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DEPARTMENT OF DEFENSE

STANDARD PRACTICE FOR MILITARY PACKAGING

AMSC 9965

AREA PACK

FOREWORD

1. Details and decision logic for the use of this standard are described in 1.1, 1.2, and figure 1.

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

3. For technical guidance on the contents of this document or to submit technical changes or recommended changes to the Appendix J codes, email frank.magnifico@navy.mil Commander, Naval Air Warfare Center Aircraft Division Lakehurst, (Code 6.7.2.4), Bldg. 333, Route 547, Joint Base MDL, NJ 08733.

4. Comments, suggestions, or questions on this document should be addressed to: Commander, Naval Air Warfare Center Aircraft Division Lakehurst, (Code 4.1.2.2), Route 547, Mail Stop 120-3, Joint Base MDL, NJ 08733-5100, or emailed to michael.sikora@navy.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at https://assist.dla.mil.

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1. SCOPE

1.1 Purpose. This document outlines standard processes for the development and documentation of military packaging. This standard covers methods of preservation to protect materiel against environmentally induced corrosion and deterioration, physical and mechanical damage, and other forms of degradation during storage, multiple handling, and shipment of materiel in the Defense Transportation System (DTS). For the purpose of this standard, military distribution system includes the processes by which materiel, not intended for immediate use, is stored or moved within or between DoD facilities. A decision chart is included for determining how to develop military packaging requirements (see figure 1). If military packaging is applicable, figure 1 will further aid in the development of detailed packaging requirements.

1.2 Applicability. The requirements of MIL-STD-2073-1E apply when military packaging is required to meet operational demands. This applies to items entering the Defense Transportation System and includes but is not limited to, the following items:

a. Delivered during wartime for deployment or sustainment to operational units.

b. Depot level repairables.

c. Requiring reusable containers.

d. Intended for delivery at sea.

e. Security Assistance/Foreign Military Sales/Grant Aid (unless otherwise directed by the destination country).

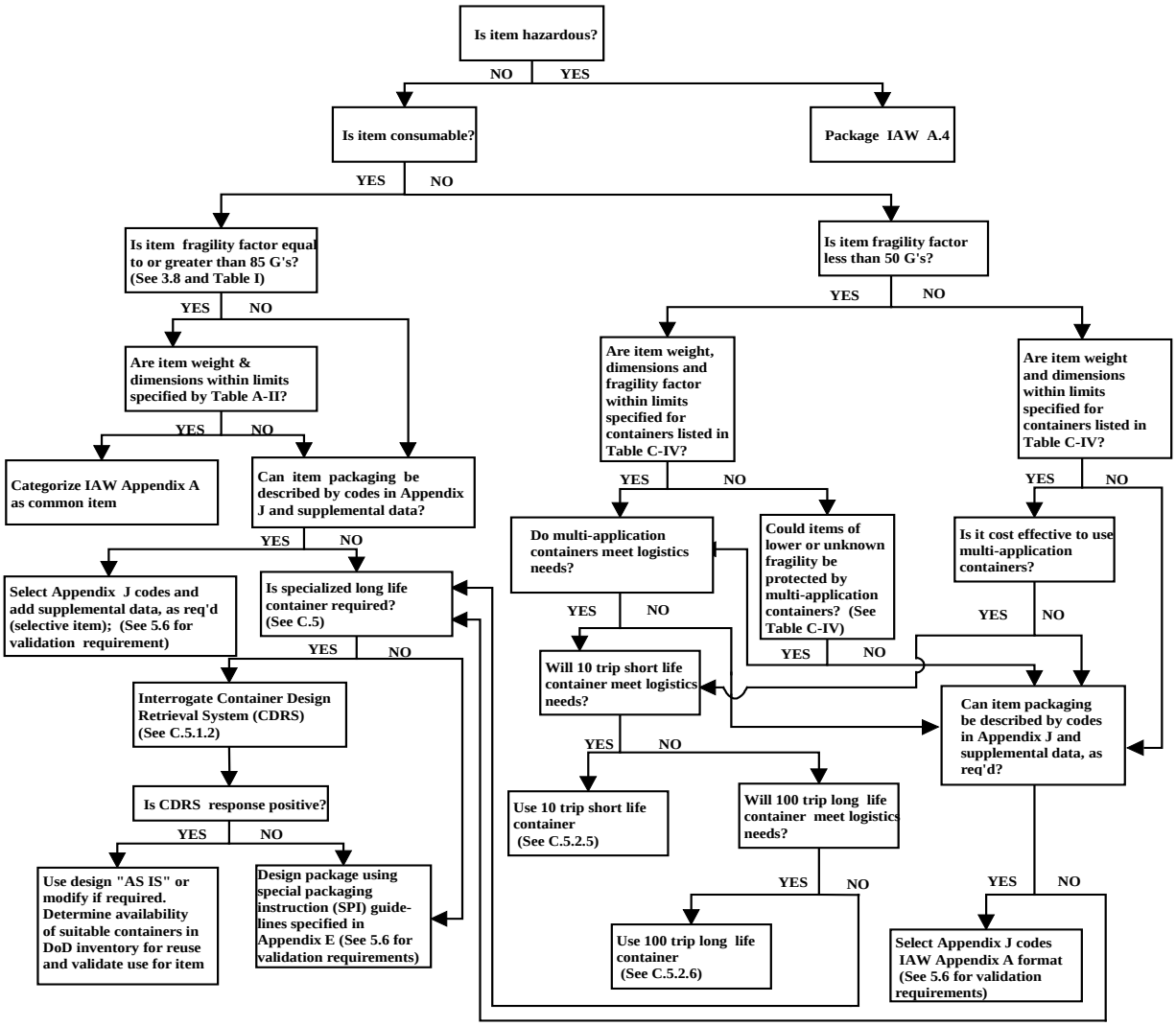

FIGURE 1. Military packaging requirements development decision chart.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this standard. This section does not include documents cited in other sections of this standard or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this standard, whether or not they are listed.

2.2 Government documents.

2.2.1 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 cited in the solicitation or contract.

FEDERAL SPECIFICATIONS

QQ-A-1876	-	Aluminum Foil.
PPP-B-1672	-	Boxes, Shipping, Reusable with Cushioning.

COMMERCIAL ITEM DESCRIPTION

A-A-3174	-	Plastic Sheet, Polyolefin.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-DTL-117	-	Bags, Heat-Sealable.
MIL-PRF-121	-	Barrier Materials, Greaseproof, Waterproof, Flexible, Heat-Sealable.
MIL-PRF-131	-	Barrier Materials, Watervaporproof, Greaseproof, Flexible, Heat-Sealable.
MIL-PRF-3420	-	Packaging Materials, Volatile Corrosion Inhibitor, Treated, Opaque.
MIL-D-3464	-	Desiccants, Activated, Bagged, Packaging Use and Static Dehumidification.
MIL-DTL-6060	-	Bags, Watervaporproof, Heat-Sealable, Complex.
MIL-I-8574	-	Inhibitors, Corrosion, Volatile, Utilization of.
MIL-PRF-16173	-	Corrosion Preventive Compound, Solvent Cutback, Cold-Application.
MIL-PRF-22019	-	Barrier Materials, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated.

MIL-DTL-22020	-	Bags, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated.
MIL-PRF-22191	-	Barrier Materials, Transparent, Flexible, Heat-Sealable.
MIL-PRF-81705	-	Barrier Materials, Flexible, Electrostatic Protective, Heat-Sealable.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-129	-	Military Marking for Shipment and Storage.
MIL-STD-1686	-	Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices).
MIL-STD-3010	-	Test Procedures for Packaging Materials and Containers.
MS20003	-	Indicator, Humidity, Card, Three Spot, Impregnated Areas (Cobaltous Chloride).

DEPARTMENT OF DEFENSE HANDBOOK

MIL-HDBK-263	-	Electrostatic Discharge Control Handbook for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices) (Metric).

(Copies of these documents are available online at https://quicksearch.dla.mil.)

2.2.2 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 are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE MANUAL

DoD-5220.22M	-	National Industrial Security Program Operating Manual (NISPOM).

(Copies of this document are available online at http://www.DTIC.mil/.)

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR	-	Labor.

40 CFR	-	Protection of Environment.
49 CFR	-	Transportation.

(Copies of these documents are available online at https://www.ecfr.gov.)

2.3 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 cited in the solicitation or contract.

ASTM INTERNATIONAL

ASTM D996	-	Standard Terminology of Packaging and Distribution Environments (DoD adopted).
ASTM D1974/ D1974M	-	Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes (DoD adopted).
ASTM D4279	-	Standard Test Methods for Water Vapor Transmission of Shipping Containers – Constant and Cycle Methods.
ASTM D5118/ D5118M	-	Standard Practice for Fabrication of Fiberboard Shipping Boxes (DoD adopted).
ASTM D5168	-	Standard Practice for Fabrication and Closure of Triple Wall Corrugated Fiberboard Containers (DoD adopted).

(Copies of these documents are available online at http://www.astm.org.)

ELECTROSTATIC DISCHARGE (ESD) ASSOCIATION

ANSI/ESD S20.20	–	For the Development of an Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assembles and Equipment (Excluding Electrically Initiated Exposure Devices).

(Copies of this document are available online at https://www.ansi.org.)

SAE INTERNATIONAL

SAE AS26860	-	Indicator, Humidity, Plug, Color Change (DoD adopted).

(Copies of this document are available online at http://www.sae.org.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, 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. DEFINITIONS

3.1 General. Definitions of terms unique to this standard are listed below. Definitions of other terms commonly used in the packaging community may be found in ASTM D996 or MIL-STD-129.

3.2 Categorization. The process of evaluating an item by chemical and physical characteristics that are significant in determining the preservation requirements.

3.3 Common group items. Items with a fragility rating of 85 G's (see 3.9) or more which have no dimension greater than 24 inches and weigh not more than 10 pounds for which predetermined packaging has been developed (see A.5.4.1 and table A-IV). Hazardous materials, electrostatic discharge sensitive items, shelf life items, sets, outfits, and kits are excluded from this group regardless of their fragility, size, or weight.

3.4 Consumable. An item of supply (except explosive ordnance, major end items of equipment, and repairables) that is normally expended or used up beyond recovery in the use for which it was designed or intended.

3.5 Container Design Retrieval System (CDRS). A management system program to provide a DoD centralized automated data base system for storing, retrieving and analyzing existing container designs and test information concerning specialized containers. The purpose of the CDRS is to avoid duplication in container designs, minimize the number of new container designs being developed and promote reuse of existing DoD specialized containers for new item development and procurement (see Appendix H).

3.6 Critical items. Items meeting one or more of the following criteria are considered critical.

a. Critical chemically. Items that are of such a nature that any degree of deterioration (in the form of corrosion, stain, scale, mold, fungi, or bacteria) caused by oxygen, moisture, sunlight, living organisms, and other contaminants which are time or temperature dependent, will result in premature failure or malfunction of the item or equipment in which the item is installed or with which the item interfaces.

b. Critical physically. Items that would become unfit for use as a result of physical action on the item or any integral surfaces thereof. This includes, but is not limited to, items having a surface finish of 64 microinches root mean square or less, items

that have surfaces that mate with surfaces of other parts, optical and reflective devices having highly polished surfaces, items requiring a high degree of cleanliness, and items requiring special protection against shock, vibration, or abrasion.

c. Critical application. Items that, either in assembly or operation, provide an essential attribute to attaining critical military objectives.

3.7 Defense Transportation System (DTS). The Defense Transportation System (DTS) is that portion of the worldwide transportation infrastructure that supports Department of Defense (DOD) transportation needs in peace and war. It consists of two major elements: military (organic) and commercial (nonorganic) resources. These resources include aircraft, ships, barges, rail and road assets, pipelines, services, and systems organic to, contracted for, or controlled by DOD. DTS infrastructure, including seaports, aerial ports, railways, highways, pipeline pumping and terminal stations, automated information systems, as well as supporting services, such as in-transit visibility (ITV), customs, and traffic management, are vital elements of the DOD capability to project power worldwide.

3.8 Electrostatic Discharge Sensitive (ESDS) items. Electronic items that are susceptible to damage or degradation as a result of an electrostatic discharge event.

3.9 Fragility factor. Maximum force acceleration or deceleration expressed in units of gravity (G's) that can be applied to an item in its non-operating state without causing physical damage or changes in its operational characteristics. The fragility factor is expressed in units of acceleration for a defined shock pulse. Shock pulse forms and durations that approximate the transportation and handling environment are to be used in determining the fragility factor. Representative fragility factors for various classes of items are listed in table I.

3.10 Hazardous material. A material, substance, or waste that has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce and that has been so designated. (This includes all items listed as hazardous in Titles 29, 40 and 49 CFR and other applicable modal regulations effective at the time of shipment.)

3.11 Military packaging. A means of specifying the military preservation and packing that a given item requires to ensure that it is not degraded during shipment and storage in the military distribution system.

a. Military preservation. Application of materials and/or methods designed to protect an item during shipment, handling, indeterminate storage and distribution to consignees worldwide.

b. Military packing. Application of any exterior protective methods, materials, or devices to ensure the integrity of the preserved item as follows:

(1) Level A. Protection required to meet the most severe worldwide shipment, handling, and storage conditions. Level A packing must in tandem with the applied method of preservation, be capable of protecting material from the effects of direct exposure to extremes of climate, terrain, and operational and transportation environments. Examples of situations that indicate a need for use of Level A packing are: War Reserve Material, mobilization, strategic and theater deployment and employment, open storage, deck loading and Foreign Military Sales (as specified in the contract). Examples of containers used for Level A packing requirements include, but are not limited to, overseas type wood boxes, and plastic and metal reusable containers.

(2) Level B. Protection required to meet moderate worldwide shipment, handling, and storage conditions. Level B packing must in tandem with the applied preservation, be capable of protecting material not directly exposed to extremes of climate, terrain, and operational and transportation environments. Examples of situations that indicate a need for use of Level B packing are: security assistance, such as Foreign Military Sales (as specified in the contract) and containerized overseas shipments. Examples of containers used for Level B packing requirements include, but are not limited to, domestic wood crates, weather-resistant fiberboard containers, fast pack containers, weather-resistant fiber drums, and weather-resistant paper and multi-wall shipping sacks.

3.12 Packaging design validation. Testing to ascertain the capability of the prototype pack to protect the integrity and serviceability of the item(s) for which the package is designed.

3.13 Repairable item. An item that, by the application of engineering, economic, and other factors, could be reasonably restored to a serviceable condition through regular repair procedures.

3.14 Reusable container. A shipping and storage container that can be reused without impairment of its protective function and that can be repaired or retrofitted to prolong its life or modified to adapt it for shipment of items other than that for which it was originally intended. Reusable shipping and storage containers are further defined as follows:

a. Long life container (100 trips minimum). A shipping container that can be used repeatedly, and whose service life can be expected to equal the service life of the item it is designed to protect. These containers may be refurbished by appropriate maintenance practices to their original condition and subsequently reused.

b. Short life container (10 trips minimum). A shipping container that can be reused for a limited number of times. The container is usually made of wood, plywood, fiberboard or similar material that has a limited life.

c. Multi-application containers. Multi-application containers are designed to protect a variety of components within a given fragility and size range. They can be manufactured in a similar manner to that used for specialized containers or in accordance with applicable/specified military or federal specifications. A multi-application container can be either of the short-life or long-life variety. Short life multi-application containers include "fast packs," consisting of a family of standard size cushioned fiberboard shipping containers of four types. These types are fully described in PPP-B-1672 and are identified as Types I, II, III and IV in table C-IV. Long-life multi-application reusable containers are designated as Types VI thru X and are also described in table C-IV. These containers are made of rugged plastic construction containing internal cushioning pads or permanent shock mitigation systems (for example, shear mounts, steel coils, and springs) and are designed to protect repairable components packaged therein, during forward and retrograde movements within the military supply system.

d. Specialized container. Specialized containers are generally the long-life variety and are uniquely configured to support and protect a specific item, or limited variety of items, during handling and storage or to protect personnel and equipment from hazardous contents. Containers of this type frequently incorporate energy absorbing systems, temperature control systems or special features to make handling or shipment possible, easier or safer. Engineering drawings, or equivalent, are used to define form, fit, function, materials, tolerances and manufacturing techniques. Internal fixtures and other fitments within specialized shipping containers result from either original design efforts or the redesign or modification of an existing container to meet a specific application or need.

3.15 Sealed. An item is considered sealed if the entrances to the interior of the item are sealed with gaskets or closely mated surfaces under mechanical pressure or are sealed by threaded closure devices (except plastic caps). Sealed items also include assemblies that are encapsulated in plastics, ceramics, glass or metal with completely cemented seams or joints closing the interior to the entrance of liquid water. Hermetic sealing is a seal that will exclude air and is leakproof at ambient temperatures and atmospheric pressures and is usually glass to glass, metal to metal or metal to glass.

3.16 Selective group items. Items that cannot appropriately utilize predetermined packaging developed for common group items (see 3.3) yet do not require a drawing, sketch, illustration, or separate narrative type instruction to specify packaging details.

3.17 Special group items. Items with peculiar characteristics such as weight, configuration, complexity, fragility, or other considerations that cannot be classified as common or selective. An item is considered special if drawings, sketches, illustrations, narrative type instructions, or specialized containers are required to specify packaging details.

4. GENERAL REQUIREMENTS

4.1 General. Military packaging requirements shall be developed using the figure 1 decision chart in accordance with the requirements of this section, Section 5 and all Appendices herein. The developed military packaging requirements shall be documented in accordance with Appendix E and as specified on the Contract Data Requirements List (CDRL) (see 6.3). These requirements are generally defined by a twelve digit position-sensitive code system, as illustrated on figure A-1. Appropriate codes are drawn from those listed in Appendix J. When an item has been determined to be in the special group category, a Special Packaging Instruction shall be required, prepared in accordance with Appendix E and as specified on the CDRL (see 6.3).

4.1.1 Options. Unless otherwise specified in supplemental instructions (see E.4.2.6), all military packaging requirements defined or developed herein shall be mandatory for compliance and no substitutions are permitted. When specified in supplemental instructions (see E.4.2.6) or via Optional Procedure Indicator Codes (Table J-VIII), options can be exercised as to the specific method of preservation or DoD approved packaging materials to be used. However, the basic preservation method shall be retained, all other supplemental instructions shall be complied with, and unit package dimensions shall not be increased by more than one inch. Equal or higher degree of protection shall be afforded the item and there shall be no increase in the package cost.

4.2 Development of military packaging details and data requirements. If this standard is cited for use and no specific military packaging details or data requirements are contained in the contract, the contracting officer shall be contacted for same. Appendix A and other applicable sections and appendices of this standard shall be used to develop detailed military packaging requirements in cases where the development of packaging data by the contractor is cited.

4.3 Hazardous material. Packaging for hazardous materials shall be developed in accordance with the requirements specified in A.4.

4.4 Packaging of classified items. Packaging developed for classified items shall meet the requirements of DoD 5220.22M.

4.5 Quantity per unit pack (QUP). The QUP shall be determined in accordance with Appendix B.

4.6 Containers. Requirements for containers and their selection for military packaging applications are specified in Appendix C.

4.7 Kits. Military packaging of parts kits or modification kits shall be in accordance with Appendix D.

4.8 Repairable return items and residual parts. Repairable return items and residual part(s) for which packaging has not been stipulated by the acquisition activity shall be packaged to afford adequate protection as required to prevent further deterioration due to rust, corrosion, or physical damage. Unless otherwise specified by the acquisition activity, the QUP shall be one.

4.9 Loose fill materials. Loose fill materials are prohibited in all military packages, except for the packaging of peculiar hazardous materials that require their use for absorptive purposes.

4.10 Shock and vibration absorption. Shock and vibration absorption shall be provided by cushioning materials or isolators that protect the contents and packaging components from physical damage during handling, shipment and storage. A cushioning medium shall be placed as close to the contents as practicable. A non-corrosive wrap shall be placed between the item and all corrosive type cushioning media.

4.11 Determination of item fragility. Fragility factors in the non-operating state of the item, established in the item specification, shall be used to establish the maximum energy permitted to reach the item during transportation and handling (see 3.9). When fragility factors are not available or established, criteria of table I can be used to approximate G factors. Caution shall be taken to ensure that there are no additional components installed that lower the item fragility rating.

4.12 Packaging materials. The use of new packaging materials or products is encouraged and recommended if their protective capabilities are equivalent to, or exceed approved materials without increasing the overall cost to the Government. To expedite the use of these materials prior to their inclusion in Government specifications, their prompt use will be permitted under conditions outlined herein. In instances where the material or product is not covered by a specific specification or standard, the manufacturer or fabricator of the material or product shall make available documented test data by an approved testing laboratory, that the material or product meets or exceeds all performance requirements of the specification for a similar material or product. The request for approval shall be submitted to the acquisition activity via the technical packaging element of the contract management activity.

5. DETAILED REQUIREMENTS

5.1 General military package design considerations. Military packaging shall be of minimum cost consistent with required performance. Unit packs shall be designed to conserve weight and cube while retaining the protection required and enhancing standardization.

5.2 Military preservation. The intent of the military preservation procedure is that it be accomplished without interruption. When interruptions are unavoidable, temporary wraps, covers or enclosures shall be provided to ensure against contamination or deterioration of the items.

5.2.1 Cleaning and drying. Items shall be cleaned and dried by any process or processes that are not injurious to the item. All items shall pass the applicable cleaning and drying inspection requirements of table G-I.

5.2.2 Preservatives.

5.2.2.1 Preservative applicability. When contact preservatives are required to protect an item from chemical deterioration, they shall conform to table J-III. Preservatives selected shall be those whose application, use, or removal will not damage the item or impair item function.

5.2.2.2 Application of contact preservatives. Directly after cleaning and drying of the item, the required preservative shall be uniformly applied by any appropriate procedure that permits the preservative to coat all necessary surfaces. Suggested methods of application include, but are not limited to:

a. Dipping
b. Flow coating
c. Slushing
d. Brushing
e. Filling or flushing
f. Fogging
g. Spraying

5.2.2.3 Application and use criteria of volatile corrosion inhibitors (VCI). Volatile corrosion inhibitors shall be utilized in accordance with the criteria and procedures of MIL-I-8574.

5.2.3 Methods of military preservation - general requirements. There are five basic methods of preservation (MOP) established herein:

Method 10 Physical protection
Method 20 Preservative coating
Method 30 Waterproof protection
Method 40 Watervaporproof protection
Method 50 Watervaporproof protection with desiccant

Various specific techniques, also detailed herein, have been developed to meet these basic methods and shall be used as appropriate. The preservation methods shall be as specified in the contract or purchase order. In the absence of such requirements, the appropriate method shall be selected in accordance with the applicable tables of Appendix A. The following general requirements shall apply:

a. Protection from physical damage and mechanical malfunction is required for all methods of preservation in addition to the specific environment protection provided. This requirement shall be verified through performance of the tests specified in Appendix F.

b. When methods provide either transparent or opaque protection, transparent protection may be furnished at the option of the supplier but is not required unless specifically called for in the contract or purchase order.

c. Protection for all electrostatic discharge sensitive items requires the use of packaging materials to counteract electrostatic and electromagnetic field forces (see 5.2.4.1).

d. When specific methods require using a bag or container, preliminary wrapping, cushioning or other dunnage material shall be applied as necessary to protect the item, the bag, and the container from all projections or sharp edges of the item, as well as to restrict movement of the item within the unit pack. Additionally, the bag shall be protected from any sources of damage (e.g., metal stitching, staples, nails, etc) when placed in any interior or exterior container.

e. When methods require chipboard or fiberboard containers within the bag, the corners and edges of the containers shall be blunted prior to placing the item in the box and enclosing within the bag.

f. When a transparent unit pack is specified, the preliminary wrapping shall also be transparent.

g. Methods of preservation requiring the use of a bag for the interior packaging shall be subject to the use and fabrication procedures and limitations of MIL-DTL-117. Table II lists the acceptable materials that may be used in constructing bags that meet the requirements of these specific methods of preservation (see 6.9). Bags shall comply with MIL-DTL-6060 when the construction limitations of MIL-DTL-117 are exceeded.

h. All materials used (e.g. wraps, cushioning, dunnage, and barrier bags) shall be as clean and dry as practicable to minimize item susceptibility to corrosion and contaminants.

i. Items with handles, knobs, or other protrusions shall be wrapped or otherwise protected and secured to facilitate equal distribution of shock forces over the entire surface of the item and thus prevent damaging shock forces to the protrusion.

j. When flexible bags are used, the volume of trapped air within the bag shall be kept to a minimum by compressing the bag around the contents, or by carefully drawing a vacuum inside the bag, prior to final heat sealing or cold sealing (for VCI). Caution shall be taken to prevent rupture of the bag, or damage to the item, due to excessive vacuum.

k. Items preserved with VCI-treated materials are exempted from preliminary wrapping.

l. When the unit container of the method of preservation is a bag and when a wood box (of any composition) is specified as the outer/shipping container, then a 6 mil polyethylene film conforming to A-A-3174 or equivalent material shall be used as an overwrap (secured with tape) around the sealed bag to prevent chafing or rupture by the outer container. When primary cushioning is located between the sealed bag and the outer/shipping container, then the overwrap is not required. Alternately, fiberboard can be used to line the box in place of the polyethylene film. Closure, sealing or banding (as applicable) shall be in accordance with the applicable container specification procedures or ASTM D1974/D1974M, making certain that the bag is not damaged. (Note: When the outer container serves as the shipping container, table C-II, it shall be marked as a shipping container in accordance with MIL-STD-129; the bag shall be marked as a unit pack in accordance with MIL-STD-129.)

5.2.3.1 Surfaces coated with preservatives. Preliminary wrapping materials in contact with any item coated with a preservative shall be greaseproof and shall conform to MIL-PRF-121 or QQ-A-1876. Greaseproof wraps applied solely to confine the contact preservative on item surfaces are not necessary when a method requires a bag as the preliminary container and the bag is made of material conforming to MIL-PRF-121, MIL-PRF-131, or MIL-PRF-22191, type I or II. However, wraps shall not be excluded if necessary to protect the bags from rupture or perforation.

5.2.3.2 Metal surfaces not coated with preservatives. Only noncorrosive wrapping, cushioning and dunnage materials meeting the test requirements of MIL-STD-3010, Test Method 3005, shall be used in contact with metal surfaces of the item. Materials also shall be as dry and clean as practicable at the time of use.

5.2.3.3 Method 10 - Physical protection. The unpreserved item(s) shall be protected from physical damage and mechanical malfunction. Cushioning materials, dunnage, blocking and bracing shall be applied as required to protect the item(s) and the enclosing media and restrict the movement of the item within the container. The materials selected for all blocking and bracing, and the design and application thereof, shall be compatible with the item and its bearing load limitations. Materials shall be as clean and as dry as practicable. Method 10 unit packs shall pass the applicable inspection requirements of table G-I.

5.2.3.4 Method 20 – Preservative coating. Items shall be treated with appropriate preservatives in accordance with the procedures of 5.2.2.2 or 5.2.2.3. Contact preservative coated items shall be wrapped in material conforming to MIL-PRF-121 or QQ-A-1876. Flexible wraps shall snugly enclose the coated part or item and be secured to prevent unintentional unwrapping. Parts or items coated with hard film preservatives conforming to MIL-PRF-16173, Grade 1 or 4, may, when dried, be exempted from wrapping. Projections, sharp edges, or other features of the item, that may damage the wrap, shall be cushioned as required in accordance with 5.2.3. The type of cushioning and wrapping material used shall be commensurate with the size, weight and configuration of the preserved part or item. Method 20 unit packs shall pass the applicable inspection requirements of table G-I. When it has been determined to protect items with VCI, they shall be preserved in accordance with 5.2.4.9.

5.2.3.5 Method 30 - Waterproof or waterproof-greaseproof protection with preservative as required. Items protected in accordance with Method 30 shall be heat sealed within a waterproof or waterproof-greaseproof bag. Projections, sharp edges or other physical characteristics of the item that may damage the waterproof or waterproof-greaseproof barrier or container shall be cushioned in accordance with 5.2.3. The item shall also be cushioned as required to mitigate shock and vibration, thereby preventing physical and functional damage to the item. For all Methods of Preservation where the bag is the unit container and the outer/shipping container is a wood box, see 5.2.3(l). Unless otherwise specified, preservative coating requirements shall be determined in accordance with 5.2.2.1. All unit packs prepared in

accordance with any method of this basic group shall pass the applicable quality assurance tests specified in tables G-I and G-II.

5.2.3.5.1 Method 31 - Waterproof bag, heat sealed. The item, preserved, wrapped and cushioned as required in 5.2.3.5, shall be enclosed in a heat-sealed bag conforming to MIL-DTL-117, Type III, Class B, Style 2. (Note: When specified in the contract or order, a carton or box shall be required to effect the unit container, and the primary cushioning shall be placed between the outside of the bag and the inside of the carton or box.) When it has been determined to protect items with VCI, they shall be preserved in accordance with 5.2.4.9.

5.2.3.5.2 Method 32 - Container, waterproof bag, heat sealed. The item, preserved, wrapped and cushioned as required in 5.2.3.5, shall be enclosed in a close fitting container (box) selected from table C-I, which in turn shall be enclosed in a heat-sealed waterproof bag conforming to MIL-DTL-117, Type III, Class B, Style 2.

5.2.3.5.3 Method 33 - Greaseproof-waterproof bag, heat sealed. The item, preserved, wrapped and cushioned as required in 5.2.3.5, shall be enclosed in a close fitting heat-sealed bag conforming to MIL-DTL-117, Type II, Class C, Style 1, 2 or 3. (Note: When specified in the contract or order, a carton or box shall be required to effect the unit container, and the primary cushioning specified in the contract or order shall be placed between the outside of the bag and the inside of the carton or box.) When it has been determined to protect items with VCI, they shall be preserved in accordance with 5.2.4.9.

5.2.3.6 Method 40 - Watervaporproof protection with preservative as required. Items protected in accordance with Method 40 shall be heat sealed within a watervaporproof enclosure. Projections, sharp edges or other physical characteristics of the item, which may damage the watervaporproof enclosure, shall be cushioned as required in accordance with 5.2.3. The item shall also be cushioned as required to mitigate shock and vibration, thereby preventing physical and functional damage to the item. For all Methods of Preservation where the bag is the unit container and the outer/shipping container is a wood box, see 5.2.3(l). Unless otherwise specified, preservative coating requirements shall be determined in accordance with 5.2.2.1. All unit packs prepared in accordance with any method of this basic group shall pass the applicable quality assurance tests specified in tables G-I and G-II.

5.2.3.6.1 Method 41 - Watervaporproof bag, heat sealed. The item, preserved, wrapped and cushioned as required in 5.2.3.6, shall be enclosed in a close fitting heat-sealed bag conforming to one of the following:

a. MIL-DTL-117, Type I, Class E, Style 1, 2 or 3 (see notes 2/, 4/).
b. MIL-DTL-117, Type I, Class F, Style 1, use intended for ESD sensitive items only (see note 1/).
c. MIL-DTL-117, Type II, Class E, Style 1 (see notes 2/, 3/).
d. MIL-DTL-117, Type IV, Class E, Style 1 (see notes 2/, 4/).

1/ For electrostatic protection refer to 5.2.4.1.
2/ When specified in the contract or order, a carton or box shall be required to complete the unit container and the primary cushioning shall be placed between the outside of the bag and the inside of the carton or box.
3/ When MIL-DTL-117, Type II, Class E, Style 1 bags are selected, they shall be limited to the restrictions detailed in MIL-PRF-131 for Class 2 material.
4/ When it has been determined to protect items with VCI, they shall be preserved in accordance with 5.2.4.9.

5.2.3.6.2 Method 42 - Container, watervaporproof bag, heat sealed, container. The item, preserved, wrapped and cushioned as required in 5.2.3.6, shall be enclosed in a close fitting inner container (box), selected from table C-I, and enclosed in a heat-sealed bag conforming to MIL-DTL-117, Type I, Class E, Style 1; or Type II, Class E, Style 1. Bags in accordance with MIL-DTL-6060 shall be used when the construction limitations of MIL-DTL-117 are exceeded. The sealed bag shall then be enclosed within an appropriate outer container (box), selected from table C-II. When wood, wood cleated plywood, or wood cleated panelboard is specified as the outer container of this method, see 5.2.3(l). (Note: When the outer container serves as the shipping container, selected from table C-II, it shall be marked as a shipping container in accordance with MIL-STD-129; the bag shall be marked as a unit pack in accordance with MIL-STD-129.)

5.2.3.6.3 Method 43 - Floating watervaporproof bag, heat sealed. The item, preserved, wrapped and cushioned as required in 5.2.3.6 and anchored or shock mounted as necessary, shall be enclosed in a heat-sealed bag conforming to MIL-DTL-6060. (Note: When the outer container serves as the shipping container, selected from table C-II, it shall be marked as a shipping container in accordance with MIL-STD-129; the bag shall be marked as a unit pack in accordance with MIL-STD-129.)

5.2.3.6.4 Method 44 - Rigid container (other than metal), sealed. The item, preserved, wrapped, and cushioned as required in 5.2.3.6, shall be enclosed in a sealed, snug fitting, rigid

container other than all metal. Any sealed rigid container other than all metal may be used if the sealed container provides a watervapor transmission rate (WVTR) not exceeding 0.075 gram per 100 square inches per 24 hours, when tested in accordance with ASTM D4279.

5.2.3.6.5 Method 45 - Rigid metal container, sealed. The item, preserved, wrapped and cushioned as required in 5.2.3.6, shall be snugly enclosed in a sealed, rigid metal container. Any selected type of rigid metal container with machine seamed or gasketed closure may be used. When specified in the contract or purchase order or when dictated by the requirements of the item, the metal container shall be vacuum sealed.

5.2.3.7 Method 50 - Watervaporproof protection with desiccant. Items protected in accordance with Method 50 shall be heat sealed in a watervaporproof enclosure with activated desiccant. Unit packs of all of these methods shall also include a humidity indicator. Projections, sharp edges, or other physical characteristics of the item that may damage the watervaporproof bag or container shall be cushioned as required in accordance with 5.2.3. The item shall also be cushioned as required to mitigate shock and vibration, thereby preventing physical and functional damage to the item. Preservative coating requirements shall be determined in accordance with 5.2.2.1. For all Methods of Preservation where the bag is the unit container and the outer/shipping container is a wood box, see 5.2.3(l). When bags are used, the bag size shall be of sufficient surface area to permit two subsequent resealing after item inspection. Unless prohibited in the contract or order, carrying cases or housings, which function as a sealed container, may also be used as the watervaporproof enclosure within which the desiccant and humidity indicator will be placed. Precautions shall be prominently noted on the item cases or housings that the desiccant and indicator cards shall be removed prior to placing the item into use. Requirements for desiccant and humidity indicators are as follows:

a. Desiccant (activated) - The bagged, activated desiccant shall conform to MIL-D-3464. Type I shall be used unless Type II or III is specified or required because of special characteristics of the item. Desiccant shall be in standard unit sized bags. The desiccant shall be strategically located in the pack so as not to be load bearing. Optimally, it is to be placed in voids of the item or pack interior. Desiccant shall be adequately secured to prevent its shifting or movement or placed in specially designed desiccant baskets affixed to the container interior. Under no circumstances shall desiccant be permitted to come in direct contact with critical surfaces of the enclosed item. The desiccant shall not be unnecessarily exposed to the ambient environment when removed from the sealed desiccant storage container. Removal of the desiccant and its insertion into the unit pack shall be the last action prior to final sealing of the bag or container.

b. Quantity of desiccant - The minimum quantity of desiccant to be used per unit pack shall be computed in accordance with either Formula I or II as applicable. The

various values of "X" take into consideration the quality and types of dunnage. The inner container (when applicable) shall be considered in the dunnage calculations.

Formula I - To find units of desiccant for use within a sealed container other than rigid all metal:

$$U = CA + X_1D + X_2D + X_3D + X_4D$$

Formula II - To find units of desiccant for use within a sealed rigid metal container:

$$U = KV + X_1D + X_2D + X_3D + X_4D$$

Symbols used above are defined as follows:

U = The number of units of desiccant to be used.

C = 0.011 when the area of the barrier material is stated in square inches.

C = 1.6 when the area of the barrier material is stated in square feet.

A = Area of container (barrier) stated in square inches or square feet.

K = 0.0007 when volume is stated in cubic inches.

K = 1.2 when volume is stated in cubic feet.

V = Volume within rigid metal container in cubic inches or cubic feet.

X_1 = 8.0 for cellulosic material, including wood and any other material not noted below.

X_2 = 3.6 for bound fibers (synthetic or vegetable fibers bound with rubber).

X_3 = 2.0 for glass fibers (fiberglass).

X_4 = 0.5 for synthetic foams and rubber.

D = Pounds of dunnage within the container.

Note: Formula II may also be used to determine the units of desiccant required for sealed rigid containers other than all metal, when the sealed enclosure provides a WVTR not exceeding 0.001 gram per 24 hours per 100 square inches, tested in accordance with ASTM D4279 using the constant atmosphere method.

c. Humidity indicators. Humidity indicators shall conform to MS20003. The humidity indicator shall be firmly secured directly behind the inspection window or immediately within the closure seal of the container. When specified, externally mounted humidity indicating elements or devices shall be installed in the barrier or rigid container used to effect the unit pack. Externally mounted color change humidity indicating devices shall conform to SAE AS26860.

All unit packs prepared in accordance with any method of this basic group shall pass the applicable quality assurance tests of tables G-I and G-II.

5.2.3.7.1 Method 51 - Watervaporproof bag with desiccant, heat sealed. The item, preserved, wrapped, cushioned and desiccated with humidity indicator as required in 5.2.3.7, shall be enclosed within a heat sealed bag conforming to one of the following:

a. MIL-DTL-117, Type I, Class E, Style 1, 2 or 3 (1/, 2/).
b. MIL-DTL-117, Type II, Class E, Style 1 or Type IV, Class E, Style 1 (2/).

1/ When specified in the contract or order, a carton or box shall be required to complete the unit container and the primary cushioning shall be placed between the outside of the bag and the inside of the carton or box.

2/ When MIL-DTL-117, Type II, Class E, Style 1 bags are selected, they shall be limited to the restrictions detailed in MIL-PRF-131 for Class 2 material.

5.2.3.7.2 Method 52 - Container, watervaporproof bag with desiccant, heat sealed, container. The item, preserved, wrapped, cushioned and desiccated with humidity indicator as required in accordance with 5.2.3.7, shall be enclosed in a close fitting inner container (box) selected from table C-I. The item and container shall then be enclosed in a heat-sealed bag conforming to MIL-DTL-117, Type I, Class E, Style 1; or Type II, Class E, Style 1; or Type IV, Class E, Style 1. Bags in accordance with MIL-DTL-6060 shall be used when the construction limitations of MIL-DTL-117 are exceeded. The sealed bag shall then be enclosed within an appropriate outer container (box) selected from table C-II. When wood, wood cleated plywood or wood cleated panelboard boxes are specified as the outer container, see 5.2.3(l).

5.2.3.7.3 Method 53 - Floating watervaporproof bag with desiccant, heat sealed. The item, preserved, wrapped, cushioned, and desiccated with humidity indicator as required in 5.2.3.7 and anchored or shock mounted as necessary, shall be enclosed in a sealed bag conforming to MIL-DTL-6060. When specified in the contract or order, a window of material conforming to MIL-PRF-22191, Type I shall be provided in the bag in accordance with MIL-DTL-6060 procedures for packs 15 cubic feet or larger. When specified, externally mounted plug type humidity indicators conforming to SAE AS26860 shall be used. When an exterior container is to be placed over the floating bag, a removable inspection port shall be provided in the exterior container body, so situated as to coincide with the location of the inspection window of the bag or the mounted humidity plug.

5.2.3.7.4 Method 54 - Rigid container (other than metal) with desiccant, sealed. The item, preserved, wrapped, cushioned and desiccated with humidity indicator as required in 5.2.3.7, shall be enclosed in a sealed, close fitting, rigid container other than all metal. Any sealed, rigid container other than all metal may be used if the sealed container provides a WVTR not exceeding 0.075 gram per 100 square inches per 24 hours when tested in accordance with ASTM D4279 using the constant atmosphere method.

5.2.3.7.5 Method 55 - Rigid metal container with desiccant, sealed. The item, preserved, wrapped, cushioned and desiccated with humidity indicator as required in 5.2.3.7, shall be enclosed in a sealed, close fitting, metal container. Any selected type of rigid metal container with a machine seamed or welded closure or reusable container with a gasketed or threaded closure shall be used.

5.2.4 Military preservation requirements for items with specific characteristics.

5.2.4.1 Electrostatic discharge sensitive (ESDS) items. All ESDS items shall be preserved in accordance with table J-Ia, Code "GX."

5.2.4.1.1 ESD Control Program. All ESDS items shall be packaged in a facility that has an approved ESD control program. ESD Control Program requirements are typically specified in accordance with the contract. If ESDS items are being procured and there are no ESD Control Program requirements specified in the contract, then an ESD program shall be developed and implemented in accordance with MIL-STD-1686 or ANSI/ESD S20.20. Guidance for implementation of MIL-STD-1686 is detailed in MIL-HDBK-263.

5.2.4.2 Items capable of disassembly. Items may be disassembled into component parts provided an overall saving will result and disassembly and reassembly can be accomplished with the use of common hand tools by semi-skilled personnel. Each of the disassembled parts shall be preserved as necessary. Removed parts shall be clearly marked (or match-marked if necessary)

to ensure correct reassembly. All fasteners removed during disassembly shall be unitized, preserved as appropriate, and included within the unit pack.

5.2.4.3 Flexible-coilable items. Flexible, coilable items constructed in a loop, such as fan belts or door seals, having a 14 inch diameter or greater, shall be looped so as not to distort or otherwise damage the item. Items shall not be looped if undue strain or damage will occur. Items that are practical to roll or fold shall be rolled or folded to the minimum cube that prevents deformation or set to the item during long term storage. When appropriate, coils may be loosely tied with tape or twist ties to facilitate handling and unpacking.

5.2.4.4 Caging or damping. Items such as instruments or gyroscopes, which incorporate caging or damping features for securing movable parts in place, shall be properly engaged or electrically damped prior to packaging.

5.2.4.5 Items with mounts. Equipment containing vibration/shock mounts shall not be shipped on the mounts unless they are immobilized by blocking or unless the mounts are an integral internal part of the equipment. In either event, an appropriate cushioning system shall be provided.

5.2.4.6 Rubber and synthetic rubber items. When rubber or synthetic rubber items are unit packed in quantities of two or more, the individual pieces shall be separated by kraft or plastic film.

5.2.4.7 Hazardous items. All hazardous items shall be preserved and packed in accordance with table J-Ia, Code "HM".

5.2.4.8 Moveable parts. Items with moveable external parts that might become damaged by shock or vibration during shipment shall have these parts secured by blocking, bracing, tie-downs, disassembly or other techniques.

5.2.4.9 Items compatible with VCI. Prior to preserving items using volatile corrosion inhibitor materials for Methods of Preservation 20, 31, 33 and 41, compatibility of the item with VCI shall be considered in accordance with the limitations and restrictions detailed in MIL-I-8574. Items are to be cushioned as required. VCI compatible items preserved in accordance with Method 20 shall be enclosed in VCI treated materials conforming to MIL-PRF-3420 or MIL-PRF-22019, respectively taped or sealed to form an airtight-like enclosure, and are exempted from wrapping (see 5.2.3.4). VCI compatible items preserved in accordance with Methods 31 or 33 protection shall be enclosed in VCI treated bags conforming to MIL-DTL-22020 and sealed. Alternately for Methods 31 or 33, items shall be wrapped in VCI treated materials conforming to MIL-PRF-3420 and enclosed in the appropriate heat-sealed bag corresponding to Method 31 or 33 (see 5.2.3.5.1 and 5.2.3.5.3 respectively). VCI compatible items preserved in accordance with Method 41 shall be wrapped in VCI treated materials conforming to MIL-PRF-3420 or MIL-PRF-22019 and enclosed in the appropriate heat-sealed

bag corresponding to Method 41 (see 5.2.3.6.1). When selecting use of a VCI, application of a contact preservative is prohibited.

5.2.4.10 Vacuum sensitive items. When flexible barrier bags are utilized to provide watervaporproof protection for vacuum sensitive items (e.g., air speed indicators, altimeters, etc.), special care is to be exercised when minimizing the volume of trapped air within the barrier bag to assure that negative pressure does not develop inside the bag prior to final closure.

5.3 Level A and B packing requirements.

5.3.1 Container selection. Acceptable shipping containers for Levels A and B military packing are listed in table C-II. Selection criteria shall reflect the most economical container that provides the required protection for any given military packing application.

5.3.1.1 Intermediate containers. Intermediate containers shall be used under any one of the following conditions:

a. When they are considered economical because of total quantity on order, production schedule or when they facilitate handling, storage and reshipment.

b. When the quantity to be shipped to a single destination permits the use of two or more intermediate containers in an exterior container.

c. When the exterior surface of the unit pack is a bag or wrap of any kind.

d. When specified by the acquisition activity.

5.3.1.1.1 Intermediate Container Quantity (ICQ). To determine intermediate container quantity, see Appendix B.

5.3.1.2 Exterior containers. When practicable, the exterior container being shipped to a single destination shall:

a. Contain items of the same National Stock Number.

b. Contain identical quantities of unit/intermediate packs.

c. Contain items of the same contract.

d. Contain items having the same lot number, cure, manufacture or expiration date.

e. Be the most cost effective and be of minimum cube to contain and protect the items.

5.3.2 Restricted movement. All level A and B packs shall use dunnage, blocking or bracing as necessary to restrict movement.

5.4 Minimal packing requirements. When anticipated logistics paths indicate that items requiring military preservation, as outlined in this standard, will not be exposed to shipping environments more severe than those normally encountered in the commercial distribution system, military packing requirements need not be implemented. Acceptable minimal packing requirements for shipments of this nature are listed in table J-IXb.

5.5 Marking. All unit, intermediate and exterior packs shall be marked in accordance with MIL-STD-129 and additional marking requirements as specified by the acquisition activity. Interior bags or containers, when enclosed within another container to complete a unit pack (see table G-I, Notes 1 and 2), shall also be marked as specified for unit pack identification in MIL-STD-129.

5.6 Military packaging design validation provisions. The packaging design validation tests on selective and special group items shall be performed in accordance with Appendix F unless one of the following conditions exists:

a. Furnished data - Detailed packaging instructions or design are furnished by the acquisition activity. This includes the predetermined codes to be used for common items.

b. Previous test records - The contractor has previous successful test records for the same item or an item with similar weight, dimensions, fragility, and composition.

c. Approved engineering data - The contractor has engineering data that has been approved by the cognizant DoD activity and indicates that the proposed packaging design will successfully meet the requirements of the contract.

d. Multi-application containers - Items meet the weight, dimensional and fragility requirements of table C-IV and are packed in the appropriate multi-application container for the specified packing level.

e. Contractor shipping data - The contractor has historical shipping data confirming adequate protection was provided to similar items using the same or equivalent packaging.

5.7 Verification provisions. The contractor is responsible for the performance of all quality assurance requirements as specified in Appendix G (see 6.4).

6. NOTES

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

6.1 Intended use. Detailed descriptions regarding the intended use of this standard can be found within 1.1 and 1.2.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, revision and date of this standard.

b. Level of packing required (see 5.3 and 5.4).

6.3 Associated Data Item Descriptions (DIDs). This standard has been assigned an Acquisition Management Systems Control (AMSC) number authorizing it as the source document for the following DIDs. When it is necessary to obtain the data, the applicable DIDs must be listed on the Contract Data Requirements List (DD Form 1423).

Reference paragraph	DID Number	DID title
4.1	DI-PACK-80120	Preservation and Packing Data
4.1	DI-PACK-80121	Special Packing Instructions (SPI)
C.5.1.2/H.3.1	DI-PACK-80683	Container Design Retrieval System (CDRS) Search Request
C.5.1.2/H.3.3.1.1	DI-PACK-80684	Container Design Retrieval System (CDRS) Data Input
F.3.3	DI-PACK-81059	Performance Oriented Packaging (POP) Test Report
F.4.4	DI-PACK-80457	Packaging Test Report

The above DIDs were current as of the date of this standard. The ASSIST database should be researched at https://quicksearch.dla.mil to ensure that only current and approved DIDs are cited on the DD Form 1423.

6.4 Testing facilities. The Government contracting activity's invitation for bid (IFB) or request for quote (RFQ) should include requirements that the bidder/contractor state that they have the necessary facilities and capabilities of performing all or part of the testing required or that they will subcontract that which they are unable to perform to an outside packaging/testing organization with the necessary facilities and identify the specific taskings.

6.5 Subject term (key word) listing.

Cleaning	Packaging design validation provisions
Containers	Packaging requirements
Drying	Preservation
Inspection	Preservatives
Marking for shipment	Procedural requirements
Methods of preservation	Quality assurance
Packaging code development	Quantity per unit pack
Packaging data forms	Testing

6.6 Copies of regulations. Copies of AFMAN24-204/TM 38-250/NAVSUP PUB 505/DLAI 4145.3 are available from the applicable system program office or the USAF e-publishing website at http://www.e-publishing.af.mil.

6.7 Change notations. The margins of this standard are marked with vertical lines to indicate modifications generated by this change. This was done as a convenience only and the government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire contents irrespective of the marginal notations.

6.8 Changes in methods of preservation designations. The following are the current and superseded MIL-P-116 method of preservation designators:

Method of Preservation Designators		Remarks
In MIL-P-116J	In MIL-STD-2073-1C, -1D, and 1E	
I	20	
IA	40	
IA-5	45	
IA-6	--	Deleted by MIL-STD-2073-1C
IA-8	41	
IA-13	44	
IA-14	42	
IA-15	--	Deleted by MIL-STD-2073-1C
IA-16	43	
IC	30	
IC-1	33	
IC-2	32	
IC-3	31	
IC-4	--	Deleted by MIL-STD-2073-1C
IC-7	--	Deleted by MIL-STD-2073-1C
IC-9	--	Deleted by MIL-STD-2073-1C
IC-10	--	Deleted by MIL-STD-2073-1C
II	50	
IIa	53	
IIb	52	
IIc	51	
IId	55	
IIe	--	Deleted by MIL-STD-2073-1C
IIf	54	
III	10	

6.9 Conversion of heat-sealable bag designators. A conversion table listing the heat sealable bag designators (and corresponding materials) previously identified in MIL-B-117 and the updated designators as currently specified in MIL-DTL-117 may be found in table III.

6.10 Supersession. In addition to the document listed on the front cover, this standard also has superseded the following documents:

MIL-P-116	-	Preservation, Methods of.
MIL-P-14232	-	Parts, Equipment and Tools for Army Materiel, Packaging of
MIL-STD-726	-	Packaging Requirement Codes.
MIL-STD-794	-	Parts and Equipment, Procedures for Packaging of.

MIL-STD-834	-	Packaging Data Forms, Instructions for Preparation and Use of.
MIL-STD-1510	-	Container Design Retrieval System, Procedures for Use of.
MIL-STD-2073-2	-	Packaging Requirement Codes.
MIL-STD-2073	-	DoD Materiel, Procedures for Development and Application of Packaging Requirements.

TABLE I. Approximate fragility factors.

15 G's or less Some inertial guidance platforms and space vehicles.
16 - 24 G's Missile guidance systems, precision aligned test equipment, gyroscopic instruments, some inertial guidance platforms.
25 - 39 G's Mechanically shock-mounted instruments (shock mounts secured prior to packaging provided for in-service use only), vacuum tube electronics equipment.
40 – 59 G's Aircraft accessories such as constant speed drives; electric typewriters, most solid state electronics equipment, oscilloscopes, computer components.
60 – 84 G's TV receivers, aircraft accessories such as generators, starters; some solid state electronics equipment, some circuit cards and some terminal boards.
85 – 110 G's Refrigerators, appliances, some electromechanical equipment, some circuit cards, air duct hoses, attenuators, cable assemblies, some capacitors, gears, housings, receivers, couplers, some resistors, some terminal boards.
110 + G’s Machinery, aircraft structural parts such as landing gear, control surfaces, hydraulic equipment, washers, latch pins, plates, screw brackets, bushings, gaskets, cable assemblies, some capacitors, coupling cover drive discs, fittings, some resistors, rings, rollers, shafts, supports.

TABLE II. Method of preservation vs. appropriate MIL-DTL-117 bag designations and materials.

Method Of Preservation	MIL-DTL-117			Container Bag Material				
	Type	Class	Style	Specification	Type	Class	Characteristics	Tbl. J. VII Bag Code
31 and 32	III	B	2	MIL-PRF-22191 or A-A-3174	III I or II	1 or 2 1	Waterproof; transparent	BL
33	II	C	1	MIL-PRF-121	I	-	Waterproof; greaseproof; opaque	BE
	II	C	2	MIL-PRF-22191	II	1 or 2	Waterproof; greaseproof; transparent	SD
	II	C	3	MIL-PRF-121 and MIL-PRF-22191	I II	- 1 or 2	Waterproof; greaseproof; one side opaque, other side transparent	B2
41* and 51*	I	E	1	MIL-PRF-131	-	1	Watervaporproof; greaseproof; opaque	BS
	I	E	2	MIL-PRF-22191	I	1 or 2	Watervaporproof; greaseproof; transparent	SE
	I	E	3	MIL-PRF-131 and MIL-PRF-22191	- I	1 1 or 2	Watervaporproof; greaseproof; one side opaque, other side transparent	B3
	I	F	1	MIL-PRF-81705	I	1 or 2	Watervaporproof; electrostatic protective; electrostatic and electromagnetic shielding; opaque (Method 41 only)	B9
	II	E	1	MIL-PRF-131	-	2	Watervaporproof; greaseproof; opaque	SF
	IV	E	1	MIL-PRF-131	-	3	Watervaporproof, greaseproof, opaque	SK
42* and 52*	I	E	1	MIL-PRF-131	-	1	Watervaporproof; greaseproof; opaque	BS
	II	E	1	MIL-PRF-131	-	2	Watervaporproof; greaseproof; opaque	SF
	IV	E	1	MIL-PRF-131	-	3	Watervaporproof, greaseproof, opaque	SK

*Limited use – see limitations detailed in MIL-PRF-131for Class 2 materials

TABLE III. Heat-sealable bag designator conversion chart.

Previous MIL-B-117G			Previous Barrier Material Classification				Current MIL-DTL-117H			Current Barrier Material Classification		
Type	Class	Style	Document	Type	Grade	Class	Type	Class	Style	Document	Type	Class
I	B	1	MIL-B-121	I	A	1	II	C	1	MIL-PRF-121	I	-
II	B	1	MIL-B-121	II	A	1	III	C	1	MIL-PRF-121	II	-
III	B	1	MIL-B-121	II	A	1	III	C	1	MIL-PRF-121	II	-
I	B	2	MIL-B-22191 or L-P-378	III I or II	- A	- 1	III	B	2	MIL-PRF-22191 or A-A-3174	III I or	1 or 2 1
I	B	3	MIL-B-121 and MIL-B-22191	I III	A -	1 -	DELETED					
I	C	1	MIL-B-121	I	A	1	II	C	1	MIL-PRF-121	I	-
II	C	1	MIL-B-121	II	A	1	III	C	1	MIL-PRF-121	II	-
I	C	2	MIL-B-22191	II	-	-	II	C	2	MIL-PRF-22191	II	1 or 2
I	C	3	MIL-B-121 and MIL-B-22191	I II	A -	1 -	II	C	3	MIL-PRF-121 and MIL-PRF-22191	I II	- 1 or 2
I	E	1	MIL-B-131	I	-	1	I	E	1	MIL-PRF-131	-	1
I	E	2	MIL-B-22191	I	-	-	I	E	2	MIL-PRF-22191	I	1 or 2
II	E	1	MIL-B-131	I	-	3	IV	E	1	MIL-PRF-131	-	3
III	E	1	MIL-B-131	I	-	2	II	E	1	MIL-PRF-131	-	2
I	E	3	MIL-B-131 and MIL-B-22191	I I	- -	1 -	I	E	3	MIL-PRF-131 and MIL-PRF-22191	- I	1 1 or 2
II	E	3	MIL-B-131 and MIL-B-22191	I I	- -	3 -	DELETED					
I	F	1	MIL-B-81705	I	-	1 or 2	I	F	1	MIL-PRF-81705	I	1 or 2
I	G	1	MIL-B-131	II	-	-	DELETED					
I	H	2	MIL-B-81705	III	-	1 or 2	II	H	2	MIL-PRF-81705	III	1 or 2

APPENDIX A

DEVELOPMENT OF MILITARY PACKAGING REQUIREMENTS

A.1 SCOPE. This appendix provides direction for the development of detailed military packaging requirements in accordance with the figure 1 decision chart referenced in 4.1. This appendix also provides information on:

a. use of procedural packaging specifications (see A.3)

b. packaging of hazardous material (see A.4)

c. categorization (see A.5.3) (see tables A-I, A-II, and A-III)

d. selecting preservation methods (see table A-I)

e. development of predetermined packaging codes (see table A-IV)

f. formatting coded data (see table A-IV and figure A-1)

g. computation of weight and cube of packaging materials (see table A-V)

This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

A.2 APPLICABLE DOCUMENTS

A.2.1 General. The documents listed in this section are specified in sections A.3 through A.8 of this appendix. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections A.3 through A.8 of this appendix, whether or not they are listed.

A.2.2 Government documents.

A.2.2.1 Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

FEDERAL SPECIFICATIONS

PPP-B-140	- Batteries, Storage, Industrial, Automotive, Aircraft and Navy Portable; Packaging of.
PPP-C-795	- Cushioning Material, Packaging (Flexible Closed Cell Plastic Film, for Long Distribution Cycles).
PPP-C-2020	- Chemicals, Liquid, Dry, and Paste: Packaging of.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-V-3	- Valves, Fittings, and Flanges (Except for Systems Indicated Herein); Packaging of.
MIL-DTL-4	- Tires and Inner Tubes; (Non-Aircraft); Packaging of.
MIL-DTL-75	- Electron Tubes, Packaging of.
MIL-S-196	- Support Items, Accessories, and Kits, Mechanical; Packaging of.
MIL-DTL-197	- Packaging of Bearings, Associated Parts and Subassemblies.
MIL-DTL-2845	- Propulsion Systems, Boat and Ship; Main Shafting, Propellers, Bearings, Gauges, Special Tools, and Associated Repair Parts; Preservation, Packaging, Packing and Storage of.
MIL-PRF-3150	- Lubricating Oil, Preservative, Medium.
MIL-M-3184	- Machinery: Deck and Vehicle Mounted With Associated Equipment and Provisioned (Repair Parts) Items; Packaging of.
MIL-C-3993	- Copper and Copper-Base Alloy Mill Products; Packaging of.
MIL-W-5013	- Wheel and Brake Assemblies, Aircraft, General Specification for.
MIL-P-6063	- Packaging of Batteries, Storage, Charged and Dry Uncharged and Moist, General Specification for.
MIL-PRF-6081	- Lubricating Oil, Jet Engine.
MIL-PRF-6085	- Lubricating Oil: Instrument, Aircraft, Low Volatility.
MIL-C-6529	- Corrosion Preventive, Aircraft Engine.

MIL-PRF-7808	- Lubricating Oil, Aircraft Turbine Engine, Synthetic Base.
MIL-PRF-7870	- Lubricating Oil: General Purpose, Low Temperature.
MIL-W-10430	- Welding Rods and Electrodes; Packaging of.
MIL-C-11796	- Corrosion Preventive Compound, Petrolatum, Hot Application.
MIL-DTL-12000	- Cable, Cord, and Wire, Electric; Packaging of.
MIL-PRF-16173	- Corrosion Preventive Compound, Solvent Cutback, Cold-Application.
MIL-E-16298	- Electric Machines Having Rotating Parts, Accessories and Associated Support Items: Packaging of.
MIL-P-16789	- Pumps (Including Prime Movers and Support Items); Packaging of.
MIL-DTL-17667	- Paper, Wrapping, Chemically Neutral (Non-Corrosive).
MIL-DTL-19491	- Semiconductor Devices, Packaging of.
MIL-PRF-21260	- Lubricating Oil, Internal Combustion Engine, Preservative Break-In.
MIL-PRF-23199	- Packaging and Packing Requirements for Special Purpose Mechanical Components and Repair Parts.
MIL-PRF-23827	- Grease, Aircraft and Instrument, Gear and Actuator Screw.
MIL-DTL-28786	- Switches, Electrical and Fiber Optic, Packaging of.
MIL-PRF-32033	- Lubricating Oil, General Purpose, Preservative (Water-Displacing, Low Temperature).
MIL-DTL-39028	- Capacitors, Packaging of.
MIL-DTL-39032	- Resistors, Packaging of.
MIL-PRF-46010	- Lubricant, Solid Film, Heat Cured, Corrosion Inhibiting.

MIL-PRF-46170	-	Hydraulic Fluid, Rust Inhibited, Fire Resistant, Synthetic Hydrocarbon Base, NATO Code No. H-544.
MIL-DTL-55330	-	Connectors, Electrical and Fiber Optic, Packaging of.
MIL-PRF-81322	-	Grease, Aircraft, General Purpose, Wide Temperature Range, NATO Code G-395.
MIL-G-81559	-	Gyroscope Assemblies and Attitude and Directional Reference Instruments for Aircraft; Packaging of.
MIL-PRF-83282	-	Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Metric, NATO Code Number H-537.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-290	-	Packaging and Marking of Petroleum and Related Products.
MIL-STD-758	-	Packaging Procedures for Submarine Support Items.

(Copies of these documents are available online at https://quicksearch.dla.mil.)

A.2.2.2 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 or contract.

INTERSERVICE REGULATIONS

AFMAN24-204/TM 38-250/ NAVSUP PUB 505/DLAI 4145.3	-	Preparing Hazardous Materials for Military Air Shipments

(Copies of this document are available online at www.e-publishing.af.mil.)

CODE OF FEDERAL REGULATIONS

29 CFR	-	Labor.
40 CFR	-	Protection of Environment.
49 CFR	-	Transportation.

(Copies of these documents are available online at https://www.ecfr.gov.)

A.2.3 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 cited in the solicitation or contract.

ASTM INTERNATIONAL

ASTM B660	-	Standard Practices for Packaging/Packing of Aluminum and Magnesium Products (DoD adopted).
ASTM D5118/ D5118M	-	Standard Practice for Fabrication of Fiberboard Shipping Boxes.

(Copies of these documents are available online at www.astm.org.)

INTERNATIONAL DOCUMENTS

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)

Dangerous Goods Regulations

(Copies of this document are available online at www.iata.org.)

INTERNATIONAL MARITIME ORGANIZATION (IMO)

International Maritime Dangerous Goods (IMDG) Code.

(Copies of this document are available online at www.imo.org.)

A.3 USE OF EXISTING PACKAGING REQUIREMENTS

A.3.1 Application. If adequate military packaging requirements have already been developed for the item, these requirements shall be used. If these requirements are in the form of a procedural specification, same shall be documented in accordance with E.4.1.1. Available procedural packaging specifications are listed by commodity in table A-VI.

A.4 HAZARDOUS MATERIAL

A.4.1 General. Packaging and marking for hazardous material shall comply with applicable requirements for performance packaging contained in the following documents:

- International Air Transport Association (IATA) Dangerous Goods Regulations
- International Maritime Dangerous Goods (IMDG) Code
- Code of Federal Regulations (CFR) Title 29, Title 40 and Title 49
- Interservice Publications AFMAN24-204/TM 38-250/NAVSUP PUB 505/DLAI 4145.3 (for Military Air Shipments)
- Joint Manual DLAR 4145.41 “Packaging of Hazardous Material”

A.4.2 Hazardous material package testing. Testing of hazardous material packaging shall be conducted as specified in Appendix F.

A.4.3 Hazardous material shipment documentation. All shipments shall be supported by documentation attesting to the date and the test results obtained from performance packaging testing. The shipper, if not a self-certifier, shall be responsible for assuring that third party sources providing performance testing services are, in fact, registered with the Department of Transportation. The shipper's signed certification that the packaged configuration meets applicable requirements shall be incorporated on the DD Form 250, Materiel Inspection and Receiving Report, or other related acceptance document if the DD Form 250 is not used. All certificates and reports shall be available for inspection by authorized Government representatives for a period of three years.

A.5 MILITARY PACKAGING CODE DEVELOPMENT

A.5.1 Item classification. All materiel to be packaged can be classified into one of three groups of items: common, selective, or special.

a. **Common items** can be categorized by a specific set of chemical, physical, and other characteristics for which complete packaging details are predetermined and are listed in table A-IV using Appendix J coding. These items are characteristically small, rugged items.

b. **Selective items** cannot appropriately use predetermined packaging data and yet do not require a drawing, sketch, illustration, or narrative type instruction to specify packaging details. These packaging details can be specified by Appendix J codes, supplemented by in-the-clear information as required.

c. **Special items** have peculiar characteristics such as weight, configuration, complexity, fragility, or other considerations that preclude their being grouped as common or selective. An item is considered special if drawings, sketches, illustrations, narrative type instructions or a reusable container are required to specify packaging details.

A.5.2 Item characteristics. Knowledge of the physical and chemical characteristics and significant features of the item are required to classify items into groups. These characteristics are item composition, item surface chemistry, criticality of the surface, functional criticality of the item, item compatibility with preservatives and such physical factors as size, weight, and fragility. Knowledge of these characteristics leads to the development of a category code for an item.

A.5.3 Categorization. Tables A-I, A-II, and A-III provide the information for developing category codes. The category code for common items leads to the predetermined packaging codes in table A-IV. The category code for selective items indicates that a non-predetermined packaging code must be established. The category code for special group items indicates that a Special Packaging Instruction (SPI) or stock numbered reusable container is required.

A.5.3.1 Category code. The category code is a four-digit code derived from tables A-I, A-II, and A-III. This code provides a means to concisely define the characteristics of the item being packaged with respect to the following attributes:

a. First category – The chemical and physical characteristics (tables A-I) of the item to be considered in the selection of the proper basic method of preservation (two digits).

b. Second category – The weight, size and non-operational fragility characteristics (table A-II) of the item to be considered in the selection of the proper strength characteristics of a package (one digit).

c. Third category – Preservative requirements (see table A-III) for the item (one digit).

A.5.3.2 Category code development. Items shall be categorized in the order indicated in A.5.3.1 by extracting category code digits associated with the item's applicable characteristics from tables A-I, A-II, and A-III. Categories represent the summation of pertinent chemical, physical and other characteristics that significantly influence the packaging required for adequate protection of items. The designation of the appropriate characteristics of each category, in the sequence as listed, provides four-digit identification that permits the grouping of various items. These groupings, which may contain items dissimilar in function, have the same characteristics and therefore require the same method of preservation. A code "Z" in any of the four positions of the category code will indicate that the item is selective or special. If no "Zs" appear in the code, then the item is common.

A.5.3.2.1 First category – physical and chemical characteristics. The first category examines those characteristics that determine the method of preservation needed to afford the required protection. These are:

a. Item composition/properties.

b. Criticality of item (see 3.6).

c. Compatibility with preservative.

The chemical and physical characteristics of items as applied to table A-I lead to determination of the first two digits of the category code and the appropriate basic method of preservation. A code ZZ will indicate the item is selective or special.

A.5.3.2.1.1 Item composition/properties criteria. This determination is made by physical examination of the item or, if necessary, by researching the design definition of the item.

A.5.3.2.1.2 Critical item criteria. Items meeting one or more of the criteria listed in 3.6 shall be considered as having critical surfaces or applications as listed in table A-I.

A.5.3.2.1.3 Contact preservative criteria. Items susceptible to deterioration, such as iron and steel, require preservative unless prohibited by other factors, such as:

a. Preservative application would damage the item.

b. Preservative would be excessively difficult to remove.

c. Presence of any residual preservative would be incompatible with operational fluids, oils or greases and would potentially cause a malfunction during operation.

A.5.3.2.2 Second category – weight/size/fragility. This category establishes definitive criteria for weight/size/fragility grouping of items. These criteria determine the required cushioning for the item and have direct influence on the container to be used. It provides a means of separating those items which will permit the use of a bag-type container from those requiring containers of greater strength or other desired qualities. Category codes based on weight/size/fragility limitations are found in table A-II. A Code Z will indicate that the item is selective or special.

A.5.3.2.3 Third category – preservatives. This category establishes applicable contact preservative codes. The appropriate codes of table A-III will be shown as the third category. If the required preservative is not listed in the table, assign a "Z" code. A code "Z" will indicate that the item is either selective or special.

A.5.4 Military packaging code development. Procedures for development of military packaging codes are detailed in figure A-2.

A.5.4.1 Military packaging codes for common items. If categorization of an item can be accomplished by a four digit code without using a "Z" code, the item is a "common" item. The correct packaging for common items has been developed by DoD and is thus predetermined. This predetermined data is listed in table A-IV and shall be used for the appropriate four digit categorization for all common items. Sequencing format for this predetermined data is defined in figure A-1.

A.5.4.2 Military packaging codes for selective items. Specific codes shall be developed to define packaging for selective items using appropriate tables in Appendix J. Selection of the proper codes shall be based on the unique protection required for each item. The sequence for developed packaging codes for selective items is also defined in figure A-1. Supplemental data may be required to completely define the packaging.

When the options provided in the Method of Preservation description must be definitized, appropriate specific codes of Appendix J shall be used.

A.5.5 Recording of developed packaging data. Developed military packaging codes shall be recorded in accordance with the requirements contained in E.4.2.

A.6 CONTAINER SELECTION. Acceptable containers and their selection criteria are detailed in Appendix C.

A.7 FORMULAS. Table A-V contains formulas for calculating the weight and sizes of barrier materials, containers, wraps and cushioning.

A.8 PACKAGING DESIGN VALIDATION

A.8.1 Common items. Packaging design validation tests are not required for common items.

A.8.2 Selective and special items. See 5.6 for requirements.

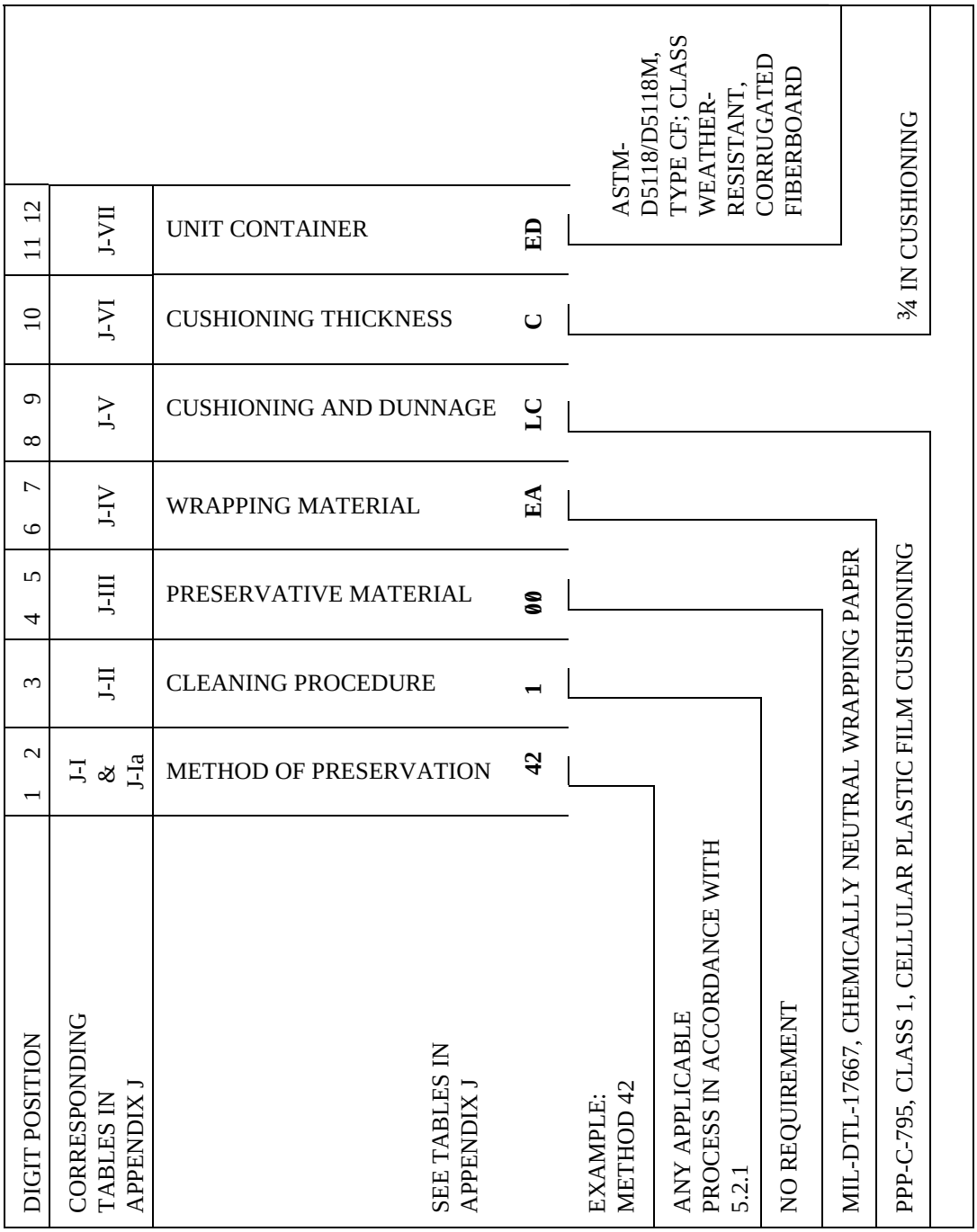

FIGURE A-1. Format for interpretation of packaging code sequence.

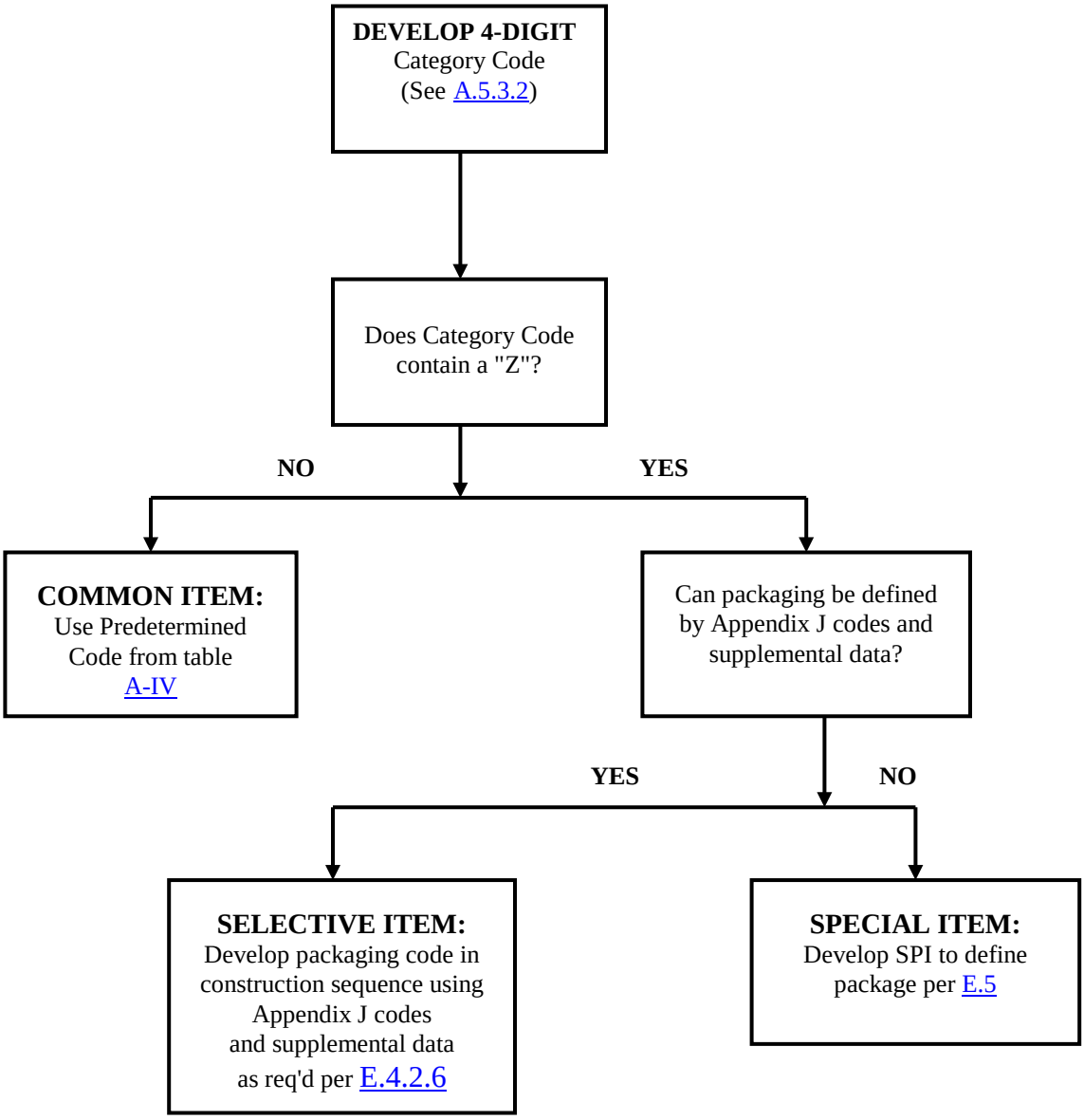

FIGURE A-2. Military packaging data development flow chart.

TABLE A-I. Physical and chemical characteristics category code determination.

BARE METAL ITEMS

Item Composition/Properties (See Note 1)	Is a Contact Preservative Allowable?	Does Item Have Critical Surfaces or Application?	1st and 2nd Digit of Category Code	Basic Method of Preservation (See Note 2)
Iron, steel (bare or black oxide coated); includes all stainless varieties except those having minimum compositions of 17Cr-7Ni	Yes	No	01	20
	Yes	Yes	03	40
	No	No	05	30
	No	Yes	07	50
Magnesium (bare or chromated)	Yes	No	09	30
	No	Yes	11	50
	No	No	13	40
Aluminum, babbitt, beryllium, brass, bronze, cadmium, cobalt, copper, copper alloys, lead, monel, nickel, rough castings, silver, sintered alloys, stainless steel, titanium, tin, zinc	No	No	15	10/See Note 3
	No	Yes	16	30
	Yes	Yes	18	20
Ferrous and non-ferrous combined	No	Yes	20	50
	Yes	No	21	30
None of above			ZZ	

Note 1: Unless otherwise specified, when the material described in the Item Composition/Properties column is combined with a non-metallic material, package to the requirement of the metal present, contact preservative prohibited, and use the appropriate metal category code.
Note 2: Specific techniques to accomplish these basic methods are available and may be used as appropriate, except for the predetermined codes for common items which are defined in table A-IV.
Note 3: If combined with a non-metallic material, package to the requirement of the non-metal present and use the corresponding non-metal category code.
Note 4: Any functional lubricant not requiring removal may be applied to the unsealed equipment.
Note 5: Package to protect item against EMI and ESD damage (not a common item). (See 5.2.4.1.)

TABLE A-I. Physical and chemical characteristics category code determination - Continued.

PLATED OR COATED ITEMS

Item Composition/Properties (See Note 1)	Is a Contact Preservative Allowable?	Does Item Have Critical Surfaces or Application?	1st and 2nd Digit of Category Code	Basic Method of Preservation (See Note 2)
Ferrous metals fully plated with chromium, copper, nickel, silver, tin, gold, iridium, osmium, palladium, rhodium, ruthenium, zinc, cadmium or terne	No	Yes	22	30
	No	No	24	10/See Note 3
	Yes	Yes	25	20
Non-ferrous metals that have been plated	No	No	27	10/See Note 3
	No	Yes	28	30
	Yes	Yes	30	20
Iron or steel which has a phosphate coating, copper or brass which has chromate or black oxide finish over entire surface	No	No	32	30/See Note 3
	No	Yes	33	30
	Yes	Yes	35	20
Anodized aluminum; zinc or zinc-plated iron or steel; zinc alloy castings; alclad aluminum	No	No	37	10/See Note 3
	No	Yes	38	30
Anodized aluminum combined with passivated corrosion resistant steel	No	No	40	10
Metals that are painted, varnished, lacquered or enameled	No	No	41	10/See Note 3
Porous metal, oil impregnated	No	No	42	30
None of above or procedural packaging specification applies			ZZ	

TABLE A-I. Physical and chemical characteristics category code determination - Continued.

NONMETALS

Item Composition/Properties (See Note 1)	Is a Contact Preservative Allowable?	Does Item Have Critical Surfaces or Application?	1st and 2nd Digit of Category Code	Basic Method of Preservation (See Note 2)
Plastics or plastic-fiber composites	No	No	43	10
	No	Yes	44	30
Natural or synthetic rubber	No	Yes	45	30
	No	No	46	30
Leather	No	No	47	10
	No	Yes	48	30
Optical glass, quartz, mica and assemblies using these as component parts	No	Yes	49	40
Carbon, graphite, asbestos, ceramics and glass (other than optical)	No	No	5Ø	10
	No	Yes	51	30
Paper	No	No	52	30
	No	Yes	53	30
Wood or cork	No	No	54	10
	No	Yes	55	30
Cordage and items made of cloth (includes shelf-life clothing)	No	No	56	10
	No	Yes	57	30
Textiles	No	Yes	58	30
None of above or procedural packaging specification applies			ZZ	

TABLE A-I. Physical and chemical characteristics category code determination - Continued.

COMPLETE ELECTRICAL INSTRUMENTS, RADIO AND RADAR SETS, ELECTRONIC ASSEMBLIES, OTHER COMMUNICATIONS EQUIPMENT

Item Composition/Properties (See Note 1)	Is a Contact Preservative Allowable?	Does Item Have Critical Surfaces or Application?	1st and 2nd Digit of Category Code	Basic Method of Preservation (See Note 2)
Assembly may contain any material and is sealed; external surfaces need no further protection against corrosion	No	No	60	10
Assembly may contain any material and is sealed; external surfaces need protection against corrosion	Yes	No	61	40
Assembly may contain any material and is not sealed.	Yes	No	62	50
None of above or procedural packaging specification applies			ZZ	

TABLE A-I. Physical and chemical characteristics category code determination - Continued.

RADIO AND RADAR, OTHER COMMUNICATIONS EQUIPMENT, ELECTRONIC ASSEMBLIES, SUBASSEMBLIES AND COMPONENT PARTS (NOT SEALED)

Item Composition/Properties (See Note 1)	Is a Contact Preservative Allowable?	Does Item Have Critical Surfaces or Application?	1st and 2nd Digit of Category Code	Basic Method of Preservation (See Note 2)
Steel, iron and magnesium	No	No	64	40
	No	Yes	65	50/See Note 4
Electrical nonmetallic combination with gold plating	Yes	No	67	30
Optical glass, quarts and mica (includes plug type electronic connectors, resistors, capacitors, etc.)	No	No	68	30
	No	Yes	69	40
Electrostatic discharge, electro-magnetic, magnetic or radioactivity sensitive devices or parts	No	No	ZZ	40/See Note 5
Copper, bronze, brass, beryllium	No	Yes	72	40
Gold, silver, platinum and iridium and other precious metals	No	No	73	40
Parts move on bearings (any material)	No	Yes	74	50
None of above or procedural packaging specification applies			ZZ	

TABLE A-I. Physical and chemical characteristics category code determination - Continued.

ELECTRICAL-MECHANICAL ASSEMBLIES

Item Composition/Properties (See Note 1)	Is a Contact Preservative Allowable?	Does Item Have Critical Surfaces or Application?	1st and 2nd Digit of Category Code	Basic Method of Preservation (See Note 2)
Bare steel, iron, or magnesium; parts electrically balanced or calibrated	No	No	77	50
End product may contain any material (not sealed)	No	No	80	40
	Yes	Yes	81	40
	No	Yes	83	50/See Note 4
End product may contain any material (sealed)	Yes	Yes	84	30
	No	No	85	10
None of above or procedural packaging specification applies			ZZ	

TABLE A-II. Weight/size/and non-operational fragility category code determination.

Item weight and dimensions	Degree of Fragility	Cate-gory Code
2.0 lbs or less; one dimension 2 inches or less, other dimensions not greater than 24 inches (see Note 1)	Above 110 G's	A
2.0 lbs or less; all dimensions over 2 inches but not greater than 24 inches (see Note 2)	Above 110 G's	B
Over 2.0 lbs to 5.0 lbs; all dimensions not greater than 24 inches	Above 110 G's	C
Over 5.0 lbs to 7.5 lbs; all dimensions not greater than 24 inches	Above 110 G's	D
Over 7.5 lbs to 10.0 lbs; all dimensions not greater than 24 inches	Above 110 G's	E
0.25 lbs or less; one dimension 2 inches or less, other dimensions not greater than 24 inches	85 to 110 G's	F
Over 0.25 lbs to 2.0 lbs; one dimension 2 inches or less, other dimensions not greater than 24 inches	85 to 110 G's	G
2.0 lbs or less; all dimensions over 2 inches, but not greater than 24 inches	85 to 110 G's	H
Over 2.0 lbs to 5.0 lbs; all dimensions not greater than 24 inches	85 to 110 G's	J
Over 5.0 lbs to 7.5 lbs; all dimensions not greater than 24 inches	85 to 110 G's	K
Over 7.5 lbs to 10.0 lbs; all dimensions not greater than 24 inches	85 to 110 G's	L
Over 10.0 lbs regardless of dimensions	Any degree of fragility	Z
Any weight and one dimension greater than 24 inches	Any degree of fragility	Z
Any weight, any dimensions	Less than 85 G's	Z

Note 1. Items that have irregularities or protrusions that require cushioning to protect the package shall be coded F or G.

Note 2. Items that have irregularities or protrusions which require cushioning to protect the package shall be coded H.

TABLE A-III. Contact preservative category code determination.

Preservative Specification	Grade, Type or Class	Description	Uses	Category Code	Corresponding Appendix J Code
MIL-PRF-16173	Grade 1, Hard Film	Asphalt compound dissolved in petroleum solvent; dries to hard film in 4 hours	Protect noncritical metal items in outdoor storage; used on bolts, chains and similar items	A	01
MIL-PRF-16173	Grade 2, Soft Film	Amber colored compound diluted in solvent; dries soft; mixes with oil; applied cold	Extended under cover protection to exterior surfaces of machinery, bearings and instruments; used outdoors for limited periods only	B	02
MIL-C-11796	Class 3, Soft Film	Petrolatum base corrosion preventive; dries soft and greasy	Bearing preservation; machined surfaces that are brushable	C	06
MIL-PRF-32033	One grade only	Light, low viscosity oil containing rust inhibitors	Small arms and automatic weapons protection; components of internal combustion engines	D	09
MIL-PRF-21260	Type I, Grades 10, 30 or 50	Light, medium or heavy viscosity oil with additives	Reciprocating spark-ignition and compression-ignition engines preservation; also all types of ground equipment; oils are operational and need not be drained	E	10

TABLE A-III. Contact preservative category code determination – Continued.

Preservative Specification	Grade, Type or Class	Description	Uses	Category Code	Corresponding Appendix J Code
MIL-PRF-23827	One grade only	Smooth homogenous mix-gelling agent	Ball, roller and needle bearings, gears, electronic items and aircraft control systems	F	11
MIL-PRF-7808	One type only	Synthetic based lubricating oil	Operating lubricating oil for aircraft turbine engines, helicopter transmissions and accessory equipment	G	33
MIL-PRF-46170	Type I	Synthetic hydro-carbon base hydraulic fluids	Intended for use in tank recoil mechanism and hydraulic systems	H	15
MIL-PRF-6085	One grade only	Synthetic oil with additives for anti-oxidation and corrosion protection	Aircraft instruments and electronic equipment	I	17
MIL-PRF-81322	One grade only	Wide temperature range liquid lubricant (grease)	Operating lubricant for aircraft related equipment	J	12
MIL-PRF-16173	Grade 4, transparent film	Solvent dispersed, amber colored, non-tacky film	General purpose indoor and limited outdoor protection where transparency is desired	K	19

TABLE A-III. Contact preservative category code determination – Continued.

Preservative Specification	Grade, Type or Class	Description	Uses	Category Code	Corresponding Appendix J Code
MIL-PRF-83282	One grade only	Hydraulic fluid, fire resistant, synthetic hydrocarbon base	Intended for use from -40° to +205°C in automatic pilots, shock absorbers, air compressor gear boxes, brakes, flap-control mechanisms, missile hydraulic servo-controlled systems and other hydraulic systems using synthetic sealing material	L	65
MIL-PRF-7870	One grade only	Clear transparent lubricating oil suitable for low temperature operations	General purpose	M	50
MIL-PRF-16173	Grade 3, Water Displacing, Soft Film	Solvent dispersed compound that deposits a thin non-drying film that displaces water	Used where fresh or salt water displacing is required; interior machinery surfaces or material under cover	N	03
MIL-PRF-3150	One grade only	Highly refined lubricating oil with corrosion inhibitor added	Lubricating and preserving internal surfaces of machine assemblies (except combustion engines); also for small arms and artillery	P	07

TABLE A-III. Contact preservative category code determination – Continued.

Preservative Specification	Grade, Type or Class	Description	Uses	Category Code	Corresponding Appendix J Code
MIL-C-6529	Type II	Ready mixed material for reciprocating engines	For preserving reciprocating engines and equipment	Q	31
MIL-C-6529	Type III	Ready mixed material for jet aircraft engines	For preserving turbojet engines	R	32
---	---	Vendor's protective grease or oil coating	----	S	49
MIL-PRF-46010	Type I or II	Solid film lubricant intended to reduce wear and prevent galling, corrosion and seizure of materials	Intended for use on aluminum, aluminum alloys, copper and copper alloys, steel and stainless steel, titanium and chromium and nickel bearing surfaces	T	30
MIL-PRF-6081	Grade 1010	Refined petroleum product containing oxidation inhibitors and pour point depressants	Used whenever jet engine oil is required and for the preservation of interiors of fuel cells and fuel systems	U	51
---	---	Preserve with normal operating lubricant	---	W	89

TABLE A-III. Contact preservative category code determination - Continued.

Preservative Specification	Grade, Type or Class	Description	Uses	Category Code	Corresponding Appendix J Code
Special requirement	---	---	---	Z	Appropriate preservative material code from Appendix J
No requirement	---	---	---	Ø	ØØ

TABLE A-IV. Predetermined military packaging data for common items.

Category Codes			Packaging code
Chemical and physical characteristics (from table A-I)	Weight/size/fragility (from table A-II)	Contact Preservative (from table A-III)	
METHOD 10			
15,24,27,37,40,41,43, 47,50,54,56,60, or 85	A	0	1010000000A1
	B	0	1010000000ED
	C	0	1010000NAAED
	D	0	1010000NABED
	E	0	1010000NACED
	F	0	1010000NAAA1
	G	0	1010000NABA1
	H	0	1010000NABED
	J	0	1010000NACED
	K	0	1010000NADED
	L	0	1010000NAFED
METHOD 20			
01,18,25,30, or 35	A	*	201**GH000BD
	B	*	201**GH000ED
	C	*	201**GHNAAED
	D	*	201**GHNABED
	E	*	201**GHNACED
	F	*	201**GHNAABD
	G	*	201**GHNABBD
	H	*	201**GHNABED
	J	*	201**GHNACED
	K	*	201**GHNADED
	L	*	201**GHNAFED

* = Category code for applicable preservative.
** = Applicable preservative code from table J-III.

TABLE A-IV. Predetermined military packaging data for common items - Continued.

Category Codes			Packaging code
Chemical and physical characteristics (from table A-I)	Weight/size/fragility (from table A-II)	Contact Preservative (from table A-III)	
METHOD 30 (WITHOUT PRESERVATIVE)			
05,16,22,28,32,33,38, 42,44,45,46,48,51,52, 53,55,57,58, or 68	A	0	3110000000BL
	B	0	3210000000BL
	C	0	3210000NAABL
	D	0	3210000NABBL
	E	0	3210000NACBL
	F	0	3110000NAABL
	G	0	3110000NABBL
	H	0	3210000NABBL
	J	0	3210000NACBL
	K	0	3210000NADBL
	L	0	3210000NAFBL
METHOD 30 (WITH PRESERVATIVE)			
09,21,67, or 84	A	*	331**GH000BE
	B	*	321**GH000BE
	C	*	321**GHNAABE
	D	*	321**GHNABBE
	E	*	321**GHNACBE
	F	*	331**GHNAABE
	G	*	331**GHNABBE
	H	*	321**GHNABBE
	J	*	321**GHNACBE
	K	*	321**GHNADBE
	L	*	321**GHNAFBE

* = Category code for applicable preservative.
** = Applicable preservative code from table J-III.

TABLE A-IV. Predetermined military packaging data for common items - Continued.

Category Codes			Packaging code
Chemical and physical characteristics (from table A-I)	Weight/size/fragility (from table A-II)	Contact Preservative (from table A-III)	
METHOD 40 (WITHOUT PRESERVATIVE)			
13,49,64,69,72,73, or 80	A	0	4110000000BS
	B	0	4210000000BS
	C	0	4210000NAABS
	D	0	4210000NABBS
	E	0	4210000NACBS
	F	0	4110000NAABS
	G	0	4110000NABBS
	H	0	4210000NABBS
	J	0	4210000NACBS
	K	0	4210000NADBS
	L	0	4210000NAFBS
METHOD 40 (WITH PRESERVATIVE)			
03,61, or 81	A	*	411**GH000BS
	B	*	421**GH000BS
	C	*	421**GHNAABS
	D	*	421**GHNABBS
	E	*	421**GHNACBS
	F	*	411**GHNAABS
	G	*	411**GHNABBS
	H	*	421**GHNABBS
	J	*	421**GHNACBS
	K	*	421**GHNADBS
	L	*	421**GHNAFBS

* = Category code for applicable preservative.
** = Applicable preservative code from table J-III.

TABLE A-IV. Predetermined military packaging data for common items - Continued.

Category Codes			Packaging code
Chemical and physical characteristics (from table A-I)	Weight/size/fragility (from table A-II)	Contact Preservative (from table A-III)	
METHOD 50 (WITHOUT PRESERVATIVE)			
07,11,20,65,74,77, or 83	A	0	5110000000BS
	B	0	5210000000BS
	C	0	5210000NAABS
	D	0	5210000NABBS
	E	0	5210000NACBS
	F	0	5110000NAABS
	G	0	5110000NABBS
	H	0	5210000NABBS
	J	0	5210000NACBS
	K	0	5210000NADBS
	L	0	5210000NAFBS
METHOD 50 (WITH PRESERVATIVE)			
62	A	*	511**GH000BS
	B	*	521**GH000BS
	C	*	521**GHNAABS
	D	*	521**GHNABBS
	E	*	521**GHNACBS
	F	*	511**GHNAABS
	G	*	511**GHNABBS
	H	*	521**GHNABBS
	J	*	521**GHNACBS
	K	*	521**GHNADBS
	L	*	521**GHNAFBS

* = Category code for applicable preservative.
** = Applicable preservative code from table J-III.

TABLE A-V. Calculation of material sizes and weights.

Material	Property	Computation
Wraps	Size	Length = (2 x Item Width) + (2 x Item Ht.) + 2" Width = Item Length + Item Ht. + 1.5"
	Weight	Weight = (Length) x (Width) x (Wrap Weight Factor in lbs/in^2)
Roll Cushioning*	Size	Length = (2 x Item Width + (2 x Item Ht.) + 1") x (No. of Thickness Required) Width = (Item Length) + (Item Ht.) + 1"
	Weight	Weight = (Length) x (Width) x (Cushion Thickness) x (Cushion Density in lbs/cu. in.)
Cut Cushioning*	Size	
	Bottom & Top Pads	Length = Item Length Width = (Item Width) + (2 x Cushion Thickness)
	End Pads	Length = (Item Width) + (2 x Cushion Thickness) Width = (Item Height) + (2 x Cushion Thickness)
	Side Pads	Length = Item Length Width = Item Height
	Weight	Weight = 2 x (Area of Bottom Pad + Area of End Pad + Area of Side Pad) x (Cushion Thickness) x (Cushion Density in lbs/cu. in.)

* Item dimensions must include all wraps, dunnage and containers already applied to the item.

TABLE A-V. Calculation of material sizes and weights – Continued.

Material	Property	Computation
Fiberboard Containers	Size	
	Inside Dimensions	Length = (Item Length) + (2 x Cushion Thickness) Width = (Item Width) + (2 x Cushion Thickness) Height = (Item Height) + (2 x Cushion Thickness)
	Outside Dimensions	Add twice the thickness of the fiberboard to each inside dimension
Flexible Barriers	Size	
	Methods 30 and 40	Length = (2 x Item Width) + (2 x Item Height) + (3") Width = (Item Length) + (Item Height) + (3")
	Method 50	Length = (2 x Item Width) + (2 x Item Height) + (5") Width = (Item Length) + (Item Height) + (5")
	EXCEPTIONS: Minimum size of bag shall be 2-1/2 x 3 inches regardless of calculations; calculated widths shall be extended to the next inch except for the minimum size bag; bag sizes may be adjusted to accommodate packaging equipment when required.	
Note: All size calculations are in inches and all weights are in pounds.		

TABLE A-VI. Procedural packaging specifications.

Commodity	Specification
Aluminum	ASTM B660
Batteries, storage, general	MIL-P-6063
Batteries, storage, industrial and lead acid	PPP-B-140
Bearings	MIL-DTL-197
Cable, electric	MIL-DTL-12000
Capacitors	MIL-DTL-39028
Chemicals	PPP-C-2020
Connectors	MIL-DTL-55330
Copper	MIL-C-3993
Electric machines	MIL-E-16298
Electron tubes	MIL-DTL-75
Engine repair parts	MIL-S-196
Fittings and flanges	MIL-V-3
Gyroscopes	MIL-G-81559
Machinery, deck and vehicle mounted	MIL-M-3184
Magnesium	ASTM B660
Petroleum products	MIL-STD-290
Propellers, ship	MIL-DTL-2845
Pumps	MIL-P-16789
Resistors	MIL-DTL-39032
Semiconductors	MIL-DTL-19491
Special purpose components and repair parts	MIL-PRF-23199
Submarine repair parts	MIL-STD-758
Support items	MIL-S-196
Switches	MIL-DTL-28786
Tires and tubes	MIL-DTL-4
Valves	MIL-V-3
Welding rods	MIL-W-10430
Wheel and brake assemblies, aircraft	MIL-W-5013
Wire, electric	MIL-DTL-12000

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APPENDIX B

FACTORS AND FORMULAS ESTABLISHING MILITARY PACKAGING QUP AND ICQ

B.1 SCOPE. This appendix provides the methods to determine the quantity per unit pack (QUP) and intermediate container quantity (ICQ) for other than hazardous materials, when same is not specified. QUPs will be developed in consonance with existing instructions for establishment of Unit of Issue information. QUP for hazardous material shall be determined after consideration of the user's needs and the most restrictive modal regulation anticipated. This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

B.2 APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

B.3 DETERMINATION OF QUP

B.3.1 Repairable items (depot or field level) or items designated Hi-value or Hi-priority. A QUP of one will be established for all items identified as repairable (depot or field level) or items designated Hi-value or Hi-priority.

B.3.2 Consumable items.

a. QUP shall be one for all consumable items with a unit cost of $50.00 or more.

b. Items of less than $50.00 unit cost may be assigned a QUP of greater than one (1) when the computation utilizing Formula A or B (see B.3.8) so indicates. However, the maximum dollar value of the QUP shall not exceed $200.00 for parts applicable to more than one assembly or $100.00 for parts applicable to only one assembly.

B.3.3 Irregular configuration, delicate or fragile items. The QUP for items of irregular configuration, delicate or fragile nature, not lending themselves to multiple packs, is one each.

B.3.4 Pairs and sets items. The QUP for items which are furnished in pairs, sets, etc., is one pair, one set, etc., as applicable.

B.3.5 Items unit packed in accordance with Method 50. The QUP for items that are unit packed in accordance with Method 50 shall be one.

B.3.6 Kit. A kit will be indicated one each, regardless of the quantity of items contained therein.

B.3.7 Lumber, raw stock, paints, oils and dope. The factors and formulas contained herein are not applicable to lumber, raw stock, paints, oils and dope.

B.3.8 Factors and formulas establishing QUP. The following factors and formulas should be used in determining the quantity per unit pack (QUP).

B.3.8.1 Consumable items having both maintenance and overhaul applications. Formula A (see B.4.1) shall be used to determine the QUP as follows:

a. Determine item unit cost.

b. Sum the factors in the appropriate cost column for Groups I through IV.

c. Determine whether item is applicable to more than one end assembly or applicable to only one end assembly. The QUP will be the number in the appropriate column opposite the above-determined sum of factors.

d. The QUP for consumer items, office supplies, clothing, commercial hardware, and similar items can be modified as necessary to assure uniformity and compatibility with retail or consumer packaging.

e. Delicate or fragile peculiar parts costing $2.50 or less and lending themselves to multiple packs, with a final sum of factors score of five or more and similar common parts with a final sum of factors score of four or more will be afforded the next lesser QUP rather than that normally specified.

f. In determining QUP for those items for which actual replacement factors are not available, estimated factors will be used, and the appropriate numerical rate assigned.

B.3.8.2 Consumable items having overhaul applications only. Formula B (see B.4.2) shall be used to determine the QUP as follows:

a. Determine quantity required per end assembly.

b. Sum the factors in the appropriate column for Groups I through IV.

c. Determine whether item is applicable to more than one end assembly or applicable to only one end assembly. The QUP will be the number in the appropriate column opposite the above-determined sum of factors.

d. In determining QUP for those items for which actual replacement factors are not available, estimated factors will be used, and the appropriate numerical rate assigned.

B.4 QUANTITY PER UNIT PACK DETERMINATION FORMULAS

B.4.1 Formula A - (For consumable items having both maintenance & overhaul applications.)

	Cost per item in dollars					
	.01 to .50	.51 to 4.00	4.01 to 10.00	10.01 to 20.00	20.01 to 35.00	35.01 to 50.00
GROUP I - Cost factor	+4	+3	+2	+1	0	-2
GROUP II - Weight & cube factor						
0 to 0.01 cu ft. and 0 to 0.19 lb.	+2	+2	+2	+2	+2	+2
0.02 to 1.00 cu ft. and 0.20 to 1.00 lb.	+1	+1	+1	+1	+1	+1
1.01 to 2.00 cu ft. and 1.01 to 2.00 lb.	0	0	0	0	0	0
2.01 to 3.00 cu ft. and 2.01 to 5.00 lb.	-1	-1	-1	-1	-1	-1
Items exceeding 3.00 cu ft. or 5.00 lb. will be packaged in QUP of one each.						
GROUP III – Replacement factor (see B.3.8.1.f)						
1% thru 20%	-2	-2	-2	-2	-2	-2
21% thru 50%	-1	-1	-1	-1	-1	-1
51% or more	0	0	0	0	0	0
GROUP IV - Method of preservation factor						
Methods 10 and 20	0	0	0	0	0	0
Methods 30 and 40	-2	-2	-2	-2	-2	-2

Sum of Factors	QUP for parts applicable to more than one assembly (see B.3.8.1.c)	QUP for parts applicable to only one assembly
0 or less	1	1
1	5	1
2	10	5
3	10	5
4	25 (see B.3.8.1.e)	10
5	50 (see B.3.8.1.e)	25
6	50 (see B.3.8.1.e)	50

B.4.2 Formula B - (For consumable items having overhaul applications only.)

	Quantity required per end assembly			
	8 or Over	5 to 7	3 to 4	1 to 2
GROUP I – Quantity required per assembly factor	+6	+5	+4	+2
GROUP II – Weight & cube factor rates				
0 to 0.01 cu ft. & 0 to .19 lb.	+2	+2	+2	+2
0.02 to 1.00 cu ft. & 0.20 to 1.00 lb	+1	+1	+1	+1
1.01 to 2.00 cu ft. & 1.01 to 2.00 lb	-5	-4	-4	-2
2.01 to 3.00 cu ft. & 2.01 to 5.00 lb	-6	-5	-5	-3
Items exceeding 3.00 cu ft. or 5.00 lb. will be packed in QUP of one each.				
GROUP III – Replacement factor (see B.3.8.2.d)				
1% thru 5%	-4	-4	-4	-4
6% thru 20%	-3	-3	-3	-3
21% thru 40%	-2	-2	-2	-2
41% thru 75%	0	0	0	0
76% thru 100%	+1	+1	+1	+1
GROUP IV – Method of preservation factor				
Methods 10 and 20	0	0	0	0
Methods 30 and 40	-2	-2	-2	-2

Sum of Factors	QUP for parts applicable to more than one assembly (see B.3.8.2.c)	QUP for parts applicable to only one assembly
0 or less	1	1
1	5	1
2	10	5
3	10	5
4	25	10
5	50	25
6	50	50
7	100	50
8	200	100*
9	500	

*Use QUP of 100 each only in instances where more than 100 each of an item is required per end assembly or is required for multiuse in a shop function where 100 each or more may be consumed at one location in a reasonable amount of time.

B.5 DETERMINATION OF ICQ

B.5.1 Quantities per intermediate container. Except as otherwise specified herein or specified by the contract, unit packs requiring intermediate packing shall be packed in quantities governed by the following:

a. Maximum of 100 unit packs to the intermediate container.

b. Maximum net load of 40 pounds.

c. Maximum size of 1.5 cubic feet with at least two dimensions not exceeding 16 inches.

Table B-I offers a guide to the quantity of unit packs that could be placed in the intermediate container based on the above criteria.

B.5.2 Intermediate container limitations. Quantities of unit packs prescribed may be varied under any one of the following conditions:

a. When the quantity to be shipped to a single destination is less than the established intermediate quantity, the total quantity shall be placed in a shipping container of a minimum size to contain the unit packs.

b. When a contract or order specifies a total quantity that is more than the established intermediate quantity, but not in multiples thereof, established quantities shall be packed in the required number of intermediate containers, and the remaining quantity shall be placed in the smallest container which will accommodate the remaining unit packs.

TABLE B-I. Guidance for establishing number of unit packs per intermediate container (see Notes 1, 2 and 3).

Unit packs per int. container	Unit pack weight (lbs)	Unit pack cube (cu. ft.)
100	.4	.0150
96	.41	.0156
92	.43	.0163
88	.46	.0170
84	.47	.0178
80	.5	.0187
76	.52	.0197
72	.55	.0208
68	.59	.0220
64	.62	.0234
60	.66	.0250
56	.71	.0267
52	.77	.0288
48	.83	.0312
44	.91	.0340
40	1.0	.0375
36	1.11	.0416
32	1.25	.0478
28	1.43	.0535
24	1.66	.0625
20	2.0	.0750
16	2.5	.0937
12	3.33	.1250
8	5.	.1870
4	10.	.3750

Note 1 Either the unit pack weight or unit pack cube, whichever is the bottommost entry in its respective column of the table, is the controlling factor in determining the number of unit packs per intermediate container. When the controlling factor falls between any two values listed in the appropriate column, the ICQ is the lesser of the two corresponding quantities given in the table.

Note 2 The following examples illustrate correct use of the table:

a. If the unit pack weight is .60 pounds and the unit cube in feet is .0175, 64 units would be placed in the intermediate container.

b. If the unit pack weight is .49 pounds and the unit pack cube in feet is .0265, 56 unit packs would be placed in the intermediate container.

Note 3 Any unit pack that exceeds either ten pounds or 0.3750 cu. ft. shall not have an intermediate container.

APPENDIX C

CONTAINERS

C.1 SCOPE. This appendix provides general requirements for containers used in military packaging, lists available containers that meet the requirements of this standard, and provides information to assist in the selection of the most economical container that will provide the required protection for any given application. This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

C.2 APPLICABLE DOCUMENTS

C.2.1 General. The documents listed in this section are specified in sections C.3, C.4, and C.5 of this appendix. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections C.3, C.4, and C.5 of this appendix, whether or not they are listed.

C.2.2 Government documents.

C.2.2.1 Specifications, standards and drawings. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

FEDERAL SPECIFICATIONS

PPP-B-566	-	Boxes, Folding, Paperboard.
PPP-B-585	-	Boxes, Wood, Wirebound.
PPP-B-676	-	Boxes, Setup.
PPP-B-1672	-	Boxes, Shipping, Reusable With Cushioning.
PPP-C-96	-	Cans, Metal, 28 Gage and Lighter.
PPP-D-729	-	Drums, Shipping and Storage, Steel, 55-Gallon (208 Liters).
PPP-T-495	-	Tubes, Mailing, and Filing

APPENDIX C

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-DTL-117	-	Bags, Heat-Sealable.
MIL-DTL-2427	-	Box, Ammunition Packing, Wood, Nailed.
MIL-DTL-6054	-	Drum, Metal-Shipping and Storage.
MIL-D-6055	-	Drum, Metal Reusable, Shipping and Storage (Cap. 88 to 510 cubic inches).
MIL-DTL-6060	-	Bags, Watervaporproof, Heat-Sealable, Complex
MIL-PRF-11264	-	Container: Shipping, Reusable - for Tank Automotive Engines, Transmissions, Differentials, Transfers, Final Drives, Drive Axles, and Similar Assemblies.
MIL-DTL-22020	-	Bags, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated.
MIL-DTL-46506	-	Boxes, Ammunition Packing, Wood, Wirebound.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-648	-	Design Criteria for Specialized Shipping Containers.
MIL-STD-3010	-	Test Procedures for Packaging Materials.
MS24347	-	Drums, Metal, Reusable, Shipping and Storage.
MS27683	-	Drum, Metal, Shipping and Storage, 16 to 80 Gallons.
MS27684	-	Drum, Metal, Shipping and Storage, 3 to 12 Gallons.

(Copies of these documents are available online at https://quicksearch.dla.mil.)

C.2.2.2 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 are those cited in the solicitation or contract.

NAVICP DRAWINGS

P069	-	Container, Molded, Reusable.
13414	-	Container, Modular, Reusable.
15024	-	Container, Shipping and Storage.
15450	-	Container, Shipping and Storage.

(These drawings may be obtained from NAVSUP Weapon Systems Support code N241, 700 Robbins Avenue, Philadelphia, PA 19111-5098.)

WARNER ROBINS AIR LOGISTIC CENTER DRAWINGS

11214-5002-100	-	Container, Shipping and Storage.
11214-5002-200	-	Container, Shipping and Storage.
11214-5002-300	-	Container, Shipping and Storage.
11214-5002-400	-	Container, Shipping and Storage.

(These drawings may be obtained from WR-ALC/TILAS, 420 Second St., Suite 100, Robins AFB, GA 31098-1640.)

C.2.3 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 cited in the solicitation or contract.

ASTM INTERNATIONAL

ASTM D5118/ D5118M	-	Standard Practice for Fabrication of Fiberboard Shipping Boxes (DoD adopted).
ASTM D5168	-	Standard Practice for Fabrication and Closure of Triple Wall Corrugated Fiberboard Containers (DoD adopted).
ASTM D6039/ D6039M	-	Standard Specification for Crates, Wood, Open and Covered (DoD adopted).

ASTM D6251	-	Standard Specification for Wood-Cleated Panelboard Shipping Boxes (DoD adopted).
ASTM D6256/ D6256M	-	Standard Specification for Wood-cleated Shipping Boxes with Skidded, Load-Bearing Bases (DoD adopted).
ASTM D6880	-	Standard Specification for Wood Boxes.
ASTM D7478/ D7478M	-	Standard Specification for Heavy Duty Sheathed Wood Crates.

(Copies of these documents are available online at http://www.astm.org.)

C.3 GENERAL

C.3.1 Unit container size. Flexible and rigid containers shall be sized to provide a snug fit for the wrapped and cushioned item. Appropriate dunnage shall be used to fill voids. The sequence of length, width and depth for ordering purposes shall be in accordance with the applicable container specification.

C.3.2 Use of unit containers as shipping containers. Unit containers serve as shipping containers only for the packing levels indicated in table C-II.

C.4 EXPENDABLE CONTAINERS

C.4.1 Interior containers. Table C-I lists specifications for various interior containers.

C.4.2 Exterior containers. Table C-II lists specifications for various exterior containers with their weight limitations and the levels of military packing for which their use is acceptable. Unit containers that also serve as shipping containers must be selected from this table. When containers fabricated in accordance with ASTM D5118/D5118M are required, an appropriate standard size shall be selected from table C-III. When one of these standard sizes cannot be used, the size of the selected container shall provide a snug fit for the wrapped and cushioned item.

C.5 REUSABLE CONTAINERS

C.5.1 Specialized containers.

C.5.1.1 Design. The design, development, test and evaluation of specialized shipping containers for major equipment items and items which are subject to repair or Technical Order Compliance (TOC) shall be in accordance with the requirements specified by the acquisition activity.

C.5.1.2 Container Design Retrieval System (CDRS). When developing the packaging requirements in accordance with 4.1 and when it has been determined that a specialized long life container is required for an item, CDRS services shall be utilized in accordance with Appendix H and as specified on the Contract Data Requirements List (see 6.3).

C.5.1.3 Specialized shipping containers. General design criteria for reusable containers (includes ordnance and non-ordnance related items) shall be in accordance with MIL-STD-648. Container design and test requirements must be tailored based on the logistics and engineering requirements of the item to be packaged.

C.5.2 Multi-application containers.

C.5.2.1 Design and selection. Multi-application containers employ shock reduction systems that are able to protect a wide range of items to specified G-levels. Although these containers are designed to protect repairable fragile items, features such as reusability, versatility, and low labor costs of insertion and removal of the item make them cost effective for many less fragile and non-repairable items. The DoD packaging activity (at the inventory control point), contractor, subcontractor, or vendor shall select the appropriate multi-application container for an item based on the size, weight, and fragility parameters listed in table C-IV.

C.5.2.2 Identification. All multi-application containers are assigned National Stock Numbers (NSNs) as indicated in table C-IV.

C.5.2.3 Coded data. Appendix J provides codes to identify each type of multi-application container. This code, plus dimensions, completely specifies the type and size of container in acquisition documents and DoD data systems.

C.5.2.4 Packaging design validation. The validation of packaging designs using multi-application containers shall be as follows:

a. Packages for items which meet the weight, dimension, and fragility factors of table C-IV do not require design validation.

b. In cases where the fragility factor of an item is unknown, or is less than that listed in table C-IV, packaging validation testing to verify the ability of the selected multi-application container to protect the item shall be conducted in accordance with the provisions of Appendix F.

C.5.2.5 Short life containers. Container Types I thru IV listed in table C-IV are short life multi-application containers. These containers are briefly described as follows:

a. Type I. Consists of a polyurethane foam cushion insert with a diecut, star shaped, vertical cavity, and top and bottom pads of the same material assembled in the container. Type I is used for packaging fragile items, either rectangular or cylindrical in shape, such as meters, gauges, and air speed indicators. Items packaged in this star pack type are inserted (loaded) into the cavity from the top of the container prior to placing the top pad in place.

b. Type II. Consists of a convoluted polyurethane foam cushion bonded to container board. This assembly is subsequently folded up to become the slide of a modified triple slide box. Although the cushioning provides protection against shock, it essentially holds the item in place by pre-compression of the convoluted tips. Type II is used for circuit boards and electronic modules. It is also used for packing glass envelope electronic tubes or other items whose depth does not exceed the limits shown in table C-IV.

c. Type III. Consists of a telescoping container with bonded convoluted (some end and side pads are flat sheet stock) polyurethane foam cushioning which forms an oblong cavity. Type III is used to pack equipment such as receiver-transmitters, amplifiers, power supply units, and electronic indicators.

d. Type IV. Consists of a two piece (top and bottom) polyurethane foam insert, which forms a star shaped cavity when the two pieces are mated in conjunction with end pads of flat sheet stock. The insert components and end pads are bonded in place in a half telescoping container fabricated in accordance with ASTM D5118/D5118M, Type CF, Style DBLCC. The cushioning insert is similar to the Type I star pack insert except that it is cut along (horizontal to) its greatest dimensional length to facilitate insertion (loading) and extraction of relatively long, rectangular or cylindrical items such as voltage regulators, electronic receivers, panels, transmitters, couplers and amplifiers.

When using these short life containers for items which do not completely fill the preformed cushion cavity, the item shall be immobilized by adding additional compatible cushioning material. Items whose dimensions slightly exceed the cushion cavity can be carefully pressed into position.

C.5.2.6 Long life containers. Container Types VI thru X listed in table C-IV are long life multi-application containers. These containers are briefly described as follows:

a. Type VI. Consists of two halves of a polyethylene blow molded container with polyurethane cushioning. This is used to ship circuit cards and similar type components.

b. Type VII. Consists of a plastic type container with bonded convoluted polyurethane foam cushioning that forms a cavity.

c. Type VIII. Consists of a plastic type container with a wire isolator platform to which is strapped highly sensitive equipment.

d. Type IX. Consists of two halves of a plastic container. A load platform suspended by elastomeric isolators is in one half. Strap tie-downs are used to hold items in place on the load platform. Type IX containers are made in four varieties and provide 15G shock protection for shock sensitive avionics-type equipment in the 10 to 91 pound weight range.

e. Type X. Consists of two halves of a plastic container. A load platform suspended by elastomeric isolators is in the bottom half. Strap tie-downs are used to hold items in place on the load platform. Type X containers are made in seven sizes and provide 45 G shock protection for shock sensitive electronics-type equipment in the 3-75 pound weight range.

C.5.2.7 Multi-application container availability.

C.5.2.7.1 General Services Administration (GSA). Types I through IV and Type IX multi-application containers are stocked by GSA (Federal Supply Service). DoD and Federal Agencies may obtain them from GSA. When authorized by the administrative contracting officer and with concurrence of the GSA regional office affected, Government contractors may buy direct from GSA. The Government may also elect to supply these packs to contractors as government furnished property.

C.5.2.7.2 Naval Supply Systems Command Weapon Systems Support (NAVSUP WSS). Types VI through VIII and X are managed by the NAVSUP WSS. DoD and Federal Agencies may obtain them from NAVSUP WSS, Philadelphia, PA. The Government may also elect to supply these packs to contractors as government furnished property.

C.5.2.7.3 Commercial sources. Suppliers of the multi-application containers are located nationwide. Names of these suppliers are available from the Contract Administration Activity.

TABLE C-I. Interior containers.

Specification	Description
PPP-B-566	Boxes, Folding, Paperboard: Variety 1, Process I or II Variety 2, Process I Variety 2, Process II
PPP-B-676	Boxes, Setup
PPP-C-96	Cans, Metal, 28 Gage and Lighter
PPP-T-495	Tubes, Mailing, and Filing
MIL-DTL-117	Bags, Heat-Sealable
MIL-DTL-6060	Bags, Watervaporproof, Heat-Sealable, Complex
MIL-DTL-22020	Bags, Transparent, Flexible, Sealable, VCI Treated
ASTM D5118/D5118M	Fiberboard Shipping Boxes: Class domestic

NOTE: Closure of containers shall be accomplished in accordance with the applicable container specification.

TABLE C-II. Exterior shipping containers - selection by maximum weight of contents and level of packing.

Specification	Description	Weight of Contents (lbs., max)	Military Packing Level	Remarks
PPP-B-585	Boxes, Wood, Wirebound Class 1 Class 3	 400 300	 B A	
PPP-B-1672	Box, Shipping, Reusable with Cushioning		B	See table C-IV, Type I thru IV for weight and size restrictions
PPP-D-729	Drums, Shipping and Storage, Steel, 55-Gallon		A	
MIL-DTL-2427	Box, Ammunition Packing: Wood, Nailed		A	Top opening or end opening with or without handles
MIL-DTL-6054	Drum, Metal-Shipping and Storage		A	MS27683: 16 to 80 gal capacity MS27684: 3 to 12 gal capacity

NOTE: Closure of containers shall be accomplished in accordance with the applicable container specification.

TABLE C-II. Exterior shipping containers - selection by maximum weight of contents and level of packing – Continued.

Specification	Description	Weight of Contents (lbs., max)	Military Packing Level	Remarks
MIL-D-6055	Drum, Metal Reusable, Shipping and Storage (Cap. 88 to 510 cubic inches)		A	MS24347; various sizes available
MIL-PRF-11264	Containers, Shipping, Reusable		A	For vehicular assemblies weighing over 1600 pounds
MIL-DTL-46506	Boxes, Ammunition Packing, Wood, Wirebound		A	Top opening, with or without handles
NAVICP Dwg. P069	Container, Molded, Reusable	4	A	For circuit boards and modules; See table C-IV, Type VI
NAVICP Dwg. 13414	Container, Modular, Reusable	120	A	For major repairables; See table C-IV, Type VII
NAVICP Dwg. 15024	Container, Shipping and Storage	40	A	For gyroscopic instruments; See table C-IV, Type VIII
NAVICP Dwg. 15450	Container, Shipping and Storage	75	A	For depot level repairables; see table C-IV, Type X

NOTE: Closure of containers shall be accomplished in accordance with the applicable container specification

TABLE C-II. Exterior shipping containers - selection by maximum weight of contents and level of packing – Continued.

Specification	Description	Weight of Contents (lbs., max)	Military Packing Level	Remarks
WRALC Dwg. 11214-5002-100	Container, Shipping and Storage	16.5	A	For gyroscopic instruments; See table C-IV, Type IX
WRALC Dwg. 11214-5002-200	Container, Shipping and Storage	25	A	For gyroscopic instruments; see table C-IV, Type IX
WRALC Dwg. 11214-5002-300	Container, Shipping and Storage	54	A	For gyroscopic instruments; see table C-IV, Type IX
WRALC Dwg. 11214-5002-400	Container, Shipping and Storage	91	A	For gyroscopic instruments; see table C-IV, Type IX
ASTM D5118/ D5118M	Fiberboard Shipping Boxes Weather resistant	See appropriate table in ASTM D5118/ D5118M	B	See table C-III for standard sizes
ASTM D5168	Boxes, Fiberboard, Corrugated, Triple Wall, Weather Resistant	See ASTM D5168	B	
ASTM D6039/ D6039M	Crates, Wood, Open and Covered Style A Style B	4,000	 A B	For size and weight restrictions, see ASTM D6039/ D6039M

NOTE: Closure of containers shall be accomplished in accordance with the applicable container specification.

TABLE C-II. Exterior shipping containers - selection by maximum weight of contents and level of packing – Continued.

Specification	Description	Weight of Contents (lbs., max)	Military Packing Level	Remarks
ASTM D6251	Wood-Cleated Panelboard Boxes Type III Class 1, domestic Class 2, overseas	 1000 1000	 B A	 Plywood panels Plywood panels
ASTM D6256/ D6256M	Wood Cleated Shipping Boxes with Skidded, Load Bearing Bases	2,500	A,B	
ASTM D6880	Boxes, Wood Class 1 – Light Duty Class 2 – Heavy Duty	 800 1,000	 B A	 Skidded as required
ASTM D7478/D7478M	Heavy Duty, Sheathed Wood Crates	30,000	A	Different base styles are available

NOTE: Closure of containers shall be accomplished in accordance with the applicable container specification.

TABLE C-III. Fiberboard container size list.

Container Inside Dimensions (inches)	National Stock No.	Container Wt. (lbs.)	Container Out-side Dimensions (inches)	Container Cube (cu . ft.)	Type	Grade	Class	Style	Variety	Bursting Strength ($lbs/in.^2$)
4x4x12	8115-00-418-4660	.74	4.3x4.3x12.5	.134	CF	V3c	WR	RSC	SW	350
4x4x16	8115-00-200-6954	.72	4.3x4.3x16.5	.177	CF	V3c	WR	RSC	SW	350
5x5x20	8115-01-030-3532	.88	5.3x5.3x20.5	.333	CF	W5c	WR	RSC	SW	275
6x6x10	8115-00-417-9440	.68	6.3x6.3x10.5	.241	CF	V3c	WR	RSC	SW	350
6x6x18	8115-00-190-4920	1.00	6.3x6.3x18.5	.425	CF	V3c	WR	RSC	SW	350
6x6x24	8115-00-190-4921	1.25	6.3x6.3x24.5	.563	CF	V3c	WR	RSC	SW	350
8x8x8	8115-00-183-9498	.90	8.3x8.3x8.5	.339	CF	W5c	WR	RSC	SW	275
8x8x10	8115-00-183-9499	1.02	8.3x8.3x10.5	.419	CF	W5c	WR	RSC	SW	275
8x8x12	8115-00-281-3882	1.12	8.3x8.3x12.5	.498	CF	V3c	WR	RSC	SW	350
8x8x14	8115-01-166-6459	1.25	8.3x8.3x14.5	.578	CF	V3c	WR	RSC	SW	350
8x8x16	8115-00-190-4936	1.35	8.3x8.3x16.5	.658	CF	V3c	WR	RSC	SW	350
8x8x24	8115-00-417-9442	1.80	8.3x8.3x24.5	.977	CF	V3c	WR	RSC	SW	350
9x6x6	8115-00-190-4950	.66	9.3x6.3x6.5	.220	CF	W5c	WR	RSC	SW	275
9x6x18	8115-01-029-6777	1.50	9.3x6.3x18.5	.627	CF	W5c	WR	RSC	SW	275
9x9x9	8115-01-166-6460	1.15	9.3x9.3x9.5	.476	CF	V3c	WR	RSC	SW	350
10x6x4	8115-00-183-9496	.60	10.5x6.3x4.5	.172	CF	W5c	WR	RSC	SW	275
10x8x6	8115-00-183-9497	.90	10.5x8.3x6.5	.328	CF	W5c	WR	RSC	SW	275
10x10x8	8115-00-183-9494	1.26	10.5x10.5x8.5	.542	CF	W5c	WR	RSC	SW	275
10x10x10	8115-00-190-4959	1.40	10.5x10.5x10.5	.670	CF	V3c	WR	RSC	SW	350
10x10x12	8115-01-034-0370	1.50	10.5x10.5x12.5	.798	CF	V3c	WR	RSC	SW	350
10x10x16	8115-00-417-9414	1.80	10.5x10.5x16.5	1.053	CF	V3c	WR	RSC	SW	350
11x11x11	8115-00-417-9406	1.70	11.5x11.5x11.5	.880	CF	V3c	WR	RSC	SW	350
11.25x8.75x4	8115-01-012-5003	.93	11.5x9.0x6.5	.389	CF	V3c	WR	RSC	SW	350
11.25x8.75x18	8115-00-190-4969	1.86	11.5x9.0x18.5	1.108	CF	V3c	WR	RSC	SW	350
12x6x6	8115-00-183-9492	.78	12.5x6.3x6.5	.296	CF	V3c	WR	RSC	SW	350
12x6x12	8115-00-190-4974	1.15	12.5x6.3x12.5	.570	CF	W5c	WR	RSC	SW	275
12x6x15	8115-00-417-9380	1.32	12.5x6.3x15.5	.706	CF	V3c	WR	RSC	SW	350
12x9x6	8115-01-011-3626	1.10	12.3x9.3x6.5	.430	CF	V3c	WR	RSC	SW	350
12x12x8	8115-00-417-9378	1.50	12.5x12.5x8.5	.769	CF	V3c	WR	RSC	SW	350
12x12x10	8115-00-183-9490	1.81	12.5x12.5x10.5	.949	CF	V3c	WR	RSC	SW	350
12x12x12	8115-00-183-9491	1.97	12.5x12.5x12.5	1.130	CF	V3c	WR	RSC	SW	350
12x12x14	8115-00-409-3807	2.14	12.5x12.5x14.5	1.311	CF	V3c	WR	RSC	SW	350
13x13x13	8115-01-166-6461	2.48	13.3x13.3x13.5	1.382	CF	V3c	WR	RSC	SW	350
14x10x6	8115-00-495-5458	1.35	14.5x10.5x6.5	.573	CF	V3c	WR	RSC	SW	350
14x10x10	8115-01-030-3537	1.68	14.5x10.5x10.5	.925	CF	V3c	WR	RSC	SW	350
14x12x8	8115-00-183-9488	1.80	14.5x12.5x8.5	.892	CF	V3c	WR	RSC	SW	350
14x14x12	8115-00-183-9489	2.22	14.5x14.5x12.5	1.521	CF	V3c	WR	RSC	SW	350
14x14x14	8115-00-417-9321	2.68	14.5x14.5x14.5	1.764	CF	V3c	WR	RSC	SW	350
14x14x16	8115-00-585-4906	2.75	14.5x14.5x16.5	2.008	CF	V3c	WR	RSC	SW	350
14x14x18	8115-00-417-9320	3.00	14.5x14.5x18.5	2.251	CF	V3c	WR	RSC	SW	350
15x15x10	8115-00-417-9318	2.55	15.5x15.5x10.5	1.460	CF	V3c	WR	RSC	SW	350
16x12x8	8115-00-183-9487	1.93	16.5x12.5x8.5	1.015	CF	V3c	WR	RSC	SW	350
16x12x12	8115-00-418-4653	2.28	16.5x12.5x12.5	1.492	CF	V3c	WR	RSC	SW	350
16x16x12	8115-00-451-7853	3.09	16.5x16.5x12.5	1.969	CF	V3c	WR	RSC	SW	350
16x16x16	8115-00-190-5002	3.50	16.5x16.5x16.5	2.600	CF	V3c	WR	RSC	SW	350
18x12x12	8115-00-514-2409	2.50	18.5x12.5x12.5	1.673	CF	V3c	WR	RSC	SW	350
18x15x10	8115-00-190-5007	2.81	18.5x15.5x10.5	1.742	CF	V3c	WR	RSC	SW	350

TABLE C-III. Fiberboard container size list – Continued.

Container Inside Dimensions (inches)	National Stock No.	Container Wt. (lbs.)	Container Out-side Dimensions (inches)	Container Cube (cu . ft.)	Type	Grade	Class	Style	Variety	Bursting Strength (lbs/in.^{2})
18x15x15	8115-00-417-9292	3.34	18x5x15.5x15.5	2.572	CF	V3c	WR	RSC	SW	350
18x18x12	8115-00-183-9482	3.64	18x5x18.5x12.5	2.476	CF	V3c	WR	RSC	SW	350
18x18x18	8115-00-428-4185	4.38	18.5x18.5x18.5	3.664	CF	V3c	WR	RSC	SW	350
20x10x10	8115-01-166-6462	2.05	20.5x10.5x10.5	1.308	CF	V3c	WR	RSC	SW	350
20x12x12	8115-01-008-3645	2.60	20.3x12.3x12.5	1.806	CF	V3c	WR	RSC	SW	350
20x20x12	8115-00-428-4183	4.30	20.5x20.5x12.5	3.040	CF	V3c	WR	RSC	SW	350
20x20x20	8115-00-428-4158	5.35	20.5x20.5x20.5	4.986	CF	V3c	WR	RSC	SW	350
22x22x12	8115-00-428-4145	5.00	22.5x22.5x12.5	3.662	CF	V3c	WR	RSC	SW	350
24x12x12	8115-01-166-6464	2.90	24.5x12.5x12.5	2.215	CF	V3c	WR	RSC	SW	350
24x16x12	8115-00-183-9481	3.80	24.5x16.5x12.5	2.924	CF	V3c	WR	RSC	SW	350
24x16x16	8115-00-292-0123	4.32	24.5x16.5x16.5	3.860	CF	V3c	WR	RSC	SW	350
24x18x18	8115-01-163-9189	5.00	24.5x18.5x18.5	4.853	CF	V3c	WR	RSC	SW	350
24x20x16	8115-00-417-9236	5.30	24.5x20.5x16.5	4.796	CF	V3c	WR	RSC	SW	350
24x24x10	8115-00-428-4124	5.45	24.5x24.5x10.5	3.647	CF	V3c	WR	RSC	SW	350
24x24x12	8115-00-174-2354	5.75	24.5x24.5x12.5	4.342	CF	V3c	WR	RSC	SW	350
24x24x16	8115-01-119-2523	6.05	24.5x24.5x16.5	5.732	CF	V3c	WR	RSC	SW	350
24x24x20	8115-01-166-6451	6.70	24.5x24.5x20.5	7.121	CF	V3c	WR	RSC	SW	350
24x24x24	8115-00-417-9416	7.62	24.5x24.5x24.5	8.510	CF	V3c	WR	RSC	SW	350
26x12x8	8115-01-166-6450	3.00	26.5x12.5x8.5	1.629	CF	V3c	WR	RSC	SW	350
26x12x10	8115-01-166-6449	3.30	26.5x12.5x10.5	2.013	CF	V3c	WR	RSC	SW	350
26x18x18	8115-01-166-6454	5.50	26.5x18.5x18.5	5.249	CF	V3c	WR	RSC	SW	350
26x26x20	8115-01-166-6463	7.00	26.5x26.5x20.5	8.331	CF	V3c	WR	RSC	SW	350
29x14x14	8115-01-166-6447	4.00	29.5x14.5x14.5	3.589	CF	V3c	WR	RSC	SW	350
30x12x6	8115-00-190-5017	2.61	30.5x12.5x6.5	1.434	CF	V3c	WR	RSC	SW	350
30x12x12	8115-01-166-6448	3.50	30.5x12.5x12.5	2.758	CF	V3c	WR	RSC	SW	350
30x16x16	8115-00-292-0120	5.00	30.5x16.5x16.5	4.805	CF	V3c	WR	RSC	SW	350
30x20x12	8115-01-163-3446	4.80	30.5x20.5x12.5	4.523	CF	V3c	WR	RSC	SW	350
34x14x10	8115-00-564-8053	3.75	34.5x14.5x10.5	3.040	CF	V3c	WR	RSC	SW	350
34x20x15	8115-01-166-6455	6.00	34.5x20.5x16.0	6.549	CF	V3c	WR	RSC	SW	350
34x20x20	8115-01-166-6456	6.50	34.5x20.5x20.5	8.390	CF	V3c	WR	RSC	SW	350
36x12x12	8115-01-166-6457	3.82	36.5x12.5x12.5	3.300	CF	V3c	WR	RSC	SW	350
36x14x14	8115-00-190-5020	4.70	36.5x14.5x14.5	4.441	CF	V3c	WR	RSC	SW	350
36x24x22	8115-01-166-5118	7.20	36.5x24.5x22.5	11.644	CF	V3c	WR	RSC	SW	350
40x14x14	8115-01-166-6452	6.00	40.5x14.5x14.5	4.928	CF	V3c	WR	RSC	SW	350

TABLE C-IV. Multi-application container selection.

TYPE I

PPP-B-1672, Vertical Star (Table J-VII, Code NR)					
Container ID (inches) (National Stock Number) (Pack Code)	Recommended max. bare item dimensions (in.)	Item weight range (lbs.)	Maximum Shock (G's) Transmitted to item	Packaged outside dimensions (inches)	Packaged Cube (cu. ft.)
6 x 6 x 10 (8115-00-192-1603) (XA1)	3 Dia x 6 3 x 3 x 6	1.0 - 1.5 1.6 - 2.2 2.3 - 3.0 1.5 - 4.0	30 – 40 25 – 29 30 – 40 30 – 40	6.3 x 6.3 x 10.5	.242
8 x 8 x 12 (8115-00-192-1604) (XA2)	3 x 3 x 8 4 Dia x 8 4 x 4 x 8 5 Dia x 8	1.5 - 4.0 3.0 - 7.5 7.6 - 8.5 3.0 - 5.0 5.1 - 7.0 3.5 - 5.5	30 – 40 25 – 29 30 – 40 25 – 29 30 – 40 30 – 40	8.3 x 8.3 x 12.5	.499
10 x 10 x 12 (8115-00-192-1605) (XA3)	4 Dia x 6 5 Dia x 6 6 Dia x 6 5 x 5 x 6	2.0 - 3.0 3.1 - 4.5 4.6 - 5.0 3.0 - 6.0 4.5 - 7.0 4.0 - 9.0	30 – 40 25 – 29 30 – 40 30 – 40 30 – 40 30 – 40	10.5 x 10.5 x 12.5	.798
12 x 12 x 14 (8115-00-134-3655) (XA4)	5 Dia x 8 6 Dia x 8 5 x 5 x 8 6 x 6 x 8	3.5 - 4.5 4.6 - 8.5 5.0 - 7.0 7.1 – 13.0 3.0 - 5.0 5.1 - 7.0 7.1 – 11.0 5.0 - 7.0 7.1 – 10.0 10.1 – 12.0	25 – 29 20 – 24 25 – 29 20 – 24 30 – 40 25 – 29 20 – 24 30 – 40 25 – 29 20 – 24	12.5 x 12.5 x 14.5	1.312
12 x 12 x 18 (8115-00-050-5237) (XA5)	5 Dia x 10 6 Dia x 10 5 x 5 x 10 6 x 6 x 10	4.0 - 5.0 5.1 – 11.0 6.0 - 8.0 8.1 – 16.0 4.0 - 6.0 6.1 - 8.0 8.1 – 13.0 8.0 – 10.0 10.1 – 14.0 14.1 – 20.0	25 – 29 20 – 24 25 – 29 20 – 24 30 – 40 25 – 29 20 – 24 30 – 40 25 – 29 20 – 24	12.5 x 12.5 x 18.5	1.673
14 x 14 x 16 (8115-00-134-3656) (XA6)	6 Dia x 10 7 Dia x 10 6 x 6 x 10 7 x 7 x 10	6.0 – 15.0 8.0 – 14.0 14.1 – 17.0 17.1 – 20.0 5.0 - 7.0 7.1 - 9.0 9.1 – 12.0 6.5 - 9.0 9.1 – 12.0 12.1 – 21.0 21.1 – 23.0	25 – 29 20 – 24 24 – 29 30 – 40 30 – 40 24 – 29 20 – 24 30 – 40 25 – 29 20 – 24 25 - 29	14.5 x 14.5 x 16.5	2.008

TABLE C-IV. Multi-application container selection - Continued.

TYPE II

PPP-B-1672, folding convoluted (Table J-VII, Code NS)				
Container ID (inches) (National Stock Number) (Pack Code)	Recommended max. bare item dimensions (in.)	Typical item weight (lbs.)	Packaged Out-side Dimensions (inches)	Packaged Cube (cu. ft.)
6 x 5 x 2-1/2 (8115-00-787-2142) (XC1)	5 x 4-1/2 x 1-1/4	0.5	6.3 x 5.3 x 3.0	.058
6 x 5 x 3-1/2 (8115-00-787-2147) (XC2)	5 x 4-1/2 x 2-1/4	1.0	6.3 x 5.3 x 4.0	.078
9 x 6 x 2-1/2 (8115-00-101-7647) (XC3)	8 x 5-1/2 x 1-1/4	0.9	9.3 x 6.3 x 3.0	.102
9 x 6 x 3-1/2 (8115-00-101-7638) (XC4)	8 x 5-1/2 x 2-1/4	1.8	9.3 x 6.3 x 4.0	.136
10 x 10 x 3-1/2 (8115-01-057-1244) (XC9)	9 x 9-1/2 x 2-1/4	1.8	10.5 x 10.5 x 4.0	.256
12 x 8 x 2-1/2 (8115-00-787-2146) (XC5)	11 x 7-1/2 x 1-1/4	1.8	12.5 x 8.3 x 3.0	.181
12 x 8 x 3-1/2 (8115-00-787-2148) (XC6)	11 x 7-1/2 x 2-1/4	3.6	12.5 x 8.3 x 4.0	.241
13 x 13 x 3-1/2 (8115-01-057-1243) (XD1)	12 x 12-1/2 x 2-1/4	4.3	13.5 x 13.5 x 4.0	.422
16 x 16 x 3-1/2 (8115-01-057-1245) (XD2)	15 x 15-1/2 x 2-1/4	8.6	16.5 x 16.5 x 4.0	.631
18 x 12 x 2-1/2 (8115-01-019-4085) (XC7)	17 x 11-1/2 x 1-1/4	4.3	18.5 x 12.5 x 3.0	.402
18 x 12 x 3-1/2 (8115-01-019-4084) (XC8)	17 x 11-1/2 x 2-1/4	8.6	18.5 x 12.5 x 4.0	.536
24 x 16 x 3-1/2 (8115-01-093-3730) (XD3)	23 x 15 x 2-1/4	10.0	24.5 x 16.5 x 4.0	.936

NOTE: Because items assigned to these packs are not of extremely low fragility, dynamic cushioning values have not been determined.

TABLE C-IV. Multi-application container selection - Continued.

TYPE III

PPP-B-1672, telescoping encapsulated (Table J-VII, Code NV)					
Container ID (inches) (National Stock Number) (Pack Code)	Recommended max. bare item dimensions (in.)	Item weight range (lbs.)	Maximum Shock (G's) transmitted to item	Packaged outside dimensions (inches)	Packaged Cube (cu. ft.)
30 x 16 x 14 (8115-00-516-0242) (XE1)	24 x 11 x 9	28 – 48 49 – 54	30 – 39 40 – 50	31.0 x 17.0 x 14.5	4.423
32 x 12 x 14 (8115-00-519-1825) (XE2)	26 x 6 x 8	12 – 19 20 – 29 30 – 33	30 – 39 25 – 29 40 – 50	33.0 x 13.0 x 14.5	3.600
26 x 9 x 9 (8115-01-015-1313) (XE8)	20 x 5 x 5	20 (max.)	50 (max.)	27.0 x 10.0 x 9.3	1.454
24 x 14 x 14 (8115-00-550-3558) (XE3)	18 x 8 x 8	13 – 16 17 – 38	30 – 39 25 – 29	25.0 x 15.0 x 14.5	3.147
20 x 14 x 9 (8115-00-516-0251) (XE4)	16 x 10 x 5	6 – 7 7 – 8	30 – 39 40 – 50	21.0 x 15.0 x 9.5	1.732
25 x 14 x 14 (8115-00-550-3574) (XE5)	13 x 7 x 7	7 – 14 15 – 16 17 – 19	20 – 24 30 – 39 40 – 50	26.0 x 15.0 x 14.5	3.273
32 x 18 x 16 (8115-01-015-1315) (XE6)	24 x 13 x 11	80 (max.)	20 – 24	32.5 x 18.5 x 17.0	5.916
34 x 24 x 18 (8115-01-015-1314) (XE9)	25 x 18 x 12	90 (max.)	35 (max.)	36.5 x 26.5 x 19.0	10.636
24 x 18 x 16 (8115-01-015-1312) (XE7)	18 x 13 x 11	20 – 39 40 – 50	25 – 29 30 – 39	25.0 x 19.0 x 16.5	4.536
30 x 27 x 14 (8115-01-094-6520) (XF1)	24 x 21 x 8	26 – 45 46 – 50	21 – 28 23 – 30	31.0 x 28.0 x 15.0	7.535

TABLE C-IV. Multi-application container selection - Continued.

TYPE IV

PPP-B-1672, horizontal star (Table J-VII, Code NW)					
Container ID (inches) (National Stock Number) (Pack Code)	Recommended max. bare item dimensions (In.)	Item weight range (lbs.)	Maximum Shock (G's) transmitted to item	Packaged outside dimensions (inches)	Packaged Cube (cu. ft.)
20 x 14 x 14 (8115-01-010-8956) (XG1)	14 x 5-1/8 x 5-3/8	6 – 14 15 – 18 19 – 21	25 – 29 30 – 39 40 – 50	20.5 x 14.5 x 14.5	2.495
	14 x 7 x 7	10 – 14 15 – 19 20 – 23 24 – 26 27 – 29	30 – 39 20 – 24 25 – 29 30 – 39 40 – 50		
22 x 16 x 16 (8115-01-006-7257) (XG2)	16 x 6-3/8 x 6-3/8	8 – 20 21 – 27 28 – 31	25 – 29 30 – 39 40 – 50	22.5 x 16.5 x 16.5	3.545
	16 x 7-1/4 x 7-1/4	11 – 16 17 – 21 22 – 24 25 – 27 28 – 31	25 – 29 20 – 24 25 – 29 30 – 39 40 – 50		

TABLE C-IV. Multi-application container selection - Continued.

TYPE VI

Molded Reusable Container Assy for Circuit Cards and Modules NAVICP Drawing No. P069 (Table J-VII, Code NY)*					
Container ID (inches) (National Stock Number)	**Recommended max. load size (in.)	Item weight range (lbs.)	Maximum Shock (G's) transmitted to item	Packaged outside dimensions (inches)	Packaged Cube (cu. ft.)
11.25 x 8.25 x 2.125 (8145-00-260-9556)	8.5 x 6.0 x 1.0	0 - 3	NOTE: Because items assigned to these packs are not of extremely low fragility, Dynamic cushioning values have not been determined.	12.0 x 10.0 x 3.0	0.208
11.25 x 8.75 x 4.5 (8145-00-260-9548)	8.5 x 6.0 x 3.25	0 - 3		12.0 x 10.0 x 5.0	.0347
13.25 x 10.75 x 2.125 (8145-00-260-9559)	10.5 x 8.0 x 1.00	0 - 4		14.0 x 12.0 x 3.0	0.292
13.25 x 10.75 x 4.5 (8145-00-260-9562)	10.5 x 8.0 x 3.25	0 - 4		14 x 12.0 x 5.0	.486
6.75 x 5.0 x 2.0 (8145-01-014-0440)	5.0 x 3.0 x 1.0	0 - 2		8.0 x 6.0 x 3.0	0.083
19.75 x 13.75 x 4.5 (8145-01-012-4088)	17.0 x 11.0 x 2.62	0 - 4		21.0 x 15.0 x 5.0	0.911
24.0 x 12.0 x 6.0 (8145-01-164-4073)	24.0 x 11.0 x 3.0	0 - 4		27.0 x 14.5 x 7.0	1.586

* NAVICP drawings can be obtained from NAVSUP Weapon Systems Support code N241, 700 Robbins Avenue, Philadelphia, PA 19111-5098.
** Includes wrap, barrier, bag, cushioned pouch and other packaging materials as required.

TABLE C-IV. Multi-application container selection - Continued.

TYPE VII

Modular Reusable Containers for Packaging Major Repairables NAVICP Drawing No. 13414 (Table J-VII, Code NZ)*					
Container ID (inches) (National Stock Number)	**Recommended max. load size (in.)	Max. item weight (lbs)	Maximum Shock (G's) transmitted to item	Packaged outside dimensions (inches)	Packaged Cube (cu. ft.)
10 x 10 x 14 (8145-00-301-2987)	4 x 4 x 8	6.0	40 - 50	13.0 x 13.0 x 16.0	1.565
10 x 10 x 18 (8145-00-288-1396)	4 x 4 x 12	7.0	40 - 50	13.0 x 13.0 x 20.0	1.956
14.5 x 13 x 10 (8145-00-553-1539)	8.5 x 7 x 4	9.0	40 - 50	18.0 x 16.0 x 12.0	2.000
14 x 14 x 12 (8145-00-519-6384)	8 x 8 x 6	11.0	40 - 50	17.0 x 17.0 x 14.0	2.341
12 x 12 x 18 (8145-00-288-1397)	6 x 6 x 12	11.0	40 - 50	15.0 x 15.0 x 20.0	2.604
20 x 13 x 12 (8145-00-485-8256)	14 x 7 x 6	17.0	40 - 50	23.0 x 16.0 x 14.0	2.981
16 x 16 x 15 (8145-00-522-6907)	10 x 10 x 9	20.0	40 - 50	19.0 x 19.0 x 17.0	3.552
18 x 14.5 x 19 (8145-00-449-8424)	12 x 8.5 x 13	25.0	40 - 50	21.0 x 18.0 x 21.0	4.594
22.5 x 21 x 11.5 (8145-01-044-3289)	16.5 x 15 x 5.5	33.0	40 - 50	26.0 x 24.0 x 14.0	5.056
22 x 16 x 17 (8145-00-540-1762)	16 x 10 x 11	31.3	40 - 50	25.0 x 19.0 x 19.0	5.223
29 x 14.5 x 14 (8145-00-501-9138)	23 x 8.5 x 8	28.0	40 - 50	32.0 x 18.0 x 16.0	5.333
28 x 18 x 13 (8145-00-549-6647)	22 x 12 x 7	35.0	40 - 50	31.0 x 21.0 x 15.0	5.651
34 x 18 x 15 (8145-00-536-4925)	28 x 12 x 9	44	40 - 50	37.0 x 21.0 x 17.0	7.644
30 x 18 x 19 (8145-00-449-8427)	24 x 12 x 13	50	40 - 50	33.0 x 21.0 x 21.0	8.422
22.5 x 21 x 22.5 (8145-00-499-9808)	16.5 x 15 x 16.5	55	40 - 50	26.0 x 24.0 x 25.0	9.028

TABLE C-IV. Multi-application container selection - Continued.

TYPE VII - Continued

Modular Reusable Containers for Packaging Major Repairables NAVICP Drawing No. 13414 (Table J-VII, Code NZ)*					
Container ID (inches) (National Stock Number)	**Recommended max. load size (in.)	Max. item weight (lbs)	Maximum Shock (G's) transmitted to item	Packaged outside dimensions (inches)	Packaged Cube (cu. Ft.)
27 x 27 x 17 (8145-00-485-8250)	21 x 21 x 11	70	40 - 50	30.0 x 30.0 x 19.0	9.896
28 x 24.5 x 20.5 (8145-01-026-2369)	22 x 18.5 x 14.5	80	40 - 50	31.0 x 28.0 x 23.0	11.553
40 x 24 x 18 (8145-00-529-8585)	34 x 18 x 12	85	40 - 50	43.0 x 27.0 x 20.0	13.438
36 x 20 x 27 (8145-01-008-3683)	30 x 14 x 21	120	40 - 50	39.0 x 23.0 x 29.0	15.054
27 x 27 x 32 (8145-01-010-3776)	21 x 21 x 26	110	40 - 50	30.0 x 30.0 x 34.0	17.708

* NAVICP drawings can be obtained from NAVSUP Weapon Systems Support code N241, 700 Robbins Avenue, Philadelphia, PA 19111-5098.
** Includes interior carton and associated blocking and bracing when applicable.

TABLE C-IV. Multi-application container selection - Continued.

TYPE VIII

Shipping & Storage Containers for Gyroscopic Instruments NAVICP Drawing No. 15024 (Table J-VII, Code MY)*							
Container ID (inches) (National Stock Number)	**Max. load size without handling case (in.)	Handling Case, outside dimensions (National Stock No.)	Item size using handling case	Item Weight Range (lbs.)	Max shock (G's) transmitted to item	Packaged outside dimensions (inches)	Packaged cube (cu. ft)
30 x 26.38 x 25.5 (8145-01-016-3451)	13 x 9 x 8	10.38 x 6.5 x 6.5 (8145-01-016-3453)	Max Length - 8.38 Max Width - 4.5 Depth Min - 1.69 Max - 3.75	0.5 - 10.5	15	30.4 x 26.8 x 25.6	12.070
		12.5 x 7.25 x 8 (8145-01-016-3454)	Max Length - 10.5 Max Width - 5.25 Depth Min - 3.25 Max - 5.25				
		14 x 10.38 x 9.75 (8145-01-016-3455)	Max Length - 12 Max Width - 8.38 Depth Min - 5 Max - 7				
35 x 27 x 30 (8145-01-016-3452)	17.5 x 12.25 x 13	18 x 12.25 x 11.75 (8145-01-016-3456)	Max Length - 16 Max Width - 10.25 Depth Min - 6.9 Max - 9	8 – 40	15	35.4 x 29.0 x 30.4	18.061
		19 x 14 x 14.25 (8145-01-016-3445)	Max Length - 17 Max Width - 12 Depth Min - 9.5 Max - 11.5				

* NAVICP drawings can be obtained from NAVSUP Weapon Systems Support code N241, 700 Robbins Avenue, Philadelphia, PA 19111-5098.
** Includes wrap and cushioning as required to protect the barrier bag when applicable

TABLE C-IV. Multi-application container selection - Continued.

TYPE IX

Type IX. Shipping and Storage Containers for Avionics Instruments and Shock Sensitive Items; Warner Robins Air Logistics Center (WRALC) Drawing Nos. 11214-5002-100, 11214-5002-200, 11214-5002-300, 11214-5002-400 (Table J-VII, Code WY)*					
Container ID (inches) (National Stock Number)	Item Size Max/Min (inches)	Item Weight Range (lbs.)	Maximum Shock (G's) Transmitted to item	Packaged outside dimensions (inches)	Packaged Cube (cu. ft.)
24.5 x 23.25 x 21.75 (8145-01-235-1113)	10.5 x 9.75 x 9.25/4 x 4 x 5	10 – 16.5	15	27.5 x 26 x 25	10.344
32.5 x 32.25 x 27 (8145-01-235-1112)	21 x 21 x 15.75/8 x 6 x 5	12 - 25	15	35.25 x 35.25 x 30.25	21.752
32.5 x 32.25 x 27 (8145-01-236-5003)	21 x 21 x 15.75/12 x 6 x 6.75	25 - 54	15	35.25 x 35.25 x 30.25	21.752
38.5 x 44 x 36 (8145-01-235-1114)	25 x 32 x 20.8/15 x 8.75 x 7.75	40 - 91	15	41.13 x 37 x 39.13	34.461

* WR-ALC/TILAS drawings can be obtained from 420 Second St., Suite 100, Robins AFB, GA 31098-1640.

TABLE C-IV. Multi-application container selection - Continued.

TYPE X

Type X, Modular Reusable Containers for Packaging Depot Level Repairables; NAVICP Drawing No. 15450 (Table J-VII, Code RC)*				
Container NSN	Item Size (in.)	Item Weight Range (lbs.)	Packaged Outside Dimensions (in.)	Packaged Cube (cu. ft.)
8145-01-262-2982 (Size Designation -100)	Min. 8 x 4 x 4 Max. 12 x 8 x 8	3 - 10	20 x 16 x 14.5	2.7
8145-01-262-2983 (Size Designation -200)	Min. 12 x 8 x 6 Max. 14 x 12 x 9	10 - 20	22 x 20 x 17.5	4.5
8145-01-262-2984 (Size Designation -300)	Min. 14 x 12 x 7 Max. 16.5 x 15 x 10	15 - 30	24.5 x 23 x 17.5	5.7
8145-01-262-2985 (Size Designation -400)	Min. 14 x 12 x 9 Max. 28 x 13 x 12	20 - 40	36 x 21 x 19.5	8.5
8145-01-262-2986 (Size Designation -500)	Min. 14 x 14 x 10 Max. 16.5 x 16.5 x 15	30 - 60	24.5 x 24.5 x 23	8
8145-01-262-2987 (Size Designation -600)	Min. 14 x 14 x 10 Max. 28 x 21 x 14.5	30 - 60	36 x 29 x 22.5	13.3
8145-01-262-2988 (Size Designation -700)	Min. 25 x 14 x 10 Max. 34 x 21 x 14	45 - 75	42 x 29 x 22	15.5

* NAVICP drawings can be obtained from NAVSUP Weapon Systems Support code N241, 700 Robbins Avenue, Philadelphia, PA 19111-5098.

APPENDIX D

DEVELOPMENT OF MILITARY PACKAGING REQUIREMENTS FOR KITS (PARTS AND MODIFICATION)

D.1 SCOPE. This appendix covers the development of military packaging for parts kits and modification kits (see 4.7). This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

D.2 APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

D.3 PRESERVATION. Military preservation shall be applied to all items within the kits, including Government Furnished Property (GFP) or spare parts (to be assembled into kits). Methods of preservation shall be determined in accordance with Appendix A and procedures contained herein. Unless otherwise specified, packaging requirements for parts and modification kits shall be defined in Special Packaging Instructions (SPIs) (see E.3.2.4).

D.3.1 Consolidation of different items within a method of preservation. Hazardous items shall be packaged in the same container only if the commodities are compatible. Items of different physical characteristics may be consolidated within the same method of preservation if all of the following requirements are met:

a. The items to be consolidated are all part of the same individual kit, identified by a single NSN.

b. The method of preservation shall afford adequate protection to the most critical item contained therein.

c. The area of the protective barrier shall not be increased by the addition of noncritical items to the extent that the package life will be shortened due to the increase in water vapor transmission or that a substantial increase in desiccant will be required.

d. Items of a delicate nature shall not be subjected to damage from rugged items contained within the same package.

e. Noncritical items of odd shapes or having sharp protrusions will not damage protective barriers.

f. Items of dissimilar metals subject to damage from electrolytic action shall be insulated with suitable material to prevent forming of galvanic cells.

g. Electromagnetic and electrostatic sensitive items shall be provided protection from degradation with electrostatic or electromagnetic protective materials conforming to military specifications.

D.3.2 Application of preservative compounds or oils.

D.3.2.1 Kits procured for oxygen equipment. No preservative compound or oil shall be applied to any item that may come into contact with oxygen.

D.3.2.2 Preservation procedures. All items are to be thoroughly cleaned and dried in accordance with 5.2.1 before application of preservative compounds or oils. In no instance shall a preservative compound or oil be applied over an operational grease or oil.

D.3.2.3 Items susceptible to corrosion (iron, steel, magnesium, etc.). No preservative compound or oil shall be applied if application would be harmful to the item. Preservative compounds are preferred; however, preservative oils may be used when compounds are difficult to remove, or are not feasible due to size, configuration or application of the item.

D.4 UNIT PRESERVATION

D.4.1 Physical protection. When kit items require physical protection, cushioning, wraps and containers of the minimum size and weight necessary to afford such protection shall be applied.

D.4.2 Segregation of items within packs. Care shall be used to ensure that items which would be difficult to identify by visual observation are kept segregated and individually identified. Segregation of items within a kit shall be accomplished by wraps, bags, boxes, dividers, container separations, tubes, skin or blister packs or other approved means.

D.4.3 Skin packaging. When skin packaging is used for kits, provisions shall be incorporated into the design layout for minimizing the size of the skin pack. This may be accomplished by folding, slotting, scoring, creasing, or perforating the substrate.

D.4.3.1 Skin packaging metals. Segregated metal items coated with preservative shall be wrapped with a greaseproof material unless the skin packaging material, ink, and backing board in contact with the item are noncorrosive and greaseproof. Bare metal items not coated with a

preservative compound shall be wrapped with a neutral material unless the skin packaging material, ink, and backing board in contact with the item are noncorrosive.

D.4.3.2 Skin packaging shims or gaskets. Kit items such as thin shims or paper gaskets, that cannot be removed from the skin pack without damage to the item shall be placed in a bag or other suitable protective media prior to film application to provide ease of removal.

D.5 PACKING AND MARKING OF KITS. Packing and marking requirements shall be in accordance with 5.3, 5.4 and 5.5.

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MILITARY PACKAGING DATA FORMS

E.1 SCOPE. This appendix outlines procedures and provides necessary guidance and instructions for the preparation of required military packaging data. This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

E.2 APPLICABLE DOCUMENTS

E.2.1 General. The documents listed in this section are specified in sections E.3, E.4, E.5 and E.6 of this appendix. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections E.3, E.4, E.5 and E.6 of this appendix, whether or not they are listed.

E.2.2 Government documents.

E.2.2.1 Standards. The following standard forms a part of this document to the extent specified herein. Unless otherwise specified, the issues of this document are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-129	-	Military Marking for Shipment and Storage.

(Copies of these documents are available online at https://quicksearch.dla.mil.)

E.2.2.2 Other Government documents, drawings, and publications. The following Government document forms a part of this document to the extent specified herein. Unless otherwise specified, the issue is that cited in the solicitation or contract.

H4/H8 Section A	-	Commercial and Government Entity (CAGE) (Name to Code)

(Copies of this Cataloging Handbook H4/H8 are available from Commander, Defense Logistics Service Center, ATTN: DLSC-WP, Federal Center, Battle Creek, MI 49017-3084.)

E.2.3 Non-Government publications. The following document forms a part of this document to the extent specified herein. Unless otherwise specified, the issue of this document is that cited in the solicitation or contract.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME Y14.100 - Engineering Drawing and Related Documentation Practices (DoD adopted).

(Copies of this document are available online at American Society of Mechanical Engineers, https://www.asme.org.)

E.3 GENERAL REQUIREMENTS

E.3.1 Development of military packaging data. Military packaging data shall be developed for each item entering the DTS (see 1.1). Data to be submitted by contractors shall be prepared in accordance with the requirements of this standard. Each applicable data item listed on DD Form 2326 (figure E-1) shall be completed, using the codes of Appendix J where and when appropriate. Data shall be entered and supplemented as outlined in E.4.1.

E.3.2 Recording military packaging data.

E.3.2.1 Recording of data. Unless otherwise specified by the procuring activity, figure E-1 (DD Form 2326) "Preservation and Packing Data," is the form on which initial entry, or revision to previously established and approved elements, of military packaging data shall be annotated. Data shall be recorded in coded form or in-the-clear as required, or by reference to specification(s) or Special Packaging Instructions (SPIs). Entries shall be recorded to assure clear, legible reproduction of the data. The contractor may, upon approval of the contracting agency, furnish the data in the form used for their internal operation, or via electronic media, provided there is no change in the sequence and format of figure E-1.

E.3.2.2 National Stock Number (NSN) requirements. When preservation and packing data are submitted on DD Form 2326, NSNs shall be provided in Part A of figure E-1 only.

E.3.2.3 Coded data. Coded data shall be as specified in E.4. If additional codes are needed to specify a requirement, requests for inclusion, with substantiating data, shall be initiated in accordance with the directions contained in J.3.2.1. Until the new requirement is represented by a code symbol in Appendix J, Code Z or ZZ shall be used and details shown as supplemental data.

E.3.2.4 Kits (parts and modification). Unless otherwise specified, packaging requirements for modification and parts kits will be defined on special packaging instructions (SPIs) (see Appendix D).

E.3.2.5 Special packaging instructions. SPIs shall be prepared in accordance with E.5.

E.4 DETAILED REQUIREMENTS

E.4.1 Development of military packaging data. Packaging data is divided into the following categories:

Item identification data (figure E-1, Part A)
Preservation and packing data (figure E-1, Part B)
Supplemental data (figure E-1, Part C)
Special packaging instruction data (figure E-1, Part D)

When data is requested, it shall be developed as specified in E.4.2.4, E.4.2.5, E.4.2.6, and E.4.2.7. Item identification data shall be developed for all items. Unless otherwise specified, no further data need be developed for common group items. Preservation and packing data, supplemental data, and special packaging instruction data shall be developed for selective and special group items as required. Data elements 29 thru 49 and 79 of table E-II shall not be provided for special group items, unless otherwise directed by the requiring activity.

E.4.1.1 Procedural specification data. When the packaging of an item can be defined by use of procedural specifications, data elements of table E-II, table E-IV, and table E-I, columns 39-42 need not be developed. The appropriate procedural packaging specification shall be invoked by direct reference as supplemental data (see table E-III, columns 22-80).

E.4.2 Preparation of military packaging data. The detailed guidance in tables E-I to E-IV prescribes the procedures for inserting data on DD Form 2326. This is a multiple use form designed to reduce the amount of work necessary in compiling data relative to packaging of any given item. The form has provisions for:

Nomenclature
Manufacturer's Commercial and Government Entity (CAGE) code and design activity's part number
Approval stamp (E.6.2)
Configuration item specification number
Item identification data
Preservation and packing data
Supplemental data
Special packaging instruction data

In the detailed guidance below, column numbers refer to the digit position indicators preprinted on figure E-1.

E.4.2.1 Nomenclature. Show item name in the designated block on the figure E-1 format.

E.4.2.2 Manufacturer's Commercial and Government Entity code and part number. Show the Commercial and Government Entity (CAGE) code of the manufacturer and the part number of the item, if any, in the appropriate block(s) on the figure E-1 format.

E.4.2.3 Configuration item (CI). When the contract requires development of a CI specification for the item, show the configuration item specification number for the item in the designated block on the figure E-1 format.

E.4.2.4 Item identification data. The elements of data in table E-I are applicable to the identification and physical characteristics of the item. Information shall be entered on DD Form 2326, Part A as prescribed in table E-I.

E.4.2.5 Preservation and packing data. Table E-II provides the basic elements of data required in preservation and packing. Information shall be entered on DD Form 2326, Part B as prescribed in table E-II and as specified in E.4.1.

E.4.2.6 Supplemental data. The elements of data in table E-III are mandatory when supplemental data is required. A "3" in column 80 of tables E-I and E-II indicate supplemental data is required. Supplemental data is pertinent to the packaging process and is either a direct reference to a specific packaging procedural specification or is information that is required in addition to that shown in the preservation and packing data area (Part B of DD Form 2326). Supplemental data shall be recorded on DD Form 2326, Part C as prescribed in table E-III. Narrative shall show only explanatory or instructional type information which directly supplements the elements of the packaging requirements code in the preservation packing data areas (DD Form 2326, Part B). Only 59 digits of supplemental data are permitted for any one item. If the necessary supplemental data would exceed this limit, a SPI shall be prepared in accordance with instructions in E.5 and Part D of DD Form 2326 shall be executed.

E.4.2.7 Special packaging instruction (SPI) data. A SPI shall be developed in accordance with E.5 when preservation-packing data and supplemental data do not provide sufficient detail to allow reproduction of the complete package. When a SPI is required, the elements of data in table E-IV shall be required as applicable. A "4" or "6" in column 80 of tables E-I and E-II indicates a SPI is required.

E.5 SPECIAL PACKAGING INSTRUCTIONS

E.5.1 General. SPIs shall be prepared when the following conditions exist:

a. When the packaging code of DD Form 2326 (figure E-1) does not contain all necessary packaging requirements and

b. When all necessary packaging requirements for complete fabrication and assembly of the pack cannot be contained in the supplemental data area of DD Form 2326.

E.5.2 Format. SPIs shall be prepared using a digital format and any one or a combination of the following techniques:

a. Narrative, as appropriate.

b. Orthographic drawings (prepared in accordance with ASME Y14.100).

c. Axonometric drawings (oblique, cabinet, isometric, diametric, trimetric).

d. Perspective drawings (developed by projection from orthographic drawings, by commercially available scaled grids, or by other methods where a scalable rendering results).

e. Photo-drawings (high contrast photographs in which all background and nonpertinent information has been removed).

f. Computer graphics.

E.5.3 Elements. The specific format of a SPI is optional provided all of the requirements of E.5.1 and E.5.2 are met and the ability to universally replicate the package is assured. At a minimum, all SPIs shall include the following mandatory elements:

a. Part or drawing number.

b. Commercial and Government Entity (CAGE) Code – Provide the 5-digit numerical code of the packaging design activity as assigned in Cataloging Handbook H4/H8, Commercial and Government Entity, Name to Code.

c. SPI number – Enter the SPI number provided by the service or agency. The contractor shall enter only when provided by the service or agency.

d. National stock number – Provide the 13-position National Stock Number and, when specified, the 2-position Material Management Aggregation Code (MMAC), Service Management Code or Special Material Identification Code (SMIC). If no NSN is available, provide the 5-digit numerical code assigned by Cataloging Handbook H4/H8 to identify the manufacturer of the part and the drawing or part number. Enter multiple NSNs if more than one NSN applies.

e. Date – Enter the ordinal date, reflecting the 2-position year and 3-position day of the latest revision of the SPI (e.g., Feb. 5, 1999 would be "99036").

f. Revision – Enter revision symbol as an alphabetic character beginning with an "A" for the first revision. Proceed through the alphabet for each succeeding revision. Letters I, O, Q, S, X and Z shall not be used. For original SPIs, leave blank.

g. QUP and ICQ – State each in-the-clear.

h. Unit pack weight – Provide to the nearest one tenth of a pound (e.g., 16.4) (not required for SPIs covering more than one size shipping container).

i. Unit pack size – Provide to the nearest tenth of an inch in order by length, width, and depth.

j. Unit pack cube – Provide to the nearest one thousandth of a cubic foot (e.g., 3.155) (not required for SPIs covering more than one size shipping container).

k. Method of Preservation (MOP) – State MOP in the clear (see 5.2.3).

l. Cleaning and drying requirements.

m. Packing – Provide all applicable packing requirements for levels A and B. Closure, sealing and reinforcement shall be as specified in the applicable container specification or supplemental closure requirements document.

n. Marking – Marking shall be as specified in MIL-STD-129. Special markings (includes opening and closing instructions) shall be given in detail when special type containers or securing media are used. When specified, include instructions to mark the SPI number on exterior (other than multi-application) containers.

E.5.4 Detailed requirements.

E.5.4.1 Package assembly instructions. All details required for fabrication of the package, including internal blocking, bracing, or contour supports shall be shown in their relationship to the item being packaged. Sequential detailed packing instructions shall be included in the SPI, as necessary. When the SPI covers blocking and bracing of unpacked items, all details necessary to indicate special handling and storage shall be provided, including instructions for cribbing, hoisting, tie down and supports. Axonometric, scaled perspective, photo drawings or orthographic drawings may be used to show the various components of the package in relation to each other and the contained item. Relationships of the component parts of the package may be shown by exploded or partial exploded views. In most instances clarity is enhanced by showing the item in phantom lines.

E.5.4.2 Bill of materials. The SPI shall include a list of all materials required for complete fabrication and assembly of the package. All items listed on the bill of material shall be identified, whenever possible, to applicable federal or military specifications (or DoD adopted commercial standards) including types, grades, classes, styles, etc. These items shall not be identified by trade name, commercial source, or commercial specification. When an item is proposed for use that is not covered by any federal or military specification, the contractor shall provide sufficient background data to demonstrate the benefits to be derived from its use.

E.5.4.3 Specification containers. Construction details of federal and military specification containers need not be illustrated, except as necessary to clarify details of the package. The specification number and type of container shall be shown. All pertinent details shall be indicated when specification containers are modified. Details for specialized shock mounts, preformed dunnage, etc., that will duplicate information on drawings prepared in accordance with ASME Y14.100 shall not be shown. However, the engineering drawing numbers shall be indicated.

E.6 APPROVAL OF CONTRACTOR DEVELOPED PACKAGING DATA

E.6.1 Procedures for submitting data for approval. The contractor shall submit the packaging data prepared for each item for approval. This approval shall be obtained prior to production packaging except for deviations which are in compliance with E.6.1.1 and E.6.1.2.

E.6.1.1 Approval of data without National Stock Numbers. Forms shall not be submitted for approval of packaging data without a National Stock Number (NSN) unless authorized by the contracting agency or unless emergency shipments are required prior to assignment of an NSN. An emergency situation is defined as a requirement for direct support of a system when a situation such as work stoppage or condition status of the system might otherwise prevent it from performing its mission. Upon receipt of the complete NSN, the contractor shall enter these on the packaging data form and forward one copy to the DoD contracting activity (packaging organization) for approval.

E.6.1.2 Approval of data for emergency shipments. When packaging data approval cannot be obtained prior to initial shipment of material which is directed by an emergency situation, the packaging data may, upon approval of the administrative contracting officer, be submitted to the appropriate office simultaneously with shipment of the material. In no case shall additional shipments of remaining identical items not required for emergency shipments be allowed prior to data submittal without approval of the DoD contracting officer.

E.6.1.3 Approval of data of interest to one DoD agency. All packaging data which are of sole interest to a particular DoD service or agency shall be submitted as applicable to the DoD agency having item management responsibility for approval.

E.6.1.4 Use of background data for approval. The contractor shall make available, when requested by the responsible DoD contracting activity (packaging organization), sufficient background data (test reports, drawings or engineering details) to permit the reviewing activity to determine the adequacy of the contractor-prepared packaging data.

E.6.1.5 Data for common items. Packaging data for common items using predetermined codes shall be reviewed and approved at the option of the responsible DoD contracting activity (packaging organization).

E.6.2 Return of approved data. Upon approval, the DoD contracting activity (packaging organization) shall return one copy of the approved data to the contractor for file. Approval shall be indicated by application of the approval stamp on the applicable forms.

E.6.3 Authentication. SPIs for hazardous materials shall be authenticated by the responsible DoD activity.

E.6.4 Transmittal of data. The data required by this standard shall be in accordance with the applicable data item description and referenced on the applicable Contract Data Requirements List (DD Form 1423). Necessary modification to the data item descriptions shall be shown on the DD Form 1423.

E.6.4.1 Military packaging data. Unless otherwise specified on the DD Form 1423, the contractor shall submit two (2) copies of DD Form 2326 (or alternate media, when specified) along with a letter of transmittal showing quantity of items for which forms are being submitted, directly to the DoD contracting activity. The letter of transmittal shall specify the contract and order number and shall list the items for which the forms are submitted. The DoD contracting activity (packaging organization) shall sign and return the letter of transmittal with the approved copies of the data.

E.6.4.2 Special packaging instructions. When special packaging instructions are required, they shall be submitted in the digital format specified by the acquiring activity.

TABLE E-I. Item identification data for PART A of DD Form 2326.

Column Number	Element of Data	Explanation or Instructions
1	Document identifier	Enter "A" to identify as item identification data.
2-6		Reserved for system document control and identification numbers and applicable prefix designations.
7-21	National stock number	Show the identification number assigned to the item of supply (7-10 for Federal Supply Classification code; 11-19 for National Item Identification Number; when specified, 20-21 for Material Management Aggregation Code (MMAC), Service Management code or Special Material Identification Code (SMIC). When NSN (Columns 7-19) is not available, completion of columns 51-79 is mandatory.
22-26	Unpackaged item weight	Show actual net weight of item to the nearest one tenth of a pound up to 9,999.9 pounds. Use zeros to fill voids. For items in excess of 9,999.9 pounds, show weight in whole pounds indicated as follows: Show "A" in column 22 and the whole pounds in columns 23-26. The "A" will indicate that the numbers entered are to be multiplied by ten to determine the actual weight (for example, A9999=99,990 pounds). Show "B" in column 22 and the whole pounds in columns 23-26. The "B" will indicate that the numbers entered are to be multiplied by one hundred to determine the actual weight (for example, B9999=999,900 pounds).

TABLE E-I. Item identification data for PART A of DD Form 2326 - Continued.

Column Number	Element of Data	Explanation or Instructions
22-26 (Cont.)	Unpackaged item weight (Cont.)	Show "C" in column 22 and the whole pounds in columns 23-26. The "C" will indicate that the numbers listed should be multiplied by 1000 to determine the actual weight being entered (for example, C9999=9,999,000 pounds).
27-38	Unpackaged item dimensions	Show unpackaged item dimensions as configured for packaging to the nearest tenth of an inch in order by length, width, and depth. The largest diameter shall be used to indicate length or width of cylindrical items. Dimensions less than .1 inch show as "0001." Use zeros to fill voids (for example, 0024, 0001) NOTE: Coilable material shall be coiled and the overall coiled dimensions used.
39-42	Packaging category code	In columns 39-40, show the appropriate two-digit code for the physical and chemical characteristics of the item using table A-I. In column 41, show the one-digit code for weight/size/fragility from table A-II and in column 42 show the one-digit code for preservative from table A-III.
43-44	Not used	
45-47	Quantity per unit pack	State quantity per unit pack (QUP) in the clear.
48-50	Intermediate container quantity	When intermediate containers are used, enter the number of unit packs to be included in the intermediate container in-the-clear up to 100. If there is no requirement for intermediate containers, enter "000".
51-55	Commercial and Government Entity code of the manufacturer of the part	Enter the 5-digit numerical code, corresponding to the manufacturer of the part, assigned in conformance with Cataloging Handbook H4/H8.

TABLE E-I. Item identification data for PART A of DD Form 2326 – Continued.

Column Number	Element of Data	Explanation or Instructions
56-79	Drawing or part number	Enter the drawing or part number of the item being packaged, as applicable. These columns may be left blank if NSN information is entered in columns 7-21.
80	Part indicator	Enter one of the following as appropriate: (a) If only Part A will be used, enter "1". (b) If Parts A and B will be used, enter "2". (c) If Parts A, B, and C will be used, enter "3". (d) If Parts A, B and D will be used, enter "4". (e) If only Parts A and C will be used, enter "5". (f) If Parts A, B, C, and D will be used, enter "6".

TABLE E-II. Preservation - Packing data for PART B of DD Form 2326.

Column Number	Element of Data	Explanation or Instructions
1	Document identifier	Enter "B" to identify as preservation-packing data.
2-6		Reserved for system document control and identification numbers and applicable prefix designations.
7-21	National stock number	Show the identification number assigned to the item of supply (7-10 for Federal Supply Classification code; 11-19 for National Item Identification Number; when specified, 20-21 for Material Management Aggregation Code (MMAC), Service Management Code or Special Material Identification Code (SMIC).
22-28	Not used	
29-30	Method of preservation	Select appropriate code from tables J-I and J-Ia. Determination of method of preservation shall be based on one of the following: (a) Table A-I. Identify the appropriate method applicable to the item in accordance with 5.2.3. (b) Table A-IV for common group items.
31	Cleaning procedure	Select appropriate code from table J-II or table A-IV. for common group items.
32-33	Preservative material	Select appropriate code from table J-III or table A-IV for common group items.
34-35	Wrap	Select appropriate code from table J-IV or table A-IV for common group items.
36-37	Cushioning and dunnage	Select appropriate code from table J-V or table A-IV for common group items.
38	Cushioning thickness	Select appropriate code from table J-VI or table A-IV for common group items.
39-40	Unit container	Select appropriate code from table J-VII or table A-IV for common group items. Note: If the unit container is also the shipping container, the level of military packing limitations of table C-II must be met.
41	Not used	

TABLE E-II. Preservation - Packing data for PART B of DD Form 2326 - Continued.

Column Number	Element of Data	Explanation or Instructions
42-43	Intermediate container	Select appropriate code from table J-VII.
44	Unit container level	Select appropriate code from table J-VIII.
45-46	Special marking	Select appropriate code from table J-X. When more than one code or when any special marking not included in the table must be specified, show "ZZ" and specify in supplemental data.
47	Level A packing	Select appropriate code from table J-IX.
48	Level B packing	Select appropriate code from table J-IXa.
49	Minimal packing	If applicable, select code from table J-IXb.
50-54	Unit pack weight	Show actual unit pack weight in-the-clear to the nearest one tenth of a pound up to 9,999.9 pounds. Use zeros to fill voids. For packs in excess of 9,999.9 pounds, show weight in whole pounds indicated as follows: (a) Show "A" in column 50 and the whole pounds in columns 51-54. The "A" will indicate that the numbers entered are to be multiplied by ten to determine the actual weight (for example, A9999=99,990 pounds). (b) Show "B" in column 50 and the whole pounds in columns 51-54. The "B" will indicate that the numbers listed should be multiplied by one hundred to determine the actual weight (for example, B9999=999,900 pounds). (c) Show "C" in column 50 and the whole pounds in columns 51-54. The "C" will indicate that the numbers listed should be multiplied by 1000 to determine the actual weight (for example, C9999=9,999,000 pounds).

TABLE E-II. Preservation - Packing data for PART B of DD Form 2326 - Continued.

Column Number	Element of Data	Explanation or Instructions
55-66	Unit pack size	Show unit container outside dimensions in-the-clear to the nearest tenth of an inch in order by length, width, and depth. Use "0001" to show dimensions less than .1 of an inch. Use zeros to fill voids (for example, "0024", "0001").
67-73	Unit pack cube	Show actual cube of the unit pack to the nearest one thousandth of a cubic foot up to 9,999.999 cubic feet. For items with cube in excess of 9,999.999 cubic feet, show X in column 67 and indicate cube in whole cubic feet in columns 68-73.
74-78	Not used	
79	Optional procedure indicator	Select appropriate code from table J-VIIIa.
80	Part indicator	Enter one of the following as appropriate: (a) If Parts A and B will be used, enter "2". (b) If Parts A, B and C will be used, enter "3". (c) If Parts A, B, and D will be used, enter "4". (d) If Parts A, B, C, and D will be used, enter "6".

TABLE E-III. Supplemental data for PART C of DD Form 2326.

Column Number	Element of Data	Explanation or Instructions
1	Document identifier	Enter "C" to identify as supplemental data.
2-6		Reserved for system document control and identification numbers and applicable prefix designations.
7-21	National stock number	Show the identification number assigned to the item of supply (7-10 for Federal Supply Classification code; 11-19 for National Item Identification Number; when specified, 20-21 for Material Management Aggregation Code (MMAC), Service Management Code or Special Material Identification Code (SMIC).
22-80	In-the-clear instructions	If there is an applicable procedural specification for the item being packaged, and the packaging requirements are adequately defined therein, enter two asterisks followed by the specification number beginning in column 22. For example, the information shall be entered as follows: **MIL-DTL-XXXXX Supplemental instructions, such as specific method(s) of preservation, may be added as appropriate. In the absence of an applicable procedural specification, enter descriptive packaging instructions in-the-clear using a maximum of 59 characters. The following are examples of data entry: (a) APPLY PRESERVE Ø2 ON BARE AREA. (Note that code for appropriate preservative is selected from table J-III)

TABLE E-III. Supplemental data for PART C of DD Form 2326 – Continued.

Column Number	Element of Data	Explanation or Instructions
22-80 (Cont.)		(b) CUSHION ENDS WITH BG. (Note that code for appropriate material is selected from table J-V.) (c) PLACE DIPSTICK IN BE BAG AND SECURE TO VALVE. (The code for appropriate bag is selected from table J-VII.) (d) PLACE "XX" UNITS OF DESICCANT IN UNIT CONTAINER. (Note that appropriate units of desiccant are determined per 5.2.3.7.b.)

TABLE E-IV. Special packaging instruction data for PART D of DD Form 2326.

Column Number	Element of Data	Explanation or Instructions
1	Document identifier	Enter "D" to identify special packaging instruction data.
2-6		Reserved for system document control and identification numbers and applicable prefix designations.
7-21	National stock number	Show the identification number assigned to the item of supply (7-10 for Federal Supply Classification code; 11-19 for National Item Identification Number; when specified, 20-21 for Material Management Aggregation Code (MMAC), Service Management Code or Special Material Identification Code (SMIC).
22-26	Packaging design activity code identification number	Enter the 5-digit numerical CAGE code of the packaging design activity, assigned in conformance with Cataloging Handbook H4/H8.
27-36	SPI number	Enter the SPI number provided by the service or agency. In column 27, one of the following alpha characters will be used: A - Army M – Marine Corps D - DLA N – Navy F - Air Force
37	Revision	Enter the revision symbol as an alphabetic character beginning with an "A" for the first revision, then proceeding through the alphabet for each succeeding revision, except do not use I, O, Q, S, X and Z.
38-40	Not used	
41-45	SPI date	Enter the ordinal date, reflecting the two-position year and three-position day of the last revision of the SPI (for example, April 15, 2003 would be "03105"). Do not use spaces or dashes.
46-61	Container NSN	Show the National Stock Number of the long-life container required, if applicable.
62-80	Not used	

APPROVAL STAMP

PRESERVATION AND PACKING DATA

FORM APPROVED
OMB No. 0704-0188

NOMENCLATURE	DESIGN ACTIVITY'S PART NUMBER
MANUFACTURER'S CAGE CODE	CONFIGURATION ITEM SPECIFICATION NUMBER

ITEM IDENTIFICATION DATA (PART A)

	DOC CON	NATIONAL STOCK NUMBER			ITEM WEIGHT	LENGTH	WIDTH	DEPTH	CAT
		FSC	NIIN	ADDL	POUNDS 10th	INCHES 10th	INCHES 10th	INCHES 10th	P/C
	1 2 3 4 5 6	7 8 9	10 11 12 13 14 15 16 17 18 19	20 21	22 23 24 25 26	27 28 29 30	31 32 33 34	35 36 37 38	39 40
A									

	CODE		QUP	ICQ	CAGE	DRAWING OR PART NUMBER	PI
	WSF	P					
	41	42 43 44	45 46	47 48 49 50	51 52 53 54 55	56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78	79 80

PRESERVATION - PACKING DATA (PART B)

	DOC CON	NATIONAL STOCK NUMBER				PRES METH	C	PRES MTL	WRAP MTL	CUSH DUNN	CT	UNIT CONT
		FSC	NIIN	ADDL								
	1 2 3 4 5 6	7 8 9	10 11 12 13 14 15 16 17 18 19	20 21	22 23 24 25 26 27 28	29 30	31	32 33	34 35	36 37	38	39 40
B												

		INT CTR	UCL	SPEC MKG	PACKING A	PACKING B	PACKING MIN	UNIT PACK WT WEIGHT (LBS.) 10th	UNIT PACK SIZE (IN.) LENGTH 10th	WIDTH 10th	DEPTH 10th	UNIT PACK CUBE (CU.FT.) WHOLE CUBE	1000 th		OPI	PI
	41	42 43	44	45 46	47	48	49	50 51 52 53 54	55 56 57 58 59	60 61	62 63 64 65 66	67 68 69 70	71 72 73	74 75 76 77 78	79	80

SUPPLEMENTAL DATA (PART C)

	DOC CON	NATIONAL STOCK NUMBER			SUPPLEMENTAL INSTRUCTIONS
		FSC	NIIN	ADDL	
	1 2 3 4 5 6	7 8 9	10 11 12 13 14 15 16 17 18 19	20 21	22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
C					

SUPPLEMENTAL INSTRUCTIONS
41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

SPECIAL PACKAGING INSTRUCTION DATA (PART D)

	DOC CON	NATIONAL STOCK NUMBER			PKG DESIGN ACT CAGE	SPI NUMBER	REV		
		FSC	NIIN	ADDL					
	1 2 3 4 5 6	7 8 9	10 11 12 13 14 15 16 17 18 19	20 21	22 23 24 25 26	27 28 29 30 31 32 33 34 35 36	37	38	39 40
D									

	SPI DATE	CONTAINER NATIONAL STOCK NUMBER			
		FSC	NIIN	ADDL	
	41 42 43 44 45	46 47 48 49	50 51 52 53 54 55 56 57 58 59	60 61	62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80

DD FORM 2326, SEP 97
S/N: 0102-LF-114-7000

PREVIOUS EDITIONS ARE OBSOLETE.

FIGURE E-1. Preservation and Packing Data.

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MILITARY PACKAGING DESIGN VALIDATION PROVISIONS

F.1 SCOPE. This appendix outlines the procedure for conducting appropriate tests to validate specific military package designs when such testing is required (see 5.6). This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

F.2 APPLICABLE DOCUMENTS

F.2.1 General. The documents listed in this section are specified in sections F.3 and F.4 of this appendix. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections F.3 and F.4 of this appendix, whether or not they are listed.

F.2.2 Government documents.

F.2.2.1 Standards. The following standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of this document are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-648	-	Design Criteria Standard - Specialized Shipping Containers
MIL-STD-810	-	Test Method Standard - Environmental Engineering Considerations and Laboratory Tests
MIL-STD-1660	-	Design Criteria for Ammunition Unit Loads.
MIL-STD-3010	-	Test Procedures for Packaging Materials and Containers

(Copies of these documents are available online at https://quicksearch.dla.mil.)

F.2.2.2 Other Government documents. The following other Government documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

CODE OF FEDERAL REGULATIONS

49 CFR	-	Transportation

(Copies of this document are available online at https://www.ecfr.gov.)

INTERSERVICE MANUALS

AFMAN24-204/TM 38-250/ NAVSUP PUB 505/DLAI 4145.3	-	Preparing Hazardous Materials For Military Air Shipments

(Copies of this document are available online at http://www.e-publishing.af.mil.)

F.2.3 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 cited in the solicitation or contract.

ASTM INTERNATIONAL

ASTM D4169	Standard Practice for Performance Testing of Shipping Containers and Systems (DoD adopted).
ASTM D5276	Standard Test Method for Drop Test of Loaded Containers by Free Fall.

(Copies of these documents are available online at http://www.astm.org.)

F.3 GENERAL REQUIREMENTS

F.3.1 Applicability. For Packaging Design Validation Testing required by 5.6, items shall be tested as specified in F.3.2 with the exception of hazardous materials, ammunition, and specialized shipping containers. Hazardous materials, ammunition, and specialized shipping containers shall be tested as specified in F.3.3., F.3.4, and F.3.5, respectively. Use ASTM D4169 Distribution Cycle 18 in lieu of applicable test specified in this appendix, only when specified in the contract or order.

F.3.2 Packaging design validation tests and inspections. Packaging design validation performance tests shall be conducted in accordance with F.4. In accordance with the verification provisions of 5.7, the applicable preservation inspections shall be in accordance with Appendix G. Except for hazardous materials package testing, packaging design validation tests shall consist of the following in sequence:

a. The applicable performance tests specified in F.4.
b. The applicable preservation inspections of Appendix G.

F.3.2.1 Test load. When practicable, an actual item or a mockup inert article of the same characteristic material composition, form, weight, center of gravity and fit shall be used. For

final packaging design validation testing, one completed package shall be tested. During package development, one prototype package will suffice if it succeeds in passing all the required tests in sequence.

F.3.2.1.1 Dummy load. When an actual item or mock up inert article is not practicable, the packaging design validation tests shall be performed using a dummy load. The dummy load shall at a minimum be representative of the item's center of gravity, mass and dimensions.

F.3.2.1.2 Instrumentation. Accelerometers shall be located as close as practicable to the center of gravity of the suspended weight. After instrumentation, the pack shall be tested and the resultant acceleration shall be less than or equal to the fragility rating of the item. The details of instrumentation, for example the location of accelerometers, shall be approved by the packaging organization of the DoD contracting activity or as specified in the contract.

F.3.2.2 Alternate test procedure approval. In instances where one or more tests may deviate from specified test procedures or parameters of this or other related standards, the packaging design validation test plan shall be tailored based on the item's characteristics and its projected logistics environment. Written approval of the alternative test shall be obtained from the packaging organization of the DoD contracting activity.

F.3.3 Hazardous material. In addition to any applicable packaging design validation testing as specified in MIL-STD-648, MIL-STD-810, MIL-STD-1660, MIL-STD-3010 or ASTM D4169 Distribution Cycle 18, any packaging design intended for hazardous materials shall also be tested and certified as specified in table J-Ia, code HM. These test results shall be documented as specified on the Contract Data Requirements List (see 6.3), or other approved test report format in compliance with 49 CFR.

F.3.3.1 HAZMAT Packaging design certification testing. When any test conducted in accordance with packaging design validation is equal to or more stringent than the prescribed HAZMAT packaging design certification test requirements in 49 CFR, that test can be incorporated by reference into the HAZMAT packaging design certification testing, as long as the tests are performed within the prescribed time frame. The referenced equivalent or more stringent packaging validation testing and results shall be cited in the applicable section of the HAZMAT packaging design certification test report.

F.3.3.2 Air shipments. For packaged commodities that have the potential to be shipped by commercial or military air at any time during its life cycle, the packaging shall be designed, tested, and certified as being air eligible per International Civil Aviation Organization (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air or Code of Federal Regulation (CFR) Title 49, Transportation Regulation for domestic air shipments. Adherence to

AFMAN24-204/TM 38-250/NAVSUP PUB 505/DLAI 4145.3 is required for military air shipments.

F.3.4 Ammunition unit loads. Ammunition unit load test requirements shall be in accordance with MIL-STD-1660.

F.3.5 Specialized shipping containers. Specialized shipping containers shall be tested in accordance with the applicable performance tests of MIL-STD-648.

F.4 TEST METHODS

F.4.1 Performance tests. Performance test procedures for packaging design validation shall be as specified in table F-1. With approval from the DoD contracting activity (packaging organization), test plans may be tailored based upon final package configuration. All table F-1 tests shall apply to large containers. For small containers see applicable test methods. In order to protect against the penetration of contaminants such as pests, rodents, or environments such as sand, dust, water, watervapor, or vulnerability to the effects of wind, the degree to which seals, seams, joints, etc. are opened or expanded shall be determined prior to testing.

F.4.2 Test sequence and marking for free-fall drop tests. Test sequence and marking of the specimen containers prior to test shall be in accordance with ASTM D5276.

F.4.2.1 Bags and cylindrical containers. Bags and cylindrical containers shall be marked as specified in the applicable test method.

F.4.3 Disposition of samples after test. All undamaged test containers shall be reused. Any containers damaged during testing shall be repaired. Containers damaged beyond repair shall be recycled or disposed of, as applicable. When actual items are used as test loads, they shall be inspected to determine if any damage was incurred. Future usability of the actual item is dependent upon the extent of damage during testing.

F.4.4 Test report. A test report, as specified on the Contract Data Requirements List (see 6.3), shall provide a listing of all tests that were performed, any deviation from prescribed test methods, and corresponding test results, photos of test set-up, photos of container and contents damaged (as applicable), equipment used with calibration dates (as applicable).

TABLE F-1. Performance tests.

Test	MIL-STD-3010 Test Methods:		Special requirements or exceptions
	Cylindrical Containers	Rectangular Containers	
I. Free Fall drop tests: a. Corner drop b. Flat drop c. Edge drop d. Cylindrical Container drop	 N/A N/A N/A 5007 Procedure D	 5007 Procedure D or E 5007 Procedure B 5007 Procedure F N/A	See note 1/, 2/, and 3/
II. Tipover	N/A	5018	See note 1/
III. Impact tests: a. Pendulum b. Incline	 N/A N/A	 5012 5023	See note 1/, 2/, and 4/
IV. Superimposed load: a. Stackability with dunnage b. Uniformly distributed without dunnage	 5016 5017	 5016 5017	See note 1/ and 4/
V. Vibration: a. Sinusoidal motion b. Repetitive shock c. Random	 5020 5019 MIL-STD-810, Method 514	 5020 5019 MIL-STD-810, Method 514	See note 1/ and 2/
VI. Leakage Integrity	5009	5009	See note 1/ and 5/
VII. Handling	5011	5011	See note 1/ and 6/

1/ The following packaging design validation test requirements shall be met to prove the adequacy of the preservation, blocking, bracing, cushioning, and container for protecting the item. After testing, the contained item(s) shall show no evidence of damage to its structural integrity, remain within all dimensional tolerances, and be serviceable and capable of safe

handling. The container's structural integrity shall have no deformation or degradation that permits spillage of or damage to the contained item(s), have no reduction of strength, not permit water or water vapor entry (if applicable), and shall not adversely affect safety during transport and storage. Waterproof and watervaporproof barriers, wraps, interior containers, bracing, blocking, bolting, and cushioning shall be intact and capable of providing their intended protection.

2/ When specified in the contract or order, tests with shock and vibration instrumentation are required.

3/ Items, regardless of weight, which are secured to a base or other skidded platform shall be tested as indicated for large containers.

4/ Unless otherwise specified, either test shall be performed.

5/ The most appropriate technique depends principally upon the construction, size and weight of the unit pack and the information needed.

6/ Only lifting and transporting by forklift requirements apply.

VERIFICATION PROVISIONS

G.1 SCOPE. This appendix outlines the requirements for conducting appropriate quality conformance inspection tests on all military packages delivered under the provisions of this standard. This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

G.2 APPLICABLE DOCUMENTS

G.2.1 General. The documents listed in this section are specified in sections G.3 and G.4 of this appendix. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections G.3 and G.4 of this appendix, whether or not they are listed.

G.2.2 Government documents.

G.2.2.1 Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

COMMERCIAL ITEM DESCRIPTION

A-A-3174	-	Plastic Sheet, Polyolefin.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-121	-	Barrier Materials, Greaseproof, Waterproof, Flexible, Heat-Sealable.
MIL-PRF-131	-	Barrier Materials, Watervaporproof, Greaseproof, Flexible, Heat Sealable.
MIL-D-16791	-	Detergents, General Purpose (Liquid, Nonionic).
MIL-PRF-22019	-	Barrier Materials, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated.
MIL-DTL-22020	-	Bags, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated.
MIL-PRF-22191	-	Barrier Materials, Transparent, Flexible, Heat-Sealable.
MIL-PRF-81705	-	Barrier Materials, Flexible, Electrostatic Discharge Protective, Heat-Sealable

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-129	-	Military Marking for Shipment and Storage.
MIL-STD-3010	-	Test Procedures for Packaging Materials.

(Copies of these documents are available online at https://quicksearch.dla.mil.)

G.3 GENERAL

G.3.1 Quality system. The contractor's quality system shall be as specified in the contract.

G.3.2 Quality assurance requirements. Quality assurance requirements shall be in accordance with the contract. In addition, the applicable tests in G.4 and G.5 are mandatory.

G.3.3 Sampling.

G.3.3.1 Lot size. An inspection lot shall consist of all items manufactured during one production run and packaged by the same process using the same packaging materials.

G.3.3.2 Sampling for inspection. Completed packs shall be withdrawn from each lot in a random manner to make a representative sample sufficient in size to conduct all applicable inspections and tests as specified in G.4 and G.5.

G.4 PRESERVATION INSPECTIONS

G.4.1 Visual preservation examinations. Visually examine all test packages to determine compliance with the requirements of this standard. Specific defects that indicate quality problems are listed in table G-I.

G.4.2 Leakage test. Requirements for this inspection are based on the method of preservation utilized in the packaging process. Applicable methods of preservation are listed in

table G-II. When applicable, the unit pack shall be tested for leaks in accordance with one of the following techniques (tests) of Method 5009, MIL-STD-3010. Containers, wraps and cushioning used outside the waterproof or watervaporproof carrier shall be removed prior to testing. The time that the item and all processing materials have been maintained at ambient conditions prior to or during the processing period may be considered a part of the conditioning time.

G.4.2.1 Wetting agent. As an alternative to the use of the aerosol solution recommended by Method 5009 of MIL-STD-3010, a solution of 4 grams of water-soluble detergent, conforming to Type I of MIL-D-16791, per gallon of test water may be used to release entrapped air so that actual leakage of air through the barrier may be detected.

G.4.2.2 Selection of technique. The most appropriate technique will depend principally upon the construction, size and weight of the unit pack and the information needed. The hot water technique is appropriate for large unit packs. The squeeze technique is appropriate for small unit packs constructed of flexible materials such as plastic film. The vacuum retention technique does not specifically locate leaks and may not indicate the existence of tiny leaks in a large unit pack. The submersion (or immersion) technique for detecting water leakage is not as sensitive as the air leakage tests, but it is appropriate to reveal whether or not water might leak into the unit packs and, depending upon the duration of the test, gives some indication of the extent to which the materials used in the pack are waterproof. The pneumatic pressure technique is primarily appropriate for rigid containers. Neither the hot water nor the pneumatic pressure techniques are appropriate for rigid containers that are sealed with tapes; the submersion technique shall be used.

G.4.2.2.1 Vacuum retention technique.

G.4.2.2.1.1 Sealed rigid container. When the air in the sealed system has been evacuated to a constant specified pressure, allow the sealed system to remain undisturbed for 10 minutes. Note the pressure on the vacuum pressure gage. Loss of vacuum shall not exceed twenty-five percent of the original vacuum.

G.4.2.2.1.2 Sealed flexible bag. Sufficient air shall be drawn from the bag to cause the bag material to cling snugly to the enclosed item. Allow the bag to remain undisturbed for two hours at ambient temperature. Grasp the bag and draw it away from the item; then release it quickly. The bag shall remain taut and cling to the item. The loss of vacuum shall not cause the flexible bag to lose its tautness.

G.4.2.2.2 Submersion (or immersion) technique. After submersion and before opening the sealed system, carefully dry the outside. Open the sealed system and note whether leakage has occurred. There shall be no evidence of moisture within the bag.

G.4.2.2.3 Pneumatic pressure technique. When the sealed system is pressurized to a constant specified pressure and the line to the compressed air supply is closed, read and record the initial pressure. After thirty minutes, read and record the final gage pressure. There shall be no loss of gage pressure. When a water solution or immersion procedure is used or when required to pinpoint leaks, coat surfaces with a soap solution or submerge the system under water. There shall be no evidence of air leakage indicated by soap bubbles increasing in size, being blown away be escaping air, or by the presence of a steady stream of bubbles from any surface.

G.4.2.2.4 Hot water technique. All samples shall be conditioned at ambient conditions at least four hours prior to performing this test. Observe evolution of air bubbles at each position of the sample. There shall not be a steady stream or recurring succession of bubbles from any surface or seam. Bubbles which appear on the surface of the unit pack but are not released or are released at a slowly decreasing rate are not to be construed as indication of failure.

G.4.2.2.5 Squeeze technique (applicable only to flexible specimens). During sealing, as much air as possible shall be entrapped within the flexible bag at ambient conditions. When the bag is squeezed to increase the internal air pressure of the container, there shall not be a steady stream or recurring succession of bubbles from any surface or seam.

G.4.3 Heat-sealed seam test. The heat sealed seam strength test shall be conducted on those methods of preservation as specified in table G-II.

G.4.3.1 Selection of unit pack samples. Sealed unit pack samples shall be selected in accordance with G.3.3.2.

G.4.3.1.1 Alternate unit pack sampling procedure. An empty unit pack shall be used only when the heat sealed unit packs are made with equipment that controls temperature, dwell time, and pressure. The empty unit pack shall be prepared on the same equipment at the start of, mid-point and the end of the daily production run. This procedure shall be followed daily for each run. The machine settings for the empty packs shall be identical to the settings used for the filled packs. In the event an alternate unit pack sample fails the heat seal seam strength test, new unit pack samples shall be selected in accordance with G.4.3.1 from the actual production run and tested.

G.4.3.2 Heat sealed seam strength testing. Seam strength testing shall be in accordance with room temperature testing for fabricated bags and pouches in MIL-STD-3010, Method 2024. Each unit pack sample selected shall yield at least one specimen from each heat sealed side of the pack. Test specimens shall be 1 inch wide with length dependent on the bag size. Static load weights for barrier materials shall be as follows:

36 ± 2 ounces	MIL-PRF-121; MIL-PRF-22019, Type I
50 ± 2 ounces	A-A-3174; MIL-PRF-131; MIL-PRF-22191
56 ± 2 ounces	MIL-PRF-81705

A five percent reduction in static load weight is permitted when the room temperature in the test area exceeds 90 °F. Heat seals shall exhibit no separation for the duration of the 5 minute test.

G.5 PACKING INSPECTIONS

G.5.1 Examination procedures. Each sample intermediate or shipping container shall be visually inspected for the following deficiencies:

Material(s) not as specified.
Construction not as specified.
Container/material size not as specified.
Closure methods not as specified.
Closure material(s) not as specified.
Closure locations not as specified.
Weight exceeds container limit.
Container inappropriate for Packing Level specified.
Intermediate container not used for bagged unit pack(s).
Markings incomplete.
Markings illegible.
Markings incorrectly located.

TABLE G-I. Preservation inspection provisions.

Criteria	Method of Inspection	Method														
		10	20	31	32	33	41	42	43	44	45	51	52	53	54	55
Cleaning materials not as specified	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cleaning material contaminated	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Item not completely cleaned when tested in accordance with Note 1	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Item damaged by action of cleaning process	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Item contaminated by handling after cleaning	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Item not completely dry	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Item damaged by compressed air blast or overheating	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Contaminated compressed air used	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Contaminated wiping cloths used	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Preservative not as specified	Visual		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Incomplete or non-uniform coverage of preservative	Visual		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Excessive preservative	Visual		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Item not thoroughly drained	Visual		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Wrap not as specified	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cushioning material not as specified	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cushioning thickness not as specified	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Projections and sharp edges of item not sufficiently cushioned to prevent damage to item or external media	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Improper application of cushioning, blocking, bracing or bolting Bolting	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Improper amount of desiccant	Visual											X	X	X	X	X
Desiccant improperly secured	Visual											X	X	X	X	X
Desiccant contacting item	Visual											X	X	X	X	X
Humidity indicator not properly placed	Visual											X	X	X	X	X
Window or gaskets not as specified	Visual								X					X		
Unit container not as specified	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Interior unit container corners not blunted	Visual				X			X					X			
Insufficient material for reclosure of flexible barriers	Visual											X	X	X		
Improper seal or closure of unit containers	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Excessive air within unit container	Visual			X	X	X	X	X	X			X	X	X		
Excessive looseness in unit container	Shake	X	X	X	X	X	X	X		X	X	X	X		X	X
Weight and dimensions of unit pack exceeds maximum	Weigh & measure	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Incorrect QUP	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Marking omitted, incorrect, or illegible 2/ 3/ 4/	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

NOTES:

1/ Visual examination for cleanliness shall be performed using a daylight fluorescent tube light source having an 18-inch length (min) and 30 watts (min). The inside surface of the reflector shall be finished in white. The light source shall also be capable of directing light at any angle. All item surfaces, depressions, inside corners and crevices shall be examined for dirt, corrosion, oil, grease or similar foreign residues. Various angles of incident light shall be used while looking for foreign matter. Record whether or not foreign matter was observed.

2/ For methods 42 and 52, unit pack marking of MIL-STD-129 shall be applied to the barrier bag as well as the outer container.

3/ When a box or container is used to effect the unit pack of methods 31, 33, 41 and 51, unit pack markings of MIL-STD-129 shall be applied to the barrier bag as well as the box specified to effect the unit pack.

4/ When the unit pack is also used as the shipping container, then the markings applicable for shipment shall be applied to the exterior container in accordance with MIL-STD-129.

TABLE G-II. Leakage and heat-sealed seam test provisions.

Method or Submethod	Leak Test (See G.4.2)	Heat-sealed seam test (See G.4.3)
31	Required	Required 1/
32	Required	Required
33	Required	Required 1/
41	Required	Required
42	Required	Required
43	Required	Required
44	Required	--
45	Required	--
51	Required	Required
52	Required	Required
53	Required	Required
54	Required	--
55	Required	--

NOTES:

1/ A cold-sealed seam test as defined in MIL-DTL-22020 shall be substituted in cases where a VCI treated cold-sealed bag is employed as the unit container.

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APPENDIX H

PROCEDURES FOR COMPLIANCE WITH CONTAINER DESIGN RETRIEVAL SYSTEM (CDRS) REQUIREMENTS

H.1 SCOPE. This appendix outlines the procedures to be followed to insure compliance with the requirements of the Container Design Retrieval System (CDRS). This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

H.2 APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

H.3 DETAILED REQUIREMENTS.

H.3.1 Design search request submittal. After the development activity has established a requirement for a specialized container, the configuration of the contents is reasonably firm, and protection levels have been tentatively established, CDRS services shall be solicited before initiating detailed engineering design of the needed container. The development activity shall: (1) identify packaging requirements for which a specialized reusable container is required, (2) prepare a search request, and (3) submit the search request to the CDRS Management Office (MO), AFLCMC-EZPAA, 5215 Thurlow St. Ste. 5, Wright-Paterson AFB, Ohio, 45433-5547; CDRS@us.af.mil, or visit http://www.wpafb.af.mil/units/afptef. DoD in-house container development activities shall submit the search request directly to the CDRS Office. DoD contractors must submit copies of search requests to their respective contract administrative office and as specified on the Contract Data Requirements List (see 6.3).

H.3.2 CDRS Office search response. The CDRS MO will identify reusable specialized container designs and assets suitable to fulfill the requirements of the development activity. The CDRS MO will provide technical guidance on the use of a design(s) retrieved from the CDRS data base and considered technically/logistically suitable to satisfy the new requirement. The CDRS MO will also determine whether or not container assets (conforming to the retrieved design(s)) are available for use in the new program and provide applicable inventory management information to the development activity. The CDRS MO response will be submitted to the requester within 60 days after receipt of the search request and descriptive data. The contractor shall, unless otherwise authorized, withhold container development for the item involved pending receipt of the CDRS search response.

H.3.3 Design activity action on CDRS office response. Upon receipt of response from CDRS MO, the design activity shall initiate appropriate action based upon the CDRS MO proposal and the terms of the contract. Contractor interactions with the government shall be through the Administrative Contracting Officer (and the Acquiring Contracting Officer where appropriate) to ensure that all changes are accomplished in strict accordance with applicable contract terms. Under no circumstances may response from CDRS MO only, without firm direction from the Acquiring Contracting Officer, be interpreted as an instruction from the government to change contract terms or to do work beyond that which is explicitly specified in the contract.

H.3.3.1 Negative response from CDRS Office. If response is negative, the design activity shall complete the allocated baseline for the needed container and, if the end item hardware is to be delivered under the contract, shall proceed with the design, required test and evaluation, and documentation of the new specialized reusable container design in time to meet contract obligations.

H.3.3.1.1 Submittal of container design data. Upon completion of a new or modified container design, including any required testing and documentation, the design activity shall submit design data to CDRS MO for incorporation into the CDRS data base, as specified on the Contract Data Requirements List (see 6.3).

H.3.3.2 Positive response from CDRS Office. When a potentially suitable design(s) is provided by the CDRS MO, the development activity shall obtain (from the cognizant engineering activity) additional data on the proposed design(s) that may be required, and complete an engineering analysis to the extent necessary to determine the feasibility of using the proposed design(s). If a determination is made that the proposed design(s) is not suitable, the development activity shall justify nonselection of the proposed design to the program office, with a copy to CDRS. The cost analysis shall include consideration of the use of any surplus container assets that may be available. If the development activity is a contractor, the approval of the Acquiring Contracting MOs shall be obtained prior to initiation of a new container development effort.

H.3.3.2.1 Item (Inventory) manager notification. Whenever application of the foregoing procedures produces a potential usage for a container already in the DoD inventory, the design activity (through the Administrative Contracting Officer, if a contractor) shall promptly notify the designated inventory (item) manager of such potential usage, inquire as to actual availability of the containers and request a freeze on disposal of these assets.

H.3.3.2.2 Container design agent notification. Where a reusable container design is to be used for a new or existing end item, the design agent for that container shall be promptly informed to ensure that this usage is properly recorded and to ensure adequate configuration management coordination and control in the future. This requirement extends to individual piece parts of the container that are being used as-is in the new design and a new drawing is not being made.

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MILITARY PACKAGING REQUIREMENT CODES

J.1 SCOPE. This appendix establishes and defines codes to be used in describing military packaging methods and materials when developing packaging data as prescribed in Appendix E. This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

J.2 APPLICABLE DOCUMENTS

J.2.1 General. The documents listed in this section are specified in section J.4 of this appendix. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in section J.4 of this appendix, whether or not they are listed.

J.2.2 Government documents.

J.2.2.1 Specifications, standards and handbooks. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

FEDERAL SPECIFICATIONS

QQ-A-1876	-	Aluminum Foil.
UU-B-36	-	Bags, Paper, Grocers.
MMM-A-260	-	Adhesive, Water-Resistant (For Sealing Waterproofed Paper).
PPP-B-566	-	Boxes, Folding, Paperboard.
PPP-B-585	-	Boxes, Wood, Wirebound.
PPP-B-676	-	Boxes, Setup.
PPP-B-1055	-	Barrier Material, Waterproof, Flexible.
PPP-B-1672	-	Boxes, Shipping, Reusable With Cushioning.
PPP-C-96	-	Cans, Metal, 28 Gage and Lighter.
PPP-C-795	-	Cushioning Material, Packaging (Flexible Closed Cell Plastic Film for Long Distribution Cycles).
PPP-C-850	-	Cushioning Material, Polystyrene Expanded, Resilient (for Packaging Uses).

PPP-C-1120	-	Cushioning Material, Uncompressed Bound Fiber for Packaging.
PPP-C-1797	-	Cushioning Material, Resilient, Low Density, Unicellular, Polypropylene Foam.
PPP-T-495	-	Tubes, Mailing and Filing

COMMERCIAL ITEM DESCRIPTIONS

A-A-203	-	Paper, Kraft, Untreated.
A-A-1051	-	Paperboard, Wrapping and Cushioning.
A-A-1249	-	Paper, Wrapping, Tissue.
A-A-1507	-	Chipboard.
A-A-1898	-	Cushioning Material, Cellulosic, Packaging.
A-A-3129	-	Cushioning Material, Flexible Open Cell Plastic Film (for Packaging Applications).
A-A-3174	-	Plastic Sheet, Polyolefin.
A-A-50177	-	Paper, Lens.
A-A-59135	-	Packaging Material, Sheet
A-A-59136	-	Cushioning Material, Packaging, Closed Cell Foam Plank.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-DTL-117	-	Bags, Heat Sealable.
MIL-PRF-121	-	Barrier Materials, Greaseproof, Waterproof, Flexible, Heat-Sealable.
MIL-P-130	-	Paper, Wrapping, Laminated and Creped.
MIL-PRF-131	-	Barrier Materials, Watervaporproof, Greaseproof, Flexible, Heat-Sealable.
MIL-DTL-2427	-	Box, Ammunition Packing, Wood, Nailed.
MIL-PRF-3150	-	Lubricating Oil, Preservative, Medium.
MIL-PRF-3420	-	Packaging Materials, Volatile Corrosion Inhibitor, Treated, Opaque.
MIL-DTL-6054	-	Drum, Metal - Shipping and Storage.
MIL-D-6055	-	Drum, Metal Reusable, Shipping and Storage (Cap. 88 to 510 cubic inches).
MIL-DTL-6060	-	Bags, Watervaporproof, Heat-Sealable, Complex.
MIL-PRF-6081	-	Lubricating Oil, Jet Engine.
MIL-PRF-6085	-	Lubricating Oil: Instrument, Aircraft, Low Volatility.
MIL-C-6529	-	Corrosion Preventive, Aircraft Engine.
MIL-PRF-7808	-	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base.
MIL-PRF-7870	-	Lubricating Oil: General Purpose, Low Temperature.

MIL-PRF-8188 - Corrosion-Preventive Oil, Aircraft Turbine Engine, Synthetic Base.
MIL-PRF-10924 - Grease, Automotive and Artillery.
MIL-PRF-11264 - Container: Shipping, Reusable, for Tank Automotive Engines, Transmissions, Differentials, Transfers, Final Drives, Drive Axles, and Similar Assemblies.
MIL-C-11796 - Corrosion Preventive Compound, Petrolatum, Hot Application.
MIL-PRF-16173 - Corrosion Preventive Compound, Solvent Cutback, Cold Application.
MIL-C-16555 - Coating Compound, Strippable, Sprayable
MIL-DTL-17667 - Paper, Wrapping, Chemically Neutral (Non-Corrosive).
MIL-PRF-21260 - Lubricating Oil, Internal Combustion Engine, Preservative Break-In.
MIL-PRF-22019 - Barrier Materials, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated.
MIL-DTL-22020 - Bags, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated.
MIL-PRF-22191 - Barrier Materials, Transparent, Flexible, Heat Sealable.
MIL-PRF-23699 - Lubricating Oil, Aircraft Turbine Engine, Synthetic Base, NATO Code Number 0-156.
MIL-PRF-23827 - Grease, Aircraft and Instrument, Gear and Actuator Screw.
MIL-PRF-26514 - Polyurethane Foam, Rigid or Flexible; for Packaging.
MIL-PRF-32033 - Lubricating Oil, General Purpose, Preservative (Water-Displacing, Low Temperature).
MIL-B-43666 - Boxes, Shipping, Consolidation.
MIL-PRF-46002 - Preservative Oil, Contact and Volatile Corrosion-Inhibited.
MIL-PRF-46010 - Lubricant, Solid Film, Heat Cured, Corrosion Inhibiting.
MIL-PRF-46170 - Hydraulic Fluid, Rust Inhibited, Fire Resistant, Synthetic Hydrocarbon Base.
MIL-DTL-46506 - Boxes, Ammunition Packing, Wood, Wirebound.
MIL-DTL-53030 - Primer Coating, Epoxy, Water Reducible, Lead and Chromate Free.
MIL-PRF-81322 - Grease, Aircraft, General Purpose, Wide Temperature Range, NATO Code G-395.
MIL-PRF-81705 - Barrier Materials, Flexible, Electrostatic Protective, Heat Sealable.
MIL-DTL-81997 - Pouches, Cushioned, Flexible, Electrostatic-Protective, Transparent.
MIL-PRF-83282 - Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Metric, NATO Code No. H-537.

MIL-PRF-83671 - Foam-in-Place Packaging Materials, General Specification for.

DEPARTMENT OF DEFENSE STANDARD

MIL-STD-129 - Military Marking for Shipment and Storage.

(Copies of these documents are available online at https://quicksearch.dla.mil.)

J.2.2.2 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 are those cited in the solicitation or contract.

CODE OF FEDERAL REGULATIONS

29 CFR	-	Labor.
40 CFR	-	Protection of Environment.
49 CFR	-	Transportation.

(Copies of these documents are available online at https://www.ecfr.gov.)

WARNER ROBINS AIR LOGISTICS CENTER DRAWINGS

11214-5002-100	-	Container, Shipping and Storage.
11214-5002-200	-	Container, Shipping and Storage.
11214-5002-300	-	Container, Shipping and Storage.
11214-5002-400	-	Container, Shipping and Storage.

(These drawings may be obtained from WR-ALC/TILAS, 420 Second St., Suite 100, Robins AFB, GA 31098-1640.)

NAVICP DRAWINGS

P069	-	Container, Molded, Reusable.
13414	-	Container, Modular, Reusable.
15024	-	Container, Shipping and Storage.
15450	-	Container, Modular, Reusable.

(These drawings may be obtained from NAVSUP Weapon Systems Support code N241, 700 Robbins Avenue, Philadelphia, PA 19111-5098.)

J.2.3 Non-Government publications. The following documents form a part of these documents to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

ASTM INTERNATIONAL

ASTM D4169	- Shipping Containers and Systems, Shipping, Performance Testing of (DoD adopted).
ASTM D4727/ D4727M	- Fiberboard Sheet Stock (Container Grade) and Cut Shapes, Corrugated and Solid (DoD adopted).
ASTM D5118/- D5118M	- Boxes, Fiberboard Shipping, Fabrication of (DoD adopted).
ASTM D5168	- Containers, Fabrication and Closure of Triple Wall Corrugated Fiberboard (DoD adopted).
ASTM D5486	- Pressure Sensitive Tape for Packaging, Box Closure and Sealing (DoD adopted).
ASTM D6039/ D6039M	- Crates, Wood, Open and Covered (DoD adopted).
ASTM D6251/ D6251M	- Natural Wood-Cleated Panelboard Shipping Boxes.
ASTM D6255/ D6255M	- Standard Specification for Steel or Aluminum, Slotted Angel Crates.
ASTM D6256/ D6256M	- Standard Specification for Wood-Cleated Shipping Boxes with Skidded Load-Bearing Bases (DoD adopted).

ASTM D6880 - Standard Specification for Wood Boxes.
ASTM D7478/ D7478M - Standard Specification For Heavy Duty Sheathed Wood Crates.

(Copies of these documents are available online at http://www.astm.org.)

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)

Dangerous Goods Regulations.

(Copies of this document are available online at www.iata.org.)

INTERNATIONAL MARITIME ORGANIZATION (IMO)

International Maritime Dangerous Goods Code.

(Copies of this document are available online at www.imo.org.)

AEROSPACE INDUSTRIES ASSOCIATION (AIA)

NAS847 - Caps and Plugs, Protective, Dust and Moisture Seal.

(Copies of this document are available online at http:///www.aia.org.)

J.3 GENERAL REQUIREMENTS

J.3.1 Code system. The codes established in this appendix are used in a position and sequence system. Coded data used under this system shall appear in the sequence and the number of positions specified in Appendix E. This system reduces the data to a convenient format capable of being stored and manipulated by existing automated data processing methods and equipment or by manual means.

J.3.2 Procedure and responsibilities for revisions. The procedure and responsibilities set forth below provide a means for incorporating needed additional packaging requirements and codes into the established tables of this appendix with a minimum of delay. This procedure applies only to this appendix.

J.3.2.1 Adding codes. Military agencies requiring the addition of a requirement to the tables herein shall request the preparing activity to establish a code for the requirement and publish it in the next regular revision. Requests for additions to the code tables shall include a justification of use (number of acquisitions per year) and approximate number of items to which the requirement will apply. Due to the limitations of the code system, new codes shall not be established unless a substantial need is indicated. Copies of all correspondence relative to any code shall be furnished to the departmental custodians concerned. See Appendix E for use of supplemental data as a means of establishing requirements in lieu of codes.

J.4 DETAILED REQUIREMENTS

J.4.1 General code requirements. The requirements cited in the tables of this appendix shall be defined by use of the codes associated therewith. When using these codes, a symbol shall be used in each digit position in every field of the total code. To distinguish between alphabetical and numerical "Ø" and "ØØ", the numeric characters shall be designated as "Ø" and "ØØ" and the alphabetic characters as "O" and "OO". When none of the requirements of the table apply, one of the following codes shall be used:

a. Use the numerical code "Ø" or "ØØ" (depending on the number of digit spaces in the code field) to indicate that the field does not apply to the package described by the code.

b. Use the code "Z" or "ZZ" (depending on the number of digit spaces in the code field) to indicate that supplementary or special requirements apply which are not represented by the code symbols. When either of these symbols is used in an acquisition document, details of the requirement shall be provided with the document.

J.4.2 Preservation methods. Table J-I lists method of preservation codes as established by and described in 5.2.3.

J.4.2.1 Specialized preservation. Table J-Ia lists codes for packaging procedures which are frequently used and would require supplemental data to adequately define the packaging. Use of the specialized preservation code precludes the need to repetitively develop this data as a selective item. Note: Typically, Specialized Preservation Codes are all inclusive for preserving an item. All Requirement Code digits after the Method of Preservation enhance the 1st and 2nd digits. The detailed requirements of the specified Method of Preservation and 5.2.3 still apply when there is "Ø" or "ØØ" in any of the other Packaging Requirements Code digit positions.

J.4.3 Quantity per unit pack. The quantity per unit pack codes shall be as follows:

Code	Quantity
In clear	001 through 999
BLK	Bulk
ZZZ	Special requirements – refer to supplemental data, special instructions or drawings provided.

J.4.4 Cleaning. Table J-II lists cleaning requirement codes in alphanumerical order.

J.4.5 Preservative. Table J-III lists contact preservative material codes in alphanumerical order. Table J-IIIa lists those codes that directly reference a single specification in specification number sequence.

J.4.6 Wrapping material. Table J-IV lists wrapping material codes in alphanumerical order. Table J-IVa lists those codes that directly reference a single specification in specification number sequence.

J.4.7 Cushioning and dunnage. Table J-V lists cushioning and dunnage material codes in alphanumerical order. Table J-Va lists those codes that directly reference a single specification in specification number sequence.

J.4.8 Thickness of cushioning or dunnage. Table J-VI defines the required thickness of specified cushioning material. See note in Table J-VI for dunnage applications.

J.4.9 Unit and intermediate container. Table J-VII lists the unit and intermediate container codes in alphanumerical order. Table J-VIIa lists those codes that directly reference a single specification in specification number sequence.

J.4.9.1 Options. When the selected code allows an option in the selection of the container, the weight and size limitations of the container specification shall apply.

J.4.10 Unit container level and optional procedure indicator codes. Table J-VIII lists unit container level codes and table J-VIIIa lists optional procedure indicator codes.

J.4.11 Unit packs per intermediate container. The quantity of unit packs per intermediate container codes shall be as follows:

Code	Quantity
In clear	000 through 100
AAA	See B.5
ZZZ	Special requirement – see specific drawing or instruction provided

J.4.12 Intermediate container. The codes for the intermediate containers are the same as the codes used to specify the unit containers and are listed in table J-VII.

J.4.12.1 Intermediate container limitations. Refer to B.5.2.

J.4.13 Packing. The codes that indicate the type of shipping container for military packing are listed in table J-IX for Level A and table J-IXa for Level B packing. Codes for minimal packing are listed in table J-IXb.

J.4.14 Special markings. Table J-X lists the codes for special markings. The special markings are considered an integral part of the total pack required to identify and to protect the contained item during packaging, storage, transit and removal from the pack and shall be applied to the containers according to MIL-STD-129. The codes should be used only as they apply to items enclosed within the approved packaging and shall be compatible with the prescribed packaging data.

J.5 CROSS INDEX

J.5.1 Document number to table and code. A cross index that relates each document listed in Appendix J to the specific table that references the document, and its corresponding code, may be found in table J-XI.

TABLE J-I. Methods of preservation codes (see J.4.2).

Code	Method
10	Physical protection
20	Preservative coating
	30 Waterproof protection
31	Waterproof bag, heat sealed
32	Container, waterproof bag, heat sealed
33	Greaseproof-waterproof bag, heat sealed
	40 Watervaporproof protection
41	Watervaporproof bag, heat sealed
42	Container, watervaporproof bag, heat sealed, container
43	Floating watervaporproof bag, heat sealed
44	Rigid container (other than metal), sealed
45	Rigid metal container, sealed
	50 Watervaporproof protection with desiccant
51	Watervaporproof bag, heat sealed, with desiccant
52	Container, watervaporproof bag, heat sealed, container, with desiccant
53	Floating watervaporproof bag, heat sealed, with desiccant
54	Rigid container (other than metal), sealed, with desiccant
55	Rigid metal container, sealed, with desiccant
ZZ	See J.4.1.b

TABLE J-Ia. Specialized preservation codes (see J.4.2.1).

Code	Packaging procedure
AE	Seal or plug all openings and preserve by Method 10.
AH	Preserve Method 20 as follows: Fog spray or flush internally with preservative indicated by preservation code. All openings shall then be plugged or sealed to prevent entrance of dirt and moisture. Exterior unpainted ferrous metal surfaces shall be coated with a suitable paint or enamel, or coated with cold application, nontacky, corrosion preventive compound conforming to MIL-PRF-16173, Grade 4.
AU	Preservative compounds shall not be applied to windings, commutators or peripheries of armatures or rotors. Shafts shall be coated with MIL-PRF-16173, Grade 2 preservative and wrapped with MIL-PRF-121 material, secured in place with ASTM-D5486 tape. Commutators shall be wrapped with MIL-PRF-121 material, held in place with ASTM D5486 tape. Exposed surfaces of steel collector rings shall be coated with MIL-PRF-16173, Grade 2 preservative. No preservative is required for bronze, brass or corrosion resisting metals. All collector rings shall be wrapped with MIL-PRF-121 material, secured in place with ASTM D5486 tape. Corrodible surfaces, except shafts, commutators, and collector rings, may be preserved by the use of insulating varnish applied during the manufacturing process. In addition to the foregoing requirements, armatures and rotors shall be wrapped with MIL-PRF-121 material, secured with ASTM D5486 tape.
AW	Preserve in accordance with any of the following alternate methods (used for gaskets and similar items): a. Seal in bags conforming to Class B, C or E of MIL-DTL-117, using stiffening material internally if needed to maintain rigidity. b. Preservation method 42 or 44. c. Place between sheet of, or in fold of, corrugated fiberboard of sufficient stiffness to resist bending, overwrap with waterproof wrapping paper conforming to PPP-B-1055 and seal with pressure sensitive tape conforming to ASTM D5486 or adhesive conforming to MMM-A-260. Authorization to use other waterproof barrier materials may be granted upon request.

TABLE J-Ia. Specialized preservation codes (see J.4.2.1) - Continued.

Code	Packaging procedure
BC	Preserve by Method 20 as follows: Coat all pieces of set with preservative compound conforming to MIL-PRF-16173, Grade 4. Wrap or bag each preserved piece individually in MIL-PRF-121 material. Cushion or segregate individually wrapped or bagged pieces in the storage container to prevent movement and possible physical damage. (Segregated identical pieces, such as buckets and seal strips, are to be kept as close together in the container as possible to facilitate ease of counting.) Individually preserved, wrapped or bagged pieces need not be identified since container markings are in accordance with MIL-STD-129. Itemized packing lists for inclusion within or attachment to the outside of the container shall be furnished in accordance with MIL-STD-129. The lists shall show quantity and nomenclature of all items included in the set. (Used for turbine blade sets and similar items.)
BD	Remove parts made of rubber, fiber, or nonmetallic materials adversely affected by preservative compounds and package by Method 41 without a preservative. Preserve metal parts of assembly to conform to the requirements of Method 40. Mark the bag containing nonmetallic parts "Parts for Assembly" and include it within, or securely attached to, the pack containing metal parts in a manner which will assure its being found when the pack is opened. (Use for couplings and similar items.)
BL	Plug or seal all openings and preserve using Method 20.
DB	Preserve by Method 10 modified as follows: Preserve in transparent barrier bag made of A-A-3174 or Type III MIL-PRF-22191 material. A-A-3174 or MIL-PRF-22191, Type III material, A-A-3129 or PPP-C-795 cushioning shall be used to cushion sharp edges and protrusions of the preserved items. Bag closure shall be made by any suitable means, except that staples shall not be used. When use of a bag is not practicable, the item shall be completely wrapped in the above barrier or cushioning material and secured with pressure sensitive tape. Also, the use of shaped or molded packs utilizing MIL-PRF-22191 or A-A-3174 materials in conjunction with plastic coated board is acceptable provided the pack's cube is not increased and the pack meets the tests specified in Appendix G. Strip or block form of multiple packages shall incorporate provisions for separating unit quantities.

TABLE J-Ia. Specialized preservation codes (see J.4.2.1) - Continued.

Code	Packaging procedure
DC	Preserve by Method 20 modified as follows: Preserve in a transparent barrier wrap made of Type II, MIL-PRF-22191 barrier material, or bag conforming to Type II, Class C, Style 2 of MIL-DTL-117. MIL-PRF-22191, Type II barrier material shall be used to cushion sharp edges and protrusions of item to prevent bag puncture. A-A-3129 or PPP-C-795 may also be used to cushion sharp edges and protrusions if item is first wrapped in MIL-PRF-22191, Type II barrier material. The bag closure shall be made by any suitable means, except that staples shall not be used. Also, the use of shaped, preformed or molded packages utilizing MIL-PRF-22191 or A-A-3174 materials in conjunction with plastic coated board is acceptable, provided that the package cube is not increased and materials are compatible with preservative specified. However, these packages shall be capable of meeting the tests specified in Appendix G. Strip or block form of multiple packages shall incorporate provisions for separating unit quantities.
DR	Preserve by Method 30 as follows: Each unit shall have all internal fluid-carrying passages, which are not prelubricated, filled with the specified preservative, allowing space for internal thermal expansion. If filling is not practical, the unit shall be internally fog-sprayed or flushed, then drained to the drip point. All ports, fittings, openings, etc., shall be capped or plugged with noncorrosive (non-interacting) metal caps or plugs conforming to NAS 847 or equivalent. All hydraulic preservative operating fluid used shall be filtered through a 3 micron absolute filter prior to being used as specified above. Exterior bare metal surfaces, subject to corrosion, shall be coated with compound conforming to MIL-PRF-16173, Grade 2 or MIL-C-11796, Class 3. Unit shall be wrapped with a greaseproof wrap conforming to MIL-PRF-121 or equivalent; seal seams with ASTM D5486 tape to effect a measure of waterproofness and prevent unwrapping. The unit must be adequately cushioned with material specified and placed in a grade V3c container fabricated in accordance with ASTM D5118/D5118M (as a minimum), Style FOL or CSSC. All seams, corners, and manufacturer's joint shall be tape-sealed with two inch tape conforming to ASTM D5486, Type III or IV.

TABLE J-Ia. Specialized preservation codes (see J.4.2.1) - Continued.

Code	Packaging procedure
DW	Preserve by Method 52 as follows: Item shall be cleaned, wrapped, blocked and braced, with desiccant in an interior fiberboard box fabricated in accordance with ASTM D5118/D5118M, Class domestic. Desiccant shall be placed inside the fiberboard box. A humidity indicator shall be placed on the outside of the fiberboard box. MIL-PRF-131 barrier material, sealed as required, shall be utilized around the first container. The cushioning, to be specified under the cushioning code and in the thickness required to adequately protect the item, shall be placed between the barrier and the outer container.
EK	Preserve by Method 10 as follows: Each bolt shall have the shank and threads protected by means of a sleeve extending over the full length of the shank and thread. The sleeve shall be manufactured from paperboard, asphalt impregnated chipboard, or spiral wrap of kraft paper over chipboard, lined with material conforming to MIL-PRF-121. Plastic sleeve coverings may also be used.
GS	Preserve by Method 33 (modified) in a transparent, flexible, sealable, volatile corrosion inhibitor treated bag conforming to MIL-DTL-22020. The interleaf furnished inside each Class 2, cold sealable bag shall be withdrawn after inserting item and prior to final sealing in accordance with MIL-DTL-22020. Items with sharp edges or protrusions shall be wrapped with sufficient layers of transparent, flexible, pressure (cold) sealable volatile corrosion inhibitor barrier material conforming to MIL-PRF-22019, Type II to prevent bag puncture. The latex coated (nonprinted) side of the barrier material shall always be facing the item. Alternately, the item may be completely wrapped with transparent, flexible, pressure (cold) sealable volatile corrosion inhibitor barrier material conforming to MIL-PRF-22019, Type II as indicated above and further preserved in a transparent barrier bag conforming to Type II, Class C, Style 2 of MIL-DTL-117. Closure shall be by heat-sealing when this alternate method is used. In addition to markings required elsewhere in the contract, unit identification and caution labels shall be in accordance with MIL-STD-129.

TABLE J-Ia. Specialized preservation codes (see J.4.2.1) - Continued.

GX	Preserve by Method 41 using an approved ESD control program (see 5.2.4.1.1) as follows: Items subject to damage by electromagnetic and electrostatic field forces shall be initially wrapped in material conforming to MIL-PRF-81705, Type III, or bags conforming to MIL-DTL-117, Type II, Class H, Style 2, and sufficiently cushioned in material conforming to A-A-3129, Type I, Grade B or PPP-C-795, Class 2 or MIL-DTL-81997, Type II or PPP-C-1797, Type II or A-A-59136, Class 1, Grade B or MIL-PRF-26514, Type III, Class 2, to protect item and to prevent bag puncture, and unit packed in a heat-sealed bag conforming to MIL-DTL-117, Type I, Class F, Style 1. Alternately if applicable, reclosable cushioned pouches conforming to MIL-DTL-81997, Type I may be used in lieu of initial wrap and cushioning. Lead or terminal configurations for all items shall be maintained as manufactured without causing loads or stresses capable of causing damage to the item. Materials used to maintain item position and lead or terminal configuration shall permit item removal without damage to the item. Electrostatic discharge (ESD) sensitive caution labels shall be applied in accordance with MIL-STD-129.
HM	Packaging and marking for hazardous materials shall comply with applicable requirements for Performance Oriented Packaging contained in the International Air Transport Association (IATA) Dangerous Goods Regulations or the International Maritime Dangerous Goods Code (IMDG) and with Code of Federal Regulations (CFR) Title 29, Title 40 and Title 49. All performance test requirements shall be supported by certificates and reports attesting to the date and the results obtained from performance oriented packaging testing. The contractor, if not a self-certifier, shall be responsible for assuring that third party sources providing performance testing services are, in fact, registered with the Department of Transportation. The contractor's signed certification that the packaged configuration meets IATA or IMDG requirements shall be incorporated on the DD Form 250, Material Inspection and Receiving Report, and other related acceptance document if the DD Form 250 is not used. All certificates and reports shall be available for inspection by authorized Government representatives for a period of three years.
JF	Preserve by Method 10 – Items shall be preserved in a vacuum formed skin pack, formed from either cellulose acetate, cellulose butyrate or cellulose propionate. The material shall be 10 to 15 mils minimum thickness prior to draw and 2 to 4 mils thickness after draw. Class domestic fiberboard meeting the requirements of ASTM D4727/D4727M shall be used as a stiffener.

TABLE J-II. Cleaning procedure codes (see J.4.4).

Code	Procedure
1	Any suitable process that is not injurious to the item.
Z	Special requirements - See specific instructions or drawings provided.
Ø	No requirement.

TABLE J-III. Contact preservative material codes (see J.4.5).

Code	Material
01	MIL-PRF-16173, Grade 1, corrosion preventive, solvent cutback, cold application, hard film
02	MIL-PRF-16173, Grade 2, corrosion preventive, solvent cutback, cold application, soft film
03	MIL-PRF-16173, Grade 3, corrosion preventive, solvent cutback, cold application, water displacing soft film
06	MIL-C-11796, Class 3, light preservative compound, soft film, hot application
07	MIL-PRF-3150, medium preservative oil, cold application
09	MIL-PRF-32033, lubricating oil, general purpose preservative (water displacing, low temperature)
10	MIL-PRF-21260, preservative and break-in lubricating oil, internal combustion engine, Grade 10, 30 or 50
11	MIL-PRF-23827, grease, aircraft and instrument, gear and actuator screw
12	MIL-PRF-81322, grease, aircraft, general purpose
13	MIL-PRF-10924, grease, automotive and artillery
15	MIL-PRF-46170, hydraulic fluid, synthetic, rust inhibited, fire resistant
17	MIL-PRF-6085, lubricating oil, instrument, aircraft, low volatility
19	MIL-PRF-16173, Grade 4, corrosion preventive, solvent cutback, cold application, transparent, non-tacky
20	MIL-PRF-46002, preservative oil, contact and volatile corrosion inhibited
21	MIL-PRF-16173, Grade 5, corrosion preventive, solvent cutback, water displacing soft film, low pressure steam removable
30	MIL-PRF-46010, corrosion inhibiting lubricant, solid film, heat cured
31	MIL-C-6529, Type II, corrosion preventive, ready mixed, for reciprocating aircraft engines
32	MIL-C-6529, Type III, corrosion preventive, ready mixed, for turbojet aircraft engines
33	MIL-PRF-7808, lubricating oil, synthetic base, for aircraft turbine engines
49	Vendor's protective grease or oil coating
50	MIL-PRF-7870, lubricating oil, low temperature
51	MIL-PRF-6081, lubricating oil, jet engine, Grade 1010
52	MIL-PRF-8188, corrosion preventive oil, synthetic base, for aircraft gas turbine engines
56	MIL-PRF-23699, lubricating oil, synthetic base, for aircraft turbine engines

TABLE J-III. Contact preservative material codes (see J.4.5) – Continued.

Code	Material
57	MIL-PRF-21260, Grade 10, light viscosity preservative and break-in lubricating oil, internal combustion engine
65	MIL-PRF-83282, hydraulic fluid, synthetic, fire retardant
8Ø	MIL-DTL-53030, primer coating, epoxy, water reducible
89	Preserve with normal operating lubricant
ZZ	Special requirement – See specific instructions or drawings provided
ØØ	No requirement

TABLE J-IIIa. Contact preservative material codes in specification sequence (see J.4.5).

Specification	Code
MIL-PRF-3150, medium preservative oil, cold application.	07
MIL-PRF-6081, lubricating oil, jet engine, Grade 1010.	51
MIL-PRF-6085, lubricating oil, instrument, aircraft, low volatility.	17
MIL-C-6529, Type II, corrosion preventive, ready-mixed, for reciprocating aircraft engines.	31
MIL-C-6529, Type III, corrosion preventive, ready-mixed, for turbo-jet aircraft engines.	32
MIL-PRF-7808, lubricating oil, synthetic base, for aircraft turbine engines.	33
MIL-PRF-7870, lubricating oil, low temperature.	50
MIL-PRF-8188, corrosion preventive oil, synthetic base, for aircraft gas turbine engines.	52
MIL-PRF-10924, grease, automotive and artillery.	13
MIL-C-11796, Class 3, light preservative, soft film, hot application.	06
MIL-PRF-16173, Grade 1, corrosion preventive, solvent cutback, cold application, hard film.	01
MIL-PRF-16173, Grade 2, corrosion preventive, solvent cutback, cold application, soft film.	02
MIL-PRF-16173, Grade 3, corrosion preventive, solvent cutback, cold application, water displacing soft film.	03
MIL-PRF-16173, Grade 4, corrosion preventive, solvent cutback, cold application, transparent, non-tacky.	19
MIL-PRF-16173, Grade 5, corrosion preventive, solvent cutback, cold application, water displacing soft film, low pressure steam removable.	21
MIL-PRF-21260, Grade 10, light viscosity preservative and break-in lubricating oil, internal combustion engine	57
MIL-PRF-21260, preservative and break-in lubricating oil, internal combustion engine, Grade 10, 30 or 50.	10
MIL-PRF-23699, lubricating oil, synthetic base, for aircraft turbine engines.	56
MIL-PRF-23827, grease, aircraft and instrument.	11
MIL-PRF-32033, light lubricating and preservative oil, water displacing, low Temperature	09
MIL-PRF-46002, preservative oil, contact and volatile corrosion-inhibited.	20
MIL-PRF-46010, corrosion inhibiting lubricant, solid film, heat cured.	30
MIL-PRF-46170, hydraulic fluid, synthetic, rust inhibited, fire resistant.	15
MIL-DTL-53030, primer coating, epoxy, water reducible.	80

TABLE J-IIIa. Contact preservative material codes in specification sequence (see J.4.5) – Continued.

Specification	Code
MIL-PRF-81322, grease, general purpose, aircraft.	12
MIL-PRF-83282, hydraulic fluid, synthetic, fire retardant.	65

TABLE J-IV. Wrapping material codes (see J.4.6).

Code	Material
BA	QQ-A-1876, aluminum foil
CA	A-A-203, kraft wrapping paper
DA	A-A-1249, paper, tissue
EA	MIL-DTL-17667, neutral wrapping paper
EB	MIL-DTL-17667, Type I, neutral wrapping paper, flat
EC	MIL-DTL-17667, Type II, neutral wrapping paper, creped
FA	MIL-P-130, laminated and creped wrapping paper
GB	MIL-PRF-121, greaseproof, waterproof barrier
GC	MIL-PRF-121, Type I, medium duty, greaseproof, waterproof barrier
GH	MIL-PRF-121, Type II, light duty, greaseproof, waterproof barrier
JA	A-A-3174, plastic sheet, polyolefin, 2 mil
JL	MIL-PRF-22019, transparent volatile corrosion inhibitor treated barrier material
JT	MIL-PRF-22191, Type II, transparent, waterproof, greaseproof barrier material
JV	MIL-PRF-22191, Type III, transparent, waterproof barrier material
K3	MIL-PRF-81705, Type III, Class 1, transparent, electrostatic protective, static shielding, barrier material or MIL-DTL-117, Type II, Class H, Style 2 bag
LA	A-A-50177, lens paper
MB	MIL-PRF-3420, volatile corrosion inhibitor treated material
ZZ	Special requirements – see specific instructions or drawings provided
ØØ	No requirement

TABLE J-IVa. Wrapping material codes in specification sequence (see J.4.6).

Specification	Code
A-A-203, kraft wrapping paper	CA
A-A-1249, tissue paper	DA
A-A-3174, plastic sheet, polyolefin, 2 mil	JA
A-A-50177, lens paper	LA
QQ-A-1876, aluminum foil	BA
MIL-PRF-121, greaseproof, waterproof barrier	GB
MIL-PRF-121, Type I, medium duty, greaseproof, waterproof barrier	GC
MIL-PRF-121, Type II, light duty, greaseproof, waterproof barrier	GH
MIL-P-130, creped paper	FA
MIL-PRF-3420, volatile corrosion inhibitor treated material	MB
MIL-DTL-17667, neutral wrapping paper	EA
MIL-DTL-17667, Type I, flat neutral wrapping paper	EB
MIL-DTL-17667, Type II, creped neutral wrapping paper	EC
MIL-PRF-22019, transparent VCI-treated barrier material	JL
MIL-PRF-22191, Type II, transparent, waterproof, greaseproof barrier material	JT
MIL-PRF-22191, Type III, transparent waterproof barrier material	JV
MIL-PRF-81705, Type III, class 1, transparent, electrostatic protective, static shielding barrier material or MIL-DTL-117, Type II, Class H, Style 2 bag	K3

TABLE J-V. Cushioning and dunnage material codes (see J.4.7).

Code	Material
AD	Cushion, anchor, block or brace as required.
BG	A-A-1898, Grade II, water resistant cellulosic cushioning
BN	PPP-C-850, polystyrene cushioning
DA	A-A-1051, paperboard cushioning
FA	PPP-C-1120, Class A, water resistant bound fiber
FE	PPP-C-1120, Type II, Class A, medium soft density, water resistant bound fiber
FH	PPP-C-1120, Type III, Class A, medium firm density, water resistant bound fiber
FL	PPP-C-1120, Type IV, Class A, firm density, water resistant bound fiber
GA	A-A-59136, cushioning material, closed cell, foam plank
GD	MIL-PRF-26514, Type I, Class 1, rigid polyurethane foam
GE	MIL-PRF-26514, Type I, Class 2, Grade A, flexible polyurethane foam, light load range
GF	MIL-PRF-26514, Type I, Class 2, Grade B, flexible polyurethane foam, medium load range
GH	MIL-PRF-26514, Type I, Class 2, Grade C, flexible polyurethane foam, heavy load range
GK	MIL-PRF-26514, Type III, Class 2, Grade A, Anti-static, flexible polyurethane foam, light load range
GL	MIL-PRF-26514, Type III, Class 2, Grade B, Anti-static, flexible polyurethane foam, medium load range
GM	A-A-59136, Type I, Class 1, Grade A, standard polyethylene, closed cell foam plank cushioning material
GN	A-A-59136, Type I, Class 1, Grade B, static dissipative, polyethylene, closed cell plank cushioning material
GT	PPP-C-1797, polypropylene foam cushioning
HA	A-A-1507, chipboard sheet used as a stiffener on one side of item
HB	A-A-1507, chipboard sheet used as a stiffener on both sides of item
HD	A-A-1507, chipboard sheet used as pads, cells, die cuts or sleeves
JA	ASTM D4727/D4727M, domestic fiberboard used as a stiffener on one side of item
JB	ASTM D4727/D4727M, domestic fiberboard used as a stiffener on both sides of item
JC	ASTM D4727/D4727M, domestic fiberboard used as pads, cells, die cuts or sleeves
LC	PPP-C-795, Class 1, cellular plastic film cushioning
LK	Wood blocking and bracing, fasteners, or steel strapping, for tie-down purposes. If the item has rubber tired wheels, the wheels shall be blocked clear of the floor of the crate or skid and shall not be load bearing.
LN	Plastic containers (vials, boxes, etc.) shall be constructed of rigid, transparent material that, if applicable, is resistant to any lubricant or preservative being used
LT	PPP-C-795, Class 2, antistatic closed cell plastic film cushioning

TABLE J-V. Cushioning and dunnage material codes (see J.4.7) – Continued.

Code	Material
MA	MIL-PRF-83671, Class 2, Grade A, flexible foam-in-place polyurethane
MB	MIL-PRF-83671, Class 1, rigid foam-in-place polyurethane
MD	MIL-PRF-83671, Class 2, Grade B, flexible foam-in-place polyurethane
NA	PPP-C-795, closed cell plastic cushioning; or A-A-3129, open cell plastic cushioning; or PPP-C-1797, polypropylene foam cushioning.
NB	A-A-3129, Type I, Grade B, static dissipative open cell plastic cushioning.
NC	PPP-C-1797, Type II, electrostatic protective, polypropylene foam, resilient, low density
NG	A-A-3129, Type I, Grade A, open cell plastic cushioning
NS	Weather resistant fiberboard meeting the requirements of ASTM D4727/D4727M used as pads, cells, die cuts or sleeves; or polyurethane foam conforming to MIL-PRF-26514
P4	MIL-DTL-81997, Type I, cushioned pouch, electrostatic protective, transparent
P5	ASTM D5168, triple wall fiberboard used as pads, cells, sleeves, or die-cuts
P6	A-A-59135, packaging material, sheet
ZZ	Special requirements. See specific instructions or drawings provided.
00	No requirement

TABLE J-Va. Cushioning and dunnage material codes in specification sequence (see J.4.7).

Specification	Code
A-A-1051, paperboard cushioning	DA
A-A-1507, chipboard sheet as a stiffener on one side of the item	HA
A-A-1507, chipboard sheet as a stiffener on both sides of item	HB
A-A-1507, chipboard sheet used as pads, cells, die cuts or sleeves	HD
A-A-1898, Grade II, water resistant cellulosic cushioning	BG
A-A-3129, Type 1, Grade B, static dissipative open cell plastic cushioning	NB
A-A-3129, Type 1, Grade A, open cell plastic cushioning	NG
A-A-59135, packaging material, sheet	P6
A-A-59136, cushioning material, closed cell, foam plank	GA
A-A-59136, Type I, Class 1, Grade A, standard polyethylene, closed cell foam plank cushioning material	GM
A-A-59136, Type I, Class 1, Grade B, static dissipative, polyethylene, closed cell plank cushioning material	GN
PPP-C-795, Class 1, closed cell plastic film cushioning	LC
PPP-C-795, Class 2, anti-static closed cell plastic film cushioning	LT
PPP-C-795, closed cell plastic cushioning; or A-A-3129, open cell plastic cushioning; or PPP-C-1797, polypropylene foam cushioning	NA
PPP-C-850, polystyrene cushioning	BN
PPP-C-1120, Class A, water resistant bound fiber	FA
PPP-C-1120, Type II, Class A, medium soft density, water resistant bound fiber	FE
PPP-C-1120, Type III, Class A, medium firm density, water resistant bound fiber	FH
PPP-C-1120, Type IV, Class A, firm density, water resistant bound fiber	FL
PPP-C-1797, polypropylene foam cushioning	GT
PPP-C-1797, Type II, electrostatic protective, polypropylene foam, resilient, low density	NC
MIL-PRF-26514, Type I, Class 1, rigid polyurethane foam	GD
MIL-PRF-26514, Type I, Class 2, Grade A, flexible polyurethane foam, light load range	GE
MIL-PRF-26514, Type I, Class 2, Grade B, flexible polyurethane foam, medium load range	GF

TABLE J-Va. Cushioning and dunnage material codes in specification sequence (see J.4.7) – Continued.

Specification	Code
MIL-PRF-26514, Type I, Class 2, Grade C, flexible polyurethane foam, heavy load range	GH
MIL-PRF-26514, Type III, Class 2, Grade A, Anti-static, flexible polyurethane foam, light load range	GK
MIL-PRF-26514, Type III, Class 2, Grade B, Anti-static, flexible polyurethane foam, medium load range	GL
MIL-DTL-81997, Type I, cushioned pouch, electrostatic protective, transparent	P4
MIL-PRF-83671, Class 1, rigid foam-in-place polyurethane	MB
MIL-PRF-83671, Class 2, Grade A, flexible foam-in-place polyurethane	MA
MIL-PRF-83671, Class 2, Grade B, flexible foam-in-place polyurethane	MD
ASTM D4727/D4727M, domestic fiberboard as a stiffener on one side of item	JA
ASTM D4727/D4727M, domestic fiberboard as a stiffener on both sides of item	JB
ASTM D4727/D4727M, domestic fiberboard used as pads, cells, die cuts or sleeves	JC
ASTM D5168, triple wall fiberboard used as pads, cells, sleeves, or die-cuts	P5

TABLE J-VI. Thickness of cushioning or dunnage codes (see J.4.8).

Code	Minimum Thickness	Code	Minimum Thickness
A	1/4 inch thick	N	3-1/4 inches thick
B	1/2 inch thick	P	3-1/2 inches thick
C	3/4 inch thick	Q	3-3/4 inches thick
D	1 inch thick	R	4 inches thick
E	1-1/4 inches thick	S	4-1/4 inches thick
F	1-1/2 inches thick	T	4-1/2 inches thick
G	1-3/4 inches thick	U	4-3/4 inches thick
H	2 inches thick	V	5 inches thick
J	2-1/4 inches thick	W	5-1/4 inches thick
K	2-1/2 inches thick	Z	Special requirements – See specific
L	2-3/4 inches thick		instructions or drawings provided
M	3 inches thick	∅	Not applicable

Note: The above table lists minimum thicknesses. Additional cushioning may be used as dunnage if required to fill any voids in containers resulting from use of oversized unit containers.

TABLE J-VII. Unit and intermediate container codes (see J.4.9 or J.4.12).

Code	Container
10	Any suitable container included in this table may be used (see J.4.9.1).
A1	Bags made of material conforming to MIL-P-130, or any bag authorized by MIL-DTL-117. Closure may be by staples or tape.
A2	Any bag or sack used by the vendor.
AN	UU-B-36, bags, paper grocers
B2	MIL-DTL-117, Type II, Class C, Style 3, medium duty, waterproof, greaseproof, one side opaque and other side transparent bag
B3	MIL-DTL-117, Type I, Class E, Style 3, heavy duty, watervaporproof, greaseproof, one side opaque and other side transparent bag.
B9	MIL-DTL-117, Type I, Class F, Style 1, heavy duty, watervaporproof, electrostatic protective, opaque bag.
BD	MIL-DTL-117, bag.
BE	MIL-DTL-117, Type II, Class C, Style 1, medium duty, waterproof, greaseproof, opaque bag.
BL	MIL-DTL-117, Type III, Class B, Style 2, light duty, waterproof, transparent bag.
BS	MIL-DTL-117, Type I, Class E, Style 1, heavy duty, watervaporproof, greaseproof, opaque bag.
BT	MIL-DTL-22020, bag, transparent, heat sealable, VCI treated.
BV	MIL-DTL-117, Type III, Class C, Style 1, light duty, waterproof, greaseproof, opaque bag.
D1	PPP-B-566 or PPP-B-676, folding or setup box.
D3	PPP-B-566, PPP-B-676, or ASTM D5118/D5118M, folding, setup or fiberboard box.
D4	Vendor's setup or folding box.
DA	PPP-B-566, folding paperboard box.
DE	PPP-B-676, setup box.
DO	Any suitable fiber box included in this table may be used (see J.4.9.1).
DP	ASTM D5168, box, triple wall, fiberboard.
DQ	ASTM D5168, Class 1, non-weather resistant triple wall fiberboard box.
DR	ASTM D5168, Class 2, weather resistant triple wall fiberboard box.
E5	ASTM D5118/D5118M, fiberboard box.
E6	Vendor's fiberboard box.
E7	ASTM D5118/D5118M, Type CF, Class domestic, single wall, corrugated fiberboard box.
E8	ASTM D5118/D5118M, Type CF, Class domestic, double wall, corrugated fiberboard box.
E9	ASTM D5118/D5118M, Class weather resistant fiberboard box; or PPP-B-566, water resistant folding box; or PPP-B-676, water resistant setup box.

TABLE J-VII. Unit and intermediate container codes (see J.4.9 or J.4.12) – Continued.

Code	Container
EC	ASTM D5118/D5118M, Type CF, Class domestic, corrugated fiberboard box.
ED	ASTM D5118/D5118M, Type CF, Class weather resistant, corrugated fiberboard box.
EE	ASTM D5118/D5118M, Type CF, Class weather resistant, single wall, corrugated fiberboard box.
EF	ASTM D5118/D5118M, Type CF, Class Weather Resistant, single wall, Full Telescoping container.
EG	ASTM D5118/D5118M, Type CF, Class Weather Resistant, double wall, Full Telescoping container.
EN	ASTM D5118/D5118M, Type SF, Class domestic, solid fiberboard box.
EP	ASTM D5118/D5118M, Type SF, Class weather resistant, solid fiberboard box.
F2	ASTM D6251, Type III, Class 2, overseas cleated plywood box or ASTM-D6880, Class 2, heavy duty nailed wood box.
F3	ASTM D6251, Type III, Class 1, domestic cleated plywood box or ASTM D6880, Class 1, light duty nailed wood box.
F5	Vendor's wood box.
F6	ASTM D6251, Type III, Treatment B, Style I or J, cleated plywood box, surface treated in accordance with the requirements of the specification.
F7	ASTM D6251, Type III, or ASTM D6880, heavy or light duty, determined by shipment destination. Provided with nominal 2" x 4" skid. Box provided with an inspection door, located for clear reading of the humidity indicator, for Method 54 only. Inspection door shall be hinged, cleated or sealed (similar to inspection door specified in ASTM D7478/D7478M). Wood and plywood boxes shall have top panels secured with wood screws and boxes banded. The top, one side, and one end of the box shall be marked "REUSABLE CONTAINER AND CUSHIONING -USE FOR RETURN OF NRFI ASSEMBLY" with black letters, minimum 2" high. In addition, mark box "TO OPEN -USE SCREWDRIVER" with one inch minimum high letters. Letter sizes may be appropriately reduced in proportion to size of container.
F9	Shallow box, constructed of plywood and wood as follows: Sides and ends of one piece of lumber, 3/4 inch minimum thickness. Top and bottom of one piece standard grade 3/8 inch plywood with exterior weather-resistant glue. End cleats shall run across the grain of the ends and shall extend within 1/8 inch of the outside surface of the top and bottom. Sides shall extend over the cleats. Battens shall be applied in accordance with ASTM D6880 except exterior battens or cleats shall not be used on the top.
FA	ASTM D6880, wood box.
FB	ASTM D6880, Class 1, light duty wood box.
FC	ASTM D6880, Class 2, heavy duty wood box.
FD	ASTM D6251, Type III, wood cleated plywood box
FF	ASTM D6251, Type III, Class 2, wood cleated plywood box, overseas

TABLE J-VII. Unit and intermediate container codes (see J.4.9 or J.4.12) – Continued.

Code	Container
FG	ASTM D6251, Type III, Class 1, wood cleated plywood box, domestic
FL	ASTM D6251, Type II, Class 1, domestic, wood-cleated panelboard box.
FO	Any suitable wood box included in this table may be used (see J.4.9.1).
FU	ASTM D6256/D6256M, wood-cleated skidded box, load bearing base.
FV	ASTM D6256/D6256M, Class 1, domestic, wood-cleated skidded box.
FW	ASTM D6256/D6256M, Class 2, overseas, wood-cleated skidded box.
GB	ASTM D6256/D6256M, Class 1 or 2. Provide box with inspection door located for clear reading of the humidity indicator for Method 54 packages only. The inspection door shall be hinged, cleated and sealed (similar to inspection door specified by ASTM D7478/D7478M). The top, one side and one end of the shipping container shall be marked "REUSABLE CONTAINER – USE FOR RETURN OF NRFI ASSEMBLY" in black letters, minimum 2" high.
HA	PPP-C-96, metal can.
K1	MIL-DTL-6054 or MIL-D-6055, metal reusable drum, depending upon size or capacity limits of container.
KE	MIL-DTL-6054, reusable metal drum.
KF	MIL-D-6055, reusable metal drum (capacity from 88 to 510 cu. in.).
MA	ASTM D7478/D7478M, wood crate, lumber or plywood sheathed, nailed or bolted.
MB	ASTM D7478/D7478M, Type I, Class 1, nailed wood crate, lumber sheathed.
MC	ASTM D7478/D7478M, Type II, Class 1, bolted wood crate, lumber sheathed.
MF	ASTM D7478/D7478M, Type I, Class 2, nailed wood crate, plywood sheathed.
MG	ASTM D7478/D7478M, Type II, Class 2, bolted wood crate, plywood sheathed.
MH	ASTM D7478/D7478M, Type II, Class 1 or 2, bolted wood crate, provided with lifting attachments and an inspection port (Method 54 packages only). The top, one side and one end of the crate shall be marked "REUSABLE CONTAINER – USE FOR RETURN OF NRFI ASSEMBLY" with black letters a minimum of two inches high.
MO	Any suitable wood crate included in this table may be used (see J.4.9.1).
MV	ASTM D6039/D6039M, open and covered wood crate.
MY	NAVICP Drawing No. 15024, for shipping and storage of gyroscopic instruments.
NO	ASTM-D5118/D5118M, Type CF, Class weather resistant, double wall, corrugated fiberboard box.
NR	PPP-B-1672, Type I, vertical star cushioning in reusable box.
NS	PPP-B-1672, Type II, folding convoluted cushioning in reusable box.
NV	PPP-B-1672, Type III, telescoping encapsulated cushioning in reusable box.
NW	PPP-B-1672, Type IV, horizontal star cushioning in reusable box.

TABLE J-VII. Unit and intermediate container codes (see J.4.9 or J.4.12) – Continued.

Code	Container
NY	NAVICP Drawing No. P069, molded reusable container for circuit cards and modules.
NZ	NAVICP Drawing No. 13414, modular reusable container for packaging major repairables.
P4	MIL-DTL-81997, cushioned pouch, electrostatic protective, transparent
RC	NAVICP Drawing No. 15450, modular reusable container for packaging depot level repairables.
RD	PPP-B-585, wirebound wood box.
RH	MIL-DTL-2427, ammunition box, nailed wood.
RJ	MIL-DTL-46506, ammunition box, wirebound wood.
RK	MIL-PRF-11264, reusable wood containers, heavy duty.
SD	MIL-DTL-117, Type II, Class C, Style 2, medium duty, waterproof, greaseproof, transparent bag.
SE	MIL-DTL-117, Type I, Class E, Style 2, heavy duty, watervaporproof, greaseproof, transparent bag.
SF	MIL-DTL-117, Type II, Class E, Style 1, medium duty, watervaporproof, greaseproof, opaque bag.
SH	MIL-DTL-6060, complex, heat sealable, watervaporproof bags
SJ	MIL-B-43666, Type III, box, consolidation
SK	MIL-DTL-117, Type IV, Class E, Style 1, extra heavy duty, watervaporproof, greaseproof, opaque bag.
WD	Plastic containers constructed of rigid transparent material that, if applicable, is resistant to lubricant or preservative being used. Containers too small for adequate marking shall be overpackaged in envelopes for identification marking purposes.
WM	PPP-T-495, mailing tube.
WY	Warner-Robins Air Logistics Center Drawing Nos. 11214-5002-100, 11214-5002-200, 11214-5002-300, or 11214-50020-400 for shipping and storage of avionics instruments.
ZZ	Special requirement – See specific instructions or drawings provided.
ØØ	No requirement.

TABLE J-VIIa. Unit and intermediate container codes in specification sequence (see J.4.9 and J.4.12).

Specification	Code
PPP-B-566, folding paperboard box.	DA
PPP-B-566 or PPP-B-676, folding or setup box.	D1
PPP-B-566, PPP-B-676, or ASTM D5118/D5118M, folding, setup or fiberboard box.	D3
PPP-B-585, wirebound wood box.	RD
PPP-B-676, setup box.	DE
PPP-B-1672, Type I, vertical star cushioning in reusable box.	NR
PPP-B-1672, Type II, folding convoluted cushioning in reusable box.	NS
PPP-B-1672, Type III, telescoping encapsulated cushioning in reusable box.	NV
PPP-B-1672, Type IV, horizontal star cushioning in reusable box.	NW
PPP-C-96, metal can.	HA
PPP-T-495, mailing and filing tube.	WM
UU-B-36, bags, paper, grocers	AN
MIL-DTL-117, bag.	BD
MIL-DTL-117, Type I, Class E, Style 1, heavy duty, watervaporproof, greaseproof, opaque bag.	BS
MIL-DTL-117, Type I, Class E, Style 2, heavy duty, watervaporproof, greaseproof, transparent bag.	SE
MIL-DTL-117, Type I, Class E, Style 3, heavy duty, watervaporproof, greaseproof, one side opaque, other side transparent bag.	B3
MIL-DTL-117, Type I, Class F, Style 1, heavy duty, watervaporproof, electrostatic protective, opaque bag.	B9
MIL-DTL-117, Type II, Class C, Style 1, medium duty, waterproof, greaseproof, opaque bag.	BE
MIL-DTL-117, Type II, Class C, Style 2, medium duty, waterproof, greaseproof, transparent bag.	SD
MIL-DTL-117, Type II, Class C, Style 3, medium duty, waterproof, greaseproof, one side opaque, other side transparent bag.	B2
MIL-DTL-117, Type II, Class E, Style 1, medium duty, watervaporproof, greaseproof, opaque bag.	SF
MIL-DTL-117, Type III, Class B, Style 2, light duty, waterproof, transparent bag.	BL
MIL-DTL-117, Type III, Class C, Style 1, light duty, waterproof, greaseproof, opaque bag.	BV
MIL-DTL-117, Type IV, Class E, Style 1, extra heavy duty, watervaporproof, greaseproof, opaque bag.	SK

TABLE J-VIIa. Unit and intermediate container codes in specification sequence (see J.4.9 and J.4.12) – Continued.

Specification	Code
MIL-DTL-2427, ammunition box, nailed wood.	RH
MIL-DTL-6054 or MIL-D-6055, metal reusable drum, depending upon size or capacity limits of container.	K1
MIL-DTL-6054, metal drum, reusable.	KE
MIL-D-6055, metal drum, reusable (capacity from 88 to 510 cu. in.)	KF
MIL-DTL-6060, complex, heat-sealable, watervaporproof bags	SH
MIL-PRF-11264, reusable wood containers, heavy duty.	RK
MIL-DTL-22020, bag, transparent, heat sealable, VCI treated	BT
MIL-B-43666, Type III, box, consolidation	SJ
MIL-DTL-46506, ammunition box, wirebound wood.	RJ
MIL-DTL-81997, cushioned pouch, electrostatic protective, transparent.	P4
ASTM D5118/D5118M, fiberboard box.	E5
ASTM D5118/D5118M, Type CF, Class domestic, corrugated fiberboard box.	EC
ASTM D5118/D5118M, Type CF, Class domestic, single wall, corrugated fiberboard box.	E7
ASTM D5118/D5118M, Type CF, Class domestic, double wall, corrugated fiberboard box.	E8
ASTM D5118/D5118M, Class weather resistant fiberboard box; or PPP-B-566, water resistant folding box; or PPP-B-676, water resistant setup box.	E9
ASTM D5118/D5118M, Type CF, Class weather resistant, corrugated fiberboard box.	ED
ASTM D5118/D5118M, Type CF, Class weather resistant, single wall, corrugated fiberboard box.	EE
ASTM D5118/D5118M, Type CF, Class Weather Resistant, single wall, Full Telescoping container.	EF
ASTM D5118/D5118M, Type CF, Class Weather Resistant, double wall, Full Telescoping container.	EG
ASTM D5118/D5118M, Type SF, Class domestic, solid fiberboard box.	EN
ASTM D5118/D5118M, Type SF, Class weather resistant, solid fiberboard box.	EP
ASTM-D5118/D5118M, Type CF, Class weather resistant, double wall, corrugated fiberboard box.	NO

TABLE J-VIIa. Unit and intermediate container codes in specification sequence (see J.4.9 and J.4.12) – Continued.

Specification	Code
ASTM D5168, triple wall fiberboard box.	DP
ASTM D5168, Class 1, non-weather resistant triple wall fiberboard box.	DQ
ASTM D5168, Class 2, weather-resistant triple wall fiberboard box.	DR
ASTM D6039/D6039M, open and covered wood crate.	MV
ASTM D6251, Type II, Class 1, domestic wood-cleated panelboard box.	FL
ASTM D6251, Type III, wood cleated plywood box	FD
ASTM D6251, Type III, Class 1, wood cleated plywood box, domestic	FG
ASTM D6251, Type III, Class 2, wood cleated plywood box, overseas	FF
ASTM D6251, Type III, Treatment B, Style I or J, cleated plywood box, surface treated in accordance with requirements of the specification	F6
ASTM D6251, Type III, Class 2, overseas cleated plywood box or ASTM D6880, Class 2, heavy duty nailed wood box.	F2
ASTM D6251, Type III, Class 1, domestic cleated plywood box or ASTM D6880, Class 1, light duty nailed wood box.	F3
ASTM D6251, Type III, or ASTM D6880, heavy or light duty, determined by shipment destination. Provided with nominal 2" x 4" skid. Box provided with an inspection door, located for clear reading of the humidity indicator, for Method 54 only. Inspection door shall be hinged, cleated or sealed (similar to inspection door specified in ASTM D7478/D7478M). Wood and plywood boxes shall have top panels secured with wood screws and boxes banded. The top, one side, and one end of the box shall be marked "REUSABLE CONTAINER AND CUSHIONING -USE FOR RETURN OF NRFI ASSEMBLY" with black letters, minimum 2" high. In addition, mark box "TO OPEN -USE SCREWDRIVER" with one inch minimum high letters. Letter sizes may be appropriately reduced in proportion to size of container.	F7
Shallow box, constructed of plywood and wood as follows: Sides and ends of one piece of lumber, 3/4 inch minimum thickness. Top and bottom of one piece standard grade 3/8 inch plywood with exterior weather-resistant glue. End cleats shall run across the grain of the ends and shall extend within 1/8 inch of the outside surface of the top and bottom. Sides shall extend over the cleats. Battens shall be applied in accordance with ASTM D6880 except exterior battens or cleats shall not be used on the top.	F9

TABLE J-VIIa. Unit and intermediate container codes in specification sequence (see J.4.9 and J.4.12) – Continued.

Specification	Code
ASTM D6256/D6256M, wood cleated skidded box, load bearing base	FU
ASTM D6256/D6256M, Class 1, domestic, wood-cleated skidded box	FV
ASTM D6256/D6256M, Class 2, overseas, wood-cleated skidded box	FW
ASTM D6256/D6256M, Type I or II, Style A or B, Class 1 or 2. Provide box with inspection door located for clear reading of the humidity indicator for Method 54 packages only. The inspection door shall be hinged, cleated and sealed (similar to inspection door specified by ASTM D7478/D7478M). The top, one side and one end of the shipping container shall be marked "REUSABLE CONTAINER – USE FOR RETURN OF NRFI ASSEMBLY" in black letters, minimum 2" high.	GB
ASTM D6880, wood box	FA
ASTM D6880, Class 1, light duty wood box	FB
ASTM D6880, Class 2, heavy duty wood box	FC
ASTM D7478/D7478M, wood crate, lumber or plywood sheathed, nailed or bolted.	MA
ASTM D7478/D7478M, Type I, Class 1, nailed wood crate, lumber sheathed.	MB
ASTM D7478/D7478M, Type I, Class 2, nailed wood crate, plywood sheathed.	MF
ASTM D7478/D7478M, Type II, Class 1, bolted wood crate, lumber sheathed	MC
ASTM D7478/D7478M, Type II, Class 2, bolted wood crate, plywood sheathed.	MG
ASTM D7478/D7478M, Type II, Class 1 or 2, bolted wood crate, provided with lifting attachments and an inspection port (Method 54 packages only). The top, one side and one end of the crate shall be marked "REUSABLE CONTAINER – USE FOR RETURN OR NRFI ASSEMBLY" with black letters a minimum of 2" high.	MH
Vendors Wood Box	F5

TABLE J-VIII. Unit container level codes (see J.4.10).

Code	Unit container level
O	Unit container is not an acceptable shipping container.
A	Unit container provides level A packing protection.
B	Unit container provides level B packing protection.
Z	Unit container requires special consideration (air only, inside storage only, etc.)

TABLE J-VIIIa. Optional procedure indicator codes (see J.4.10).

Code	Optional procedure indicator
A	Packaging is in accordance with a procedural specification or an SPI. The appropriate specification number will be shown in-the-clear in the supplemental data area.
E	Certain options can be exercised as to specific method of preservation or DoD approved packaging materials, but only as indicated in supplemental data. However, basic preservation method shall be retained and unit package dimensions shall not be increased by more than one inch. Equal or better protection shall be given the item and there shall be no increase in the package cost.
M	All packaging data is mandatory for compliance and no substitutions are permitted. Fast packs should be included in this category.
O	Options can be exercised as to specific method of preservation or DoD approved packaging materials to be used. However, basic preservation method shall be retained, supplemental data shall be complied with, and unit package dimensions shall not be increased by more than one inch. Equal or better protection shall be given the item and there shall be no increase in the package cost.
P	For SPI items, polyurethane foam-in-place is permitted as specified on the SPI only when the SPI pack is not available.

TABLE J-IX. Level A military packing requirement codes (see J.4.13).

Code	Requirement
B	Packing shall be accomplished using ASTM D6251, Type III, Class 2, overseas cleated plywood boxes or wirebound wood boxes conforming to PPP-B-585, Class 3 (military overseas).
C	Packing shall be accomplished using cleated-plywood wood boxes conforming to ASTM D6251, Type III, Class 2 or nailed wood boxes conforming to ASTM D6880, Class 2, heavy duty, or covered wood crates conforming to ASTM D6039/D6039M, Type V, Style B, or lumber and plywood sheathed wood crates conforming to ASTM D7478/D7478M, or load-bearing base skidded wood-cleated boxes conforming to ASTM D6256/D6256M, Type II (overseas), or steel or aluminum slotted angle crates conforming to ASTM D6255/D6255M, Type I, or open wood crates conforming to ASTM D7478/D7478M
E	Packing shall be accomplished to meet the performance test requirements of ASTM D4169, Distribution Cycle 18, Assurance Level 1.
F	Packing is not required: the unit container shall also serve as the shipping container. Closure, sealing and reinforcement shall be in accordance with applicable specification for shipping container.
Q	Packing shall be accomplished in accordance with table C.II for the packing level specified. Closure sealing and reinforcement shall be in accordance with applicable specification for shipping container.
Z	Special requirement. See specific instructions or drawings provided.
2	Packing shall be accomplished using cleated-plywood boxes, overseas type, conforming to ASTM D6251, Type III, Class 2, or nailed wood boxes conforming to ASTM D6880, Class 2, heavy duty.

TABLE J-IXa. Level B military packing requirement codes (see J.4.13).

Code	Requirement
A	Packing shall be accomplished using fiberboard boxes, weather resistant class, fabricated in accordance with ASTM D5118/D5118M, or triplewall fiberboard boxes conforming to ASTM D5168, class weather resistant.
F	Packing is not required: the unit container shall also serve as the shipping container. Closure, sealing and reinforcement shall be in accordance with applicable specification for shipping container.
H	Packing shall be accomplished using boxes fabricated in accordance with ASTM D5118/D5118M, class weather-resistant.
P	Packing shall be accomplished using open wood crates conforming to ASTM D6039/D6039M, Type V, Style B, or open wood crates conforming to ASTM D7478/D7478M, or open steel or aluminum slotted angle crates conforming to ASTM D6255/D6255M, Type I.
Q	Packing shall be accomplished in accordance with table C-II for the packing level specified. Closure sealing and reinforcement shall be in accordance with the appropriate shipping container specification.
R	Packing shall be accomplished to meet the performance test requirements of ASTM D4169, Distribution Cycle 18, Assurance Level 2.
T	Packing shall be accomplished by use of fiberboard containers fabricated in accordance with ASTM D5118/D5118M, weather-resistant class, or triple wall fiberboard boxes conforming to ASTM D5168, class weather resistant; or whenever practicable, by means of shrink-film conforming to A-A-3174.
Z	Special requirement. See specific instructions or drawings provided.
Ø	Packing not authorized, see next higher level of packing for requirement.
7	Packing shall be accomplished using cleated-plywood boxes conforming to ASTM D6251, Type III, Class 1 (domestic), or nailed wood boxes conforming to PPP-B-621, Class 1, or wirebound boxes conforming to PPP-B-585, Class 1.
8	Packing shall be accomplished in accordance with the Level A packing requirements as specified for the item.

TABLE J-IXb. Minimal packing requirement codes (see J.4.13).

Code	Requirement
F	Packing is not required; the unit container shall also serve as the shipping container. Closure, sealing and reinforcement shall be in accordance with applicable specification for shipping container.
L	Packing shall be accomplished using fiberboard boxes fabricated in accordance with ASTM D5118/D5118M, Class domestic or ASTM D5168, class non-weather resistant.
U	Items or packages that require packing for acceptance by the carrier shall be packed in exterior type shipping containers in a manner that will ensure safe transportation at the lowest rate to the point of delivery and shall meet, as a minimum, the requirements of the following rules and regulations, as applicable to the mode(s) of transportation to be utilized: (a) Postal Regulations (b) Department of Transportation Regulations (c) Civil Air Regulations (d) Uniform Freight Classification Rules (e) National Motor Freight Classification Rules (f) American Truckers' Association Rules (g) Other applicable carriers' rules (h) Military Air Regulations for dangerous materials Consolidation of Shipments. All exterior packs of 1.5 cubic feet or less having no single dimension (length, width, height) exceeding 40 inches (and when the total number of such containers in any individual shipment exceeds 25), shall be consolidated, using flat pallets, box pallets, or containers as the consolidating media. Dangerous goods shall be prepared for shipment according to applicable Department of Transportation (DOT) regulations and international regulations in effect at time of shipment. Shipments by parcel post must comply with Postal Regulations.

TABLE J-IXb. Minimal packing requirement codes (see J.4.13) – Continued.

Code	Requirement
6	Packing shall be accomplished to meet the performance test requirements of ASTM D4169, Distribution Cycle 18, Assurance Level 3.
8	Packing shall be accomplished in accordance with the Level A packing requirements as specified for the item.
9	Packing shall be accomplished in accordance with the Level B packing requirements as specified for the item.
Z	Special requirement – see specific instructions or drawings provided.
Ø	Packing not authorized, see next higher level of packing for requirement.

TABLE J-X. Special marking codes (see J.4.14).

Code	Explanation of code	Code	Explanation of code
01	Fragile	32	Type I, shelf life
02	Arrow up	33	Type II, shelf life
03	Method 50	36	Fragile, arrow up, and glass
04	Fragile, Arrow up and Method 50	37	Fragile, arrow up
05	Delicate instrument	39	ESD sensitive electronic device requirements of MIL-STD-129 apply
06	Delicate instrument and Arrow up		
07	Glass – do not drop		
12	Fragile, Method 50	40	Markings shall be omitted for sensitive, controlled or pilferable items per MIL-STD-129
14	Center of balance		
17	Reusable container		
19	Method 50 reusable container	60	Asbestos Warning Label
20	Do not bend	ZZ	Special requirements
24	Open for inspection or use only	00	No special marking

TABLE J.XI. Document number to table and code cross-reference index (see J.5.1).

Document No.	Table	Code
A-A-203	J-IV	CA
A-A-1051	J-V	DA
A-A-1249	J-IV	DA
A-A-1507	J-V	HA, HB, HD
A-A-1898	J-V	BG
A-A-3129	J-Ia J-V	DB, DC, GX NA, NB, NG
A-A-3174	J-Ia J-IV J-IX	DB, DC JA T
A-A-50177	J-IV	LA
A-A-59135	J-V	P6
A-A-59136	J-Ia J-V	GX GA, GM, GN
QQ-A-1876	J-IV	BA
MMM-A-260	J-Ia	AW
PPP-B-566	J-VII	D1, D3, DA, E9
PPP-B-585	J-VII J-IX J-IXa	RD B 7
PPP-B-676	J-VII	D1, D3, DE, E9

TABLE J-XI. Document number to table and code cross-reference index – Continued.

Document No.	Table	Code
PPP-B-1055	J-Ia	AW
PPP-B-1672	J-VII	NR, NS, NV, NW
PPP-C-96	J-VII	HA
PPP-C-795	J-Ia J-V	DB, DC, GX LC, LT, NA
PPP-C-850	J-V	BN
PPP-C-1120	J-V	FA, FE, FH, FL
PPP-C-1797	J-Ia J-V	GX GT, NA, NC
PPP-T-495	J-VII	WM
MIL-DTL-117	J-Ia J-IV J-VII	AW, DC, GS, GX K3 A1, B2, B3, B9, BD, BE, BL, BS, BT, BV, SD, SE, SF, SK
MIL-PRF-121	J-Ia J-IV	AU, BC, DR, EK GB, GC, GH
MIL-P-130	J-IV J-VII	FA A1
MIL-PRF-131	J-Ia	DW

TABLE J-XI. Document number to table and code cross-reference index – Continued.

Document No.	Table	Code
MIL-DTL-2427	J-VII	RH
MIL-PRF-3150	J-III	07
MIL-PRF-3420	J-IV	MB
MIL-DTL-6054	J-VII	K1, KE
MIL-D-6055	J-VII	K1
MIL-PRF-6081	J-III	51
MIL-PRF-6085	J-III	17
MIL-C-6529	J-III	31, 32
MIL-PRF-7808	J-III	33
MIL-PRF-7870	J-III	50
MIL-PRF-8188	J-III	52
MIL-PRF-10924	J-III	13
MIL-PRF-11264	J-VII	RK
MIL-C-11796	J-Ia J-III	DR 06

TABLE J-XI. Document number to table and code cross-reference index – Continued.

Document No.	Table	Code
MIL-PRF-16173	J-Ia J-III	AH, AU, BC, DR 01, 02, 03, 19, 21
MIL-DTL-17667	J-IV	EA, EB, EC
MIL-PRF-21260	J-III	10, 57
MIL-PRF-22019	J-Ia J-IV	GS JL
MIL-DTL-22020	J-Ia J-VII	GS BT
MIL-PRF-22191	J-Ia J-IV	DB, DC JT, JV
MIL-PRF-23699	J-III	56
MIL-PRF-23827	J-III	11
MIL-PRF-26514	J-V J-Ia	GD, GE, GF, GH, GK, GL, NS GX
MIL-PRF-32033	J-III	09
MIL-PRF-46002	J-III	20
MIL-PRF-46010	J-III	30
MIL-PRF-46170	J-III	15

TABLE J-XI. Document number to table and code cross-reference index – Continued.

Document No.	Table	Code
MIL-DTL-46506	J-VII	RJ
MIL-DTL-53030	J-III	8Ø
MIL-PRF-81322	J-III	12
MIL-PRF-81705	J-Ia	GX
	J-IV	K3
MIL-DTL-81997	J-Ia	GX
	J-V	P4
MIL-PRF-83282	J-III	65
MIL-PRF-83671	J-V	MA, MB, MD
MIL-STD-129	J-Ia	BC, GS, GX
	J-X	39, 4Ø
ASTM D4169	J-IX	E
	J-IXa	R
	J-IXb	6
ASTM D4727/ D4727M	J-Ia	JF
	J-V	JA, JB, JC, NS
ASTM D5118/ D5118M	J-Ia	DR, DW
	J-VII	D3, E5, E7, E8, E9, EC, ED, EE, EF, EG, EN, EP NO
	J-IXa	A, H, T
	J-IXb	L
ASTM D5168	J-V	P5
	J-VII	DP, DQ, DR
	J-IXa	A, T
	J-IXb	L
ASTM D5486	J-Ia	AU, AW, DR

TABLE J-XI. Document number to table and code cross-reference index – Continued.

Document No.	Table	Code
ASTM D6039/ D6039M	J-VII J-IX J-IXa	MV C P
ASTM D6251	J-VII J-IX J-IXa	F2, F3, F6, F7, FD, FF, FG, FL B, C, 2 7
ASTM D6255/D6255M	J-1X J-1Xa	C P
ASTM D6256/ D6256M	J-VII J-IX	FU, FV, FW, GB C
ASTM D6880	J-VII J-IX	F2, F3, F7, F9, FA, FB, FC C, 2
ASTM D7478/D7478M	J-VII J-IX J-IXa	F7, GB, MA, MB, MC, MF, MG, MH C P
NAS847	J-Ia	DR

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