2), all lumber and plywood including laminated veneer material used in shipping container and pallet construction, members, blocking, bracing, and reinforcing shall be fire-retardant treated material conforming to MIL-L-19140 as follows:

Levels A and B - Type II - weather resistant.  
Category 1 - general use.

Level C - Type I - non-weather resistant.  
Category 1 - general use.

- (b) Fiberboard. Fiberboard used in the construction of class-domestic, non-weather resistant fiberboard and cleated fiberboard boxes including interior packing forms shall meet the flamespread index and the specific optic density requirements of PPP-F-320.
- (c) Cushioning and wrapping materials. The use of excelsior, newspaper, shredded paper (all types), and similar hygroscopic or nonneutral materials and all types of loose fill materials, for applications such as cushioning, fill, stuffing, and dunnage is prohibited. Materials selected for cushioning and wrapping shall have properties (characteristics) for resistance to fire (see 6.5).

3.4 Preservation. Preservation shall be level A, C, or commercial as specified (see 6.2).

3.4.1 Level A.

3.4.1.1 Filled type life preservers (kapok, fibrous glass, and unicellular plastic). Filled type life preservers (kapok, fibrous glass, and unicellular plastic) shall be cleaned by any process or combination of processes which will accomplish thorough cleaning without damage to the items. Unless otherwise specified (see 6.2), filled type life preservers shall be securely bundled in

## MIL-L-3454G

units of ten. Each bundle shall be compressed as much as practicable by hand and shall be secured with cord or twine. Where quantities of less than ten life preservers are being shipped, they shall be bundled in the lesser quantity. Each bundle of preservers shall be wrapped in waterproof barrier material conforming to PPP-B-1055 with all seams sealed with water resistant adhesive conforming to MMM-A-260 or wrapped with plastic sheet conforming to L-P-378, type I, class 1, minimum 0.006 inch thick wrapped with all seams and closures heat sealed. When bundles are packed in fiberboard boxes conforming to PPP-B-636, class weather resistant, and closed and sealed in accordance with method V of the appendix thereto, the wrap of waterproof material will not be required.

3.4.1.2 CO<sub>2</sub> inflatable life preservers (see 3.6.1). Preservers shall be cleaned as specified in 3.4.1.1 and shall be folded as follows:

- (a) The inflatable bladder shall be inserted into the vest portion so that all parts are properly oriented and the bladder has no twists or lumps.
- (b) The CO<sub>2</sub> inflation system shall be properly installed.
- (c) The inflatable bladder shall be properly evacuated through the oral inflation system and the oral inflation valve locked by means of the knurled ring.
- (d) All fasteners shall be closed and the garment laid flat, face up.
- (e) One side of the vest shall be folded in, so that the width of the garment is approximately 11-1/2 inches.
- (f) The top of the garment shall be folded down so that the folded garment measures approximately 11-1/2 by 13-1/4 inches.

3.4.1.2.1 Unit pack. A unit pack shall consist of one life preserver folded as specified in 3.4.1.2 and placed in a fiberboard box conforming to PPP-B-636 class weather-resistant, grade V or W. Each box shall be closed and sealed in accordance with method V as specified in the appendix to the box specification. The interior surface of stapled or stitched side seams of the box shall be covered with a strip of pressure sensitive tape conforming to class 1, any type of PPP-T-60 in order to protect the preserver from abrasion.

3.4.1.2.1.1 Alternate unit pack. When specified (see 6.2), twenty life preservers folded as specified in 3.4.1.2 shall be tiered flat in a container conforming to MIL-B-17757, class weather resistant. Selection of type, size, variety and grade shall be at the option of the contractor. The top and bottom vest shall be completely covered with a sheet of Kraft paper conforming to type I, grade B of UU-P-268 (see 3.3.4(c)). The box closure shall be as specified in the appendix to the box specification.

### 3.4.2 Level C

3.4.2.1 Filled type preservers (kapok, fibrous glass, and unicellular plastic). Filled type life preservers (kapok, fibrous glass, and unicellular plastic) shall be cleaned as specified in 3.4.1.1. Unless otherwise specified (see 6.2), filled type preservers shall be securely bundled in units of ten. Each bundle shall be compressed as much as practicable by hand and shall be

## MIL-L-3454G

secured with cord or twine. Where quantities of less than ten life preservers are being shipped, they shall be bundled in the lesser quantity required. Each bundle of preservers shall be wrapped with Kraft paper conforming to type I, grade B of UU-P-268 (see 3.3.4(c)) and the wrap secured with pressure sensitive adhesive tape or each bundle without wrapping shall be unit protected in a fiberboard box conforming to PPP-B-636, class domestic (see 3.3.4(b)). The box type, variety, grade and style shall be at the option of the contractor. Box closure shall be in accordance with method I as specified in the appendix to the box specification utilizing pressure sensitive tape.

3.4.2.2 CO<sub>2</sub> inflatable life preservers. Each preserver, cleaned as specified in 3.4.1.1, may be folded in accordance with 3.4.1.2, or folded in a manner so as to prevent abrasion or damage. Each preserver shall be unit packed in a fiberboard box as specified in 3.4.2.1. Stapled or stitched interior surfaces of the box shall be covered with pressure sensitive adhesive tape to protect the preserver from abrasion. Box closure shall be in accordance with method I as specified in the appendix to the box specification utilizing pressure sensitive tape.

3.4.2.2.1 Alternate unit pack for CO<sub>2</sub> inflatable life preservers (see 3.6.1). When specified (see 6.2), life preservers of one size and color only shall be unit packed as specified in 3.4.1.2.1.1 except that the box shall be class-domestic (see 3.3.4(b)).

3.4.3 Commercial. Commercial packaging (cleaning, preservation, cushioning, and unit pack) shall be in accordance with ASTM D 3951 (see 3.6.1).

3.5 Packing. Life preservers shall be packed level A, B, C, or commercial, as specified (see 3.6.1 and 6.2).

3.5.1 General requirements for levels A, B, and C. Shipping containers shall be of a uniform size and minimum weight and cube consistent with the requirements of this specification. Shipping containers shall contain identical quantities of, and identical items.

## MIL-L-3454G

3.5.1.1 Levels A, B and C containers. Life preservers, preserved as specified (see 3.4), shall be packed in exterior shipping containers for the level of packing specified (see 3.5 and 6.5), in accordance with table VII, exterior shipping container requirements of MIL-STD-2073-1, appendix C, and herein. Unless otherwise specified (see 6.2), container selection shall be at the contractor's option.

3.5.1.1.1 Caseliners, closure and gross weight.

3.5.1.1.1.1 Caseliners. Unless otherwise specified (see 6.2), level A shipping containers containing material preserved level C or commercial shall be provided with waterproof caseliners in accordance with MIL-STD-2073-1.

3.5.1.1.1.2 Closure. Container closure, reinforcing, or banding shall be in accordance with the applicable container specification or appendix thereto except that weather-resistant fiberboard boxes shall be closed in accordance with method V and reinforced with non-metallic or tape banding and domestic or fire retardant fiberboard boxes shall be closed in accordance with method I using pressure sensitive tape.

3.5.1.1.1.3 Weight. Wood, plywood, and cleated type containers exceeding 200 pounds gross weight shall be modified by the addition of skids in accordance with MIL-STD-2073-1 and the applicable container specification or appendix thereto.

3.5.1.2 Commercial. Life preservers, preserved as specified (see 3.4), shall be packed for shipment in accordance with ASTM D 3951 and herein.

3.5.1.2.1 Container modification. Shipping containers exceeding 200 pounds gross weight shall have a minimum of two, 3 by 4-inch nominal wood skids laid flat, or a skid or sill type base which will support the material and facilitate handling by mechanical handling equipment during shipment, stowage and storage.

3.5.2 Palletization. When specified (see 6.2), life preservers packed as specified (see 3.5) shall be palletized in accordance with MIL-STD-2073-1, appendix F.

3.6 Marking (levels A, B, C, and commercial). In addition to any special marking required (see 6.2), interior (unit and intermediate) packs shipping containers and palletized unit loads shall be marked including bar coding and the life preserver's date (month and year) of manufacture for shipment, stowage, and storage in accordance with MIL-STD-2073-1, appendix F.

3.6.1 CO<sub>2</sub> inflatable life preservers. CO<sub>2</sub> inflatable life preservers preserved and packed as specified and offered for air shipment shall be marked in accordance with Department of Transportation Regulation Title 49 for hazardous material.

3.7 Workmanship. Workmanship shall be such that, when the proper materials and procedures are used and followed, life preservers being packaged will be provided the maximum protection required to prevent corrosion, deterioration, and damage during shipment, stowage and storage, and will require the minimum of processing for service.

## MIL-L-3454G

## 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 must meet all requirements of section 3. 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 defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.2 Inspection conditions. Unless otherwise specified (see 6.2), all inspections shall be performed in accordance with the test conditions specified in the applicable specification.

4.3 Quality conformance inspection. Unless otherwise specified (see 6.2), quality conformance inspection shall be in accordance with MIL-STD-2073-1.

## 5. PACKAGING

5.1 Packaging requirement. This section is not applicable to this specification. Packaging requirements are specified in section 3.

## 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 packaging (preservation, packing, and marking) requirements specified herein are intended to insure proper and safe stowage, storage and transportation of life preservers for direct shipment to Government activities; shipments processed at a Military activity or agency; as a reference in section 5 of commodity specification, and for preparing packaging (preservation, packing, and marking) requirements in acquisitioning documents.

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,

## MIL-L-3454G

- the specific issue of individual documents referenced (see 2.1.1 and 2.2).
- (c) When use of used or rebuilt products are allowed (see 3.3.1).
  - (d) When a certificate of compliance is required (see 3.3.2).
  - (e) When fire-retardant treated lumber and plywood is required (see 3.3.4(a)).
  - (f) Level of preservation and packing required (see 3.4 and 3.5).
  - (g) Quantity of life preservers per bundle if other than specified (see 3.4.1.1 and 3.4.2.1).
  - (h) When the alternate unit pack for CO<sub>2</sub> preservers is required (see 3.4.1.2.1.1 and 3.4.2.2.1).
  - (i) Container selection and options if other than the contractor's (see 3.4.1.2.1.1, 3.4.2.1 and 3.5.1.1).
  - (j) When caseliners are not required (see 3.5.1.1.1.1).
  - (k) Palletization, when required (see 3.5.2).
  - (l) Special marking required (see 3.6).
  - (m) Inspection conditions if other than as specified (see 4.2).
  - (n) Quality conformance inspection if other than specified (see 4.3).

**6.3 Consideration of data requirements.** The following data requirements should be considered when this specification is applied on a contract. The applicable Data Item Descriptions (DID's) should be reviewed in conjunction with the specific acquisition to ensure that only essential data are requested/provided and that the DID's are tailored to reflect the requirements of the specific acquisition. To ensure correct contractual application of the data requirements, a Contract Data Requirements List (DD Form 1423) must be prepared to obtain the data, except where DOD FAR Supplement 27.475-1 exempts the requirement for a DD Form 1423.

<u>Reference Paragraph</u>	<u>DID Number</u>	<u>DID Title</u>	<u>Suggested Tailoring</u>
3.3.2, 3.3.3.1 6.3 and 6.4	DI-E-2121	Certificate of compliance	-----

The above DID's were those cleared as of the date of this specification. The current issue of DOD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDDL), must be researched to ensure that only current, cleared DID's are cited on the DD Form 1423.

**6.4 Certification of new materials.** If the contractor desires to use materials or procedures other than those specified, (see 3.3.2), he should furnish to the contracting activity documented evidence (see 6.3), certified by a testing laboratory satisfactory to the contracting activity, that the material or procedure is equal or exceeds the requirements specified. If after a review of the material or procedure and the related certified documented evidence or the witnessing of the stipulated tests, it is the opinion of the contracting activity that the material or procedure meets or exceeds the requirements specified, authorization for use will be granted.

**6.5 Cushioning and wrapping materials (see 3.4.4(c)).** Materials having properties for resistance to fire and acceptable for use within unit packs and shipping containers for Navy acquisitions are:

## MIL-L-3454G

<u>Material</u>	<u>Specification</u>
Paper, kraft, treated (fire resistant)	A-A-1894
Paper, kraft, wrapping	UU-P-268, Type II, Grade C or D
Fiberboard	PPP-F-320, Class - Domestic/Fire Retardant
Plastic film, flexible, cellular	PPP-C-795, Class 3 - Fire Retardant
Polystyrene expanded, resilient	PPP-C-850, Grade SE
Plastic, open cell, cushioning	PPP-C-1842, Type I, Style B
Bound fiber	PPP-C-1120, Type III or IV, Class C
Rubber, latex foam	MIL-R-5001, Grade A
Rubber, cellular	MIL-R-6130, Grade A
Fibrous glass	MIL-C-17435
Polystyrene foam	MIL-P-19644, Type II
Rubber, cellular, synthetic	MIL-R-20092, Class 5
Polyurethane foam	MIL-P-26514
Polyurethane foam, flexible, open cell	MIL-F-81334
Foam-in-place packaging materials: general specification for	MIL-F-83671
Foam, combustion, retardant, for cushioning supply items aboard navy ships	MIL-F-87090 (SA)

## 6.6 Definitions or explanation of terms.

6.6.1 Levels of protection. The following levels of protection apply equally to preservation and packing.

6.6.1.1 Level A. This packaging provides maximum protection. It is needed to protect material under the most severe worldwide shipment, handling, and storage conditions. Preservation and packing will be designed to protect material against direct exposure to extremes of climate, terrain, and operational and transportation environments, without protection other than that provided by the pack. The conditions to be considered include, but are not limited to:

- (a) Multiple handling during transportation and intransit storage from point of origin to final user.
- (b) Shock, vibration, and static loading during shipment.
- (c) Loading on shipdeck, transfer at sea, helicopter delivery, and offshore or over-the-beach discharge, to final user.
- (d) Environmental exposure during shipment or during intransit operations where port and warehouse facilities are limited or nonexistent.
- (e) Outdoor storage in all climatic conditions for a minimum of 1 year.

## MIL-L-3454G

## (f) Static loads imposed by stacking.

For packing (exterior containers) it has been determined and agreed upon by the joint DOD packaging administrators that fiberboard and paperboard are not an acceptable material for use under level A packing.

6.6.1.2 Level B. This packaging provides intermediate protection. It is needed to protect material under anticipated favorable environmental conditions of worldwide shipment, handling, and storage. Preservation and packing will be designed to protect material against physical damage and deterioration during favorable conditions of shipment, handling and storage. The conditions to be considered include, but are not limited to:

- (a) Multiple handling during transportation and intransit storage.
- (b) Shock, vibration, and static loading of shipments worldwide by truck, rail, aircraft, or ocean transport.
- (c) Favorable warehouse environment for a minimum of 18 months.
- (d) Environmental exposure during shipment and intransit transfers, excluding deck loading and offshore cargo discharge.
- (e) Stacking and supporting superimposed loads during shipment and extended storage.

For packing (exterior containers) weather-resistant grades of fiberboard and paperboard are permitted under level B. Domestic type or grade (non-weather resistant) fiberboard and paperboard are not acceptable under level B packing. Level B packing as defined in 6.5.1.2(b) covers shipments worldwide by all types of transportation.

6.6.1.3 Level C. This packaging provides minimum protection. It is needed to protect material under known favorable conditions. The following criteria determine the requirements for this degree of protection:

- (a) Use or consumption of the item at the first destination.
- (b) Shock, vibration, and static loading during the limited transportation cycle.
- (c) Favorable warehouse environment for a maximum of 18 months.
- (d) Effects of environmental exposure during shipment and intransit delays.
- (e) Stacking and supporting superimposed loads during shipment and temporary storage.

6.6.1.4 Commercial. Although not specifically defined by any Government regulation or instruction, commercial packaging (preservation and packing) is understood to be those practices by manufacturers and contractors to protect and identify material and items packaged for retail and wholesale distribution purposes. ASTM D 3951 provides guidance in the application of commercial packaging. It has been determined by joint DOD instructions that commercial, also in some areas addressed as industrial packaging, should only be used or specified when such packaging is known to satisfy the DOD needs. Such use should be determined before a contract for supplies is awarded or within the life cycle of the contract when substantial savings to the Government may result. Commercial (industrial) packaging should not be specified where multiple shipments and handlings are anticipated or desired.

## MIL-L-3454G

6.6.2 Packaging terms. For definitions or explanation of packaging terms not specified herein, MIL-P-116, ANSI MH15.1 and ASTM D 996 will apply.

6.6.2.1 Exterior pack. A container, bundle, or assembly which is sufficient by reason of material, design, and construction to protect material during shipment and storage. This can be the unit pack or a container with any combination of unit or intermediate packs.

6.6.2.2 Intermediate pack. A wrap, box, or bundle which contains two or more unit packs of identical items.

6.6.2.3 Marking. Application of numbers, letters, labels, tags, symbols, or colors for handling or identification during shipment and storage.

6.6.2.4 Military packaging. The materials and methods or procedures prescribed in federal and military specifications, standards, drawings or other authorized documents, which are designed to provide the degree of packaging protection determined necessary to prevent damage and deterioration during worldwide distribution of material.

6.6.2.5 Packaging. The process and procedures used to protect material from deterioration or damage. It includes cleaning, drying, preserving, packing, marking, and unitization.

6.6.2.6 Packing. Assembling of items into a unit, intermediate, or exterior pack with necessary blocking, bracing, cushioning, weatherproofing, reinforcement, and marking.

6.6.2.7 Preservation. Application of protective measures, including cleaning, drying, preservation materials, barrier materials, cushioning, and containers when necessary.

6.6.2.8 Unitization. Assembly of packs of one or more line items of supply into a single load in such a manner that the load can be handled as a unit through the distribution system. Unitization (unitized loads and unit loads) encompasses consolidation in a container, placement on a pallet or load base, or securely binding together.

6.6.2.9 Unit pack. The first tie, wrap, or container applied to a single item or quantity thereof, or to a group of items of a single stock number, preserved or unpreserved, which constitutes a complete or identifiable package.

6.7 Detailed information. Supplemental information on packaging may be found in the following manuals:

DSAM4145.2, Vol. I, TM38-230-1, NAVSUP PUB 502, AFP 71-15, MCO  
P4030.31.B, Preservation and Packaging (Volume I) (National Stock Number  
0530-LP-050-2073).

DSAM4145.2, Vol. II, TM38-203-2, NAVSUP PUB 503, Vol. II, AFR 71-16, MCO  
P4030.21C, Packing (Volume II) (National Stock Number 0530-LP-050-3211).

MIL-L-3454G

DSAM4145.7, TM38-236, NAVSUP PUB 504, AFP 15-01-3, AFP 71-8, MCO P4030.30B, Preparation of Freight for Air Shipment (National Stock Number 0530-LP-050-4001).

DSAM4145.3, TM38-250, NAVSUP PUB 505, AFR 71-4, MCO P4030.19D, Preparation of Hazardous Materials for Military Air Shipment (National Stock Number 0530-LP-050-5007).

Military Standardization Handbook, MIL-HDBK-304, Package Cushioning Design.

(Copies of the listed documents may be obtained from the Standardization Documents Order Desk, Bldg 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094 or from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.)

#### 6.8 Subject term (key word) listing.

Boxes  
Caseliners  
Containers  
CO<sub>2</sub>  
Cushioning  
Dusting  
Packing  
Palletization  
Preservation  
Wrapping

6.9 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 - SM  
Navy - SH  
Air Force - 99

#### Preparing activity:

Navy - SH  
(Project PACK-0902)

#### Review activity:

Army - ME  
Air Force - 84  
DLA - CS