NOT MEASUREMENT SENSITIVE

MIL-STD-2073-1C
1 October 1996

SUPERSEDING
MIL-STD-2073-1B
21 JUNE 1991,
MIL-STD-2073-2C
21 JUNE 1991,
MIL-STD-1510B
30 SEPT 1988, and
MIL-P-116J
8 APRIL 1988

DEPARTMENT OF DEFENSE

STANDARD PRACTICE FOR MILITARY PACKAGING

AMSC N5094

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FOREWORD

1. The applicability of this military standard has changed. This standard is to be invoked only when procured items are expected to enter the military distribution system. Commercial packaging is to be used to the maximum extent possible for all other items. Details and decision logic for the use of this standard are described in 1.1, 1.2, Figure 1, and 4.1.

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

3. This standard incorporates many recommendations of a recent study to simplify military packaging. The most significant changes are:

a. Limiting the application of this document to military packaging only. Logistics conditions that permit the use of commercial packaging are specified.

b. Incorporation of the requirements of MIL-P-116 into this document.

c. Redesignation of military packaging Methods of Preservation (MOP) to a logical system wherein the increased complexity and/or protection provided by any given MOP is indicated by an increase in the numerical designator for same.

d. Elimination of more than 400 seldom or unused codes.

e. Incorporation of the requirements of MIL-STD-2073-2 into this document as Appendix J.

f. Incorporation of the requirements of MIL-STD-1510 into this document as Appendix H.

g. Military and federal specifications and standards have been replaced with non-government standards wherever possible.

4. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Systems Standardization, Code 4.1.4.2, Naval Air Warfare Center Aircraft Division, Highway 547, Lakehurst, New Jersey 08733-5100, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

NOTICE!!

READ FOREWORD BEFORE PROCEEDING WITH DOCUMENT

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1. SCOPE

1.1 Purpose. This document outlines standard processes for the development and documentation of military packaging, as distinct from commercial packaging. This standard covers methods of preservation to protect material against environmentally induced corrosion and deterioration, physical and mechanical damage, and other forms of degradation during storage, multiple handling, and shipment associated with the military distribution system. A decision chart is included for developing these packaging requirements (see Figure 1).

1.1.1 Definition. For purposes of this standard, military distribution system is defined as the process(es) by which materiel, not intended for immediate use, is stored and/or moved within or between DOD facilities.

1.2 Applicability. The requirements of this standard shall only be applied to the packaging of items that are expected to enter the military distribution system. Items not going into stock shall be packaged in accordance with standard commercial practice as defined in ASTM-D3951. Items not covered by this standard include, but are not limited to, the following:

a. Items intended for immediate use

b. Items for not mission-capable supply

c. Items intended for depot operational consumption

d. Small parcel shipments (CONUS), not-for-stock

e. Direct vendor deliveries (CONUS)

Exceptions to the above criteria are items intended for delivery-at-sea, items delivered during wartime, or items requiring reusable containers.

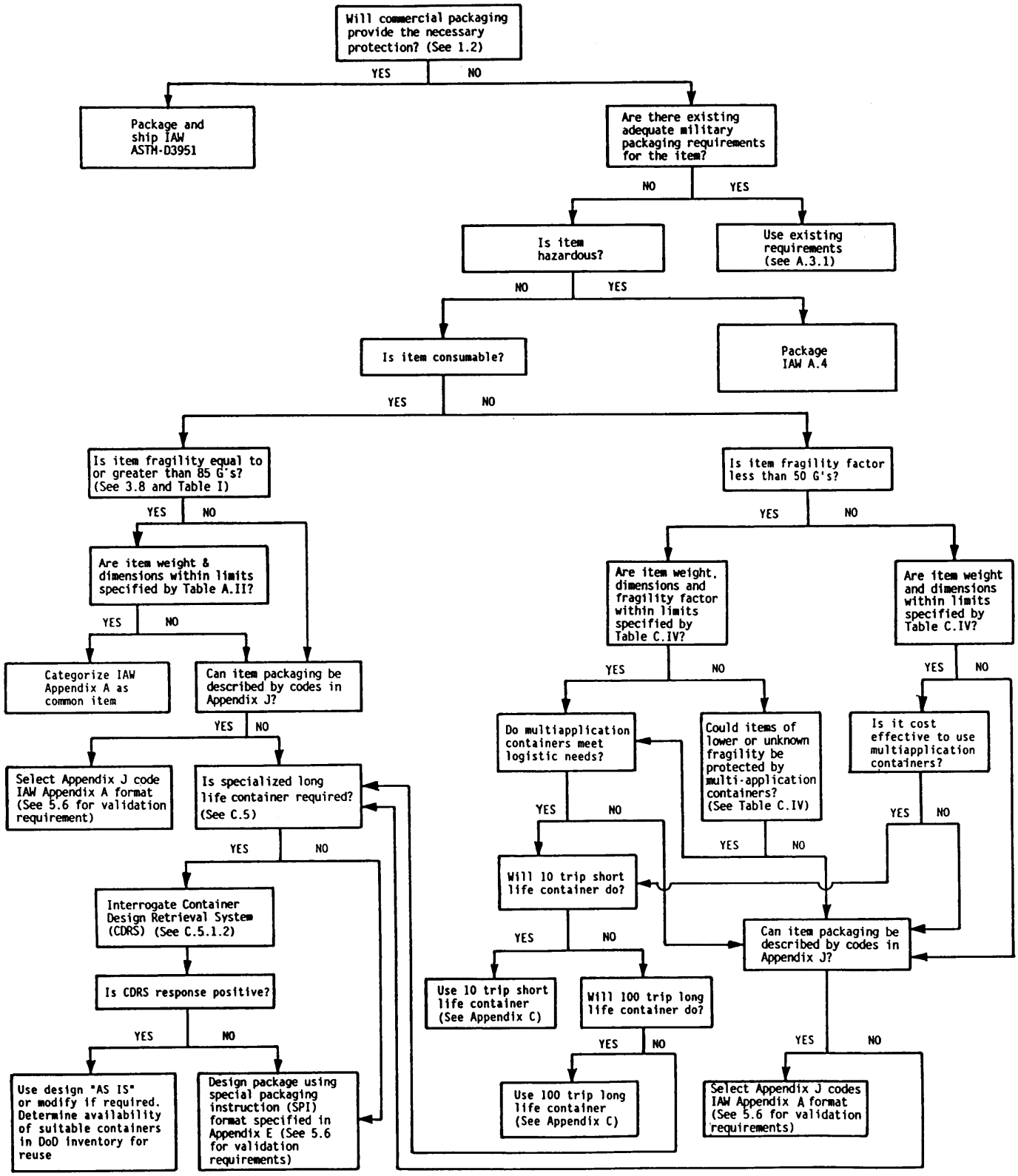

FIGURE 1. Military packaging requirements development decision chart.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, and 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 documents cited in sections 3, 4, and 5 of this standard, whether or not they are listed.

2.2 Government documents.

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 listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

QQ-A-1876	-	Aluminum Foil.
L-P-378	-	Plastic Sheet and Strip, Polyolefin.
PPP-B-1672	-	Box, Shipping, Reusable With Cushioning.
PPP-D-723	-	Drums, Fiber.

MILITARY

MIL-B-117	-	Bags, Sleeves and Tubing.
MIL-B-121	-	Barrier Material, Greaseproofed, Waterproofed, Flexible.
MIL-B-131	-	Barrier Materials, Watervaporproof, Greaseproof, Flexible, Heat-Sealable.
MIL-P-3420	-	Packaging Materials, Volatile Corrosion Inhibitor Treated, Opaque.
MIL-D-3464	-	Desiccants, Activated, Bagged, Packaging Use and Static Dehumidification.
MIL-C-3955	-	Cans, Composite, Spirally Wound.
MIL-E-6060	-	Envelope, Packaging, Water-Vaporproof, Flexible.
MIL-I-8574	-	Inhibitors, Corrosion, Volatile, Utilization of.
MIL-PRF-16173	-	Corrosion Preventive Compound, Solvent Cutback, Cold-Application.
MIL-B-22019	-	Barrier Materials, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated.

SPECIFICATIONS (continued)

MILITARY (continued)

MIL-B-22020	-	Bags, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated.
MIL-B-22191	-	Barrier Material, Transparent, Flexible, Heat Sealable.
MIL-I-26860	-	Indicator, Humidity, Plug, Color Change.
MIL-L-45973	-	Liner Material, Greaseproof.

STANDARDS

FEDERAL

FED-STD-101	-	Test Procedures for Packaging Materials.

MILITARY

MIL-STD-129	-	Marking for Shipment and Storage.
MIL-STD-1186	-	Cushioning, Anchoring, Bracing, Blocking and Waterproofing; With Appropriate Test Methods.
MS20003	-	Indicator, Humidity, Card, Three Spot, Impregnated Areas (Cobaltous Chloride).

(Unless otherwise indicated, copies of the above specifications and standards are available from the Defense Printing Service Detachment Office, Bldg 4D (NPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

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.

MANUAL

DOD-5220.22M	-	Industrial Security Manual for Safeguarding Classified Information.

CODE OF FEDERAL REGULATIONS (CFR)

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

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington, DC 20402.)

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 the documents which are DOD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM-D996	-	Standard Terminology of Packaging and Distribution Environments (DOD adopted).
ASTM-D1008	-	Test Methods for Water Vapor Transmission of Shipping Containers (DOD adopted).
ASTM-D1974	-	Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes (DOD adopted).
ASTM-D3950	-	Strapping, Non-metallic (and Joining Methods) (DOD adopted).
ASTM-D3951	-	Standard Practice for Commercial Packaging (DOD adopted).
ASTM-D3953	-	Strapping, Flat Steel and Seals (DOD adopted).
ASTM-D4675	-	Selection and Use of Flat Strapping Materials (DOD adopted).
ASTM-D5118	-	Fabrication of Fiberboard Shipping Boxes (DOD adopted).
ASTM-D5168	-	Fabrication and Closure of Triple Wall Corrugated Fiberboard Containers (DOD adopted).
ASTM-D5330	-	Tape, Pressure Sensitive, Packaging Filament Reinforced (DOD adopted).

(Application for copies should be addressed to the American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

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

3. 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.

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 3.8) or more which have no dimension greater than 24 inches and not more than 10 pounds mass (weight) for which predetermined packaging has been developed (see A.5.4 and Table A.IV). Hazardous materials, electrostatic discharge sensitive items, shelf life items, sets, 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.

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

a. Critical chemically. Items which are of such a nature that any degree of deterioration (in the form of corrosion, stain, scale, mold, fungi, bacteria, etc.) 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 installed or to which the item is interfaced.

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 items having a surface finish of 64 microinches root mean square or less, items requiring a high degree of cleanliness and freedom from contamination and items requiring special protection against shock, vibration, or abrasion.

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

3.8 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 shall be expressed in units of acceleration for a defined shock pulse. Shock pulse forms and durations which approximate the transportation and handling environment shall be used in determining the fragility factor (see Table I).

3.9 Hazardous material. A material, substance or waste which 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 which 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.)

3.10 Levels of protection. A means of specifying the level of military preservation and packing that a given item requires to assure that it is not degraded during shipment and storage. Specific levels of protection are as follows:

a. Military level of preservation. Preservation designed to protect an item during shipment, handling, indeterminate storage, and distribution to consignees worldwide.

b. Military levels of packing.

(1) Level A. Protection required to meet the most severe worldwide shipment, handling, and storage conditions. A Level A pack must, in tandem with the applied 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 which indicate a need for use of a Level A pack are: War Reserve Material, mobilization, strategic and theater deployment and employment, open storage, and deck loading. 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. A Level B pack must, in tandem with the applied preservation, be capable of protecting material not directly exposed to extremes of climate, terrain, and operational transportation environments. Examples of situations which indicate a need for use of a Level B pack are: security assistance (e.g., Foreign Military Sales (FMS)) 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.

3.11 Loads. Types of loads are determined by the degree of structural strength supplied to the shipping container by the contents. Loads are classified as Type 1, easy loads; Type 2, average loads; and Type 3, difficult loads, as described below:

a. Type 1, easy load. A Type 1, easy load, is developed from an item which completely fills the outer shipping container or from items of moderate density prepackaged in an interior container which completely fill the outer shipping container. Easy load items are not easily damaged by puncture or shock and do not shift or otherwise move within the package. Examples include items packaged in boxes or cans which are prepackaged in fiberboard boxes prior to overpacking in the shipping container; chests; tool kits; and sturdy instruments which are fully in contact with, and support, all faces of the shipping container.

b. Type 2, average load. A Type 2, average load, is developed from item(s) of moderately concentrated weight which are packed directly into the shipping container and provide partial support to all panels thereof. It also includes item(s) prepackaged by wrapping or by positioning in partitions, cells or paperboard boxes, or by other means which provide support to all panels of the shipping container. Examples include items packaged in boxes or cans which are not prepackaged in an interior container; bottles individually separated one from the other by cells or partitions.

c. Type 3, difficult load. A Type 3, difficult load is developed from item(s) which require a high degree of protection to prevent puncture, shock, or distortion of the shipping container. It also includes item(s) which do not provide complete support to the panels of the shipping container. Examples include wrenches, long bolts, and rods which exert concentrated forces on the shipping container; motors, telephones, typewriters, drop forgings, rivets, hardware, or other items that are random packed in bulk; and fragile or delicate items requiring special protection.

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 Prototype pack. A preproduction pack designed and constructed to meet specified requirements and which is the model for production packaging.

3.14 Proper shipping name. The name of the hazardous material shown in Roman print (not italics) in part 172.101 of Title 49 CFR or the applicable modal regulations.

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

3.16 Reusable container. A shipping and storage container that can be reused without impairment of its protective function and which can be repaired and/or refitted 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. Multiapplication containers. Multiapplication 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 multiapplication container can be either of the short-life or long-life variety. Short life multiapplication 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 multiapplication 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 (e.g., shear mounts, steel coils, springs, etc.) 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. Specialized shipping containers, internal fixtures and other fitments result from either original design efforts or the redesign or modification of an existing container to meet a specific application or need.

3.17 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 which 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 will be leakproof at ambient temperatures and atmospheric pressures and is usually glass to glass, metal to metal or metal to glass.

3.18 Selective group items. Items that cannot appropriately utilize predetermined packaging developed by common group technique yet do not require a drawing, sketch, illustration or separate narrative type instruction to specify packaging details.

3.19 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 a reusable container are required to specify packaging details.

4. GENERAL MILITARY PACKAGING 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 in 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 normally required and prepared in accordance with Appendix E and as specified on the CDRL (see 6.3).

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 detailed in A.4.

4.4 Packaging of classified items. Packaging developed for classified items shall meet the requirements of DOD 5220.22M, Industrial Security Manual for Safeguarding Classified Information.

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 detailed in Appendix C.

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

4.8 Repairable excess and residual parts. Repairable excess 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.

4.10 Shock and vibration absorption. Shock and vibration absorption shall be provided by cushioning materials or devices that adequately 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 noncorrosive 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. 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 which lower the item fragility rating.

4.12 Packaging materials. The use of new or commercially available packaging materials or products is encouraged and recommended provided they are equal to or better than similar approved materials or products 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 evidence by an approved testing laboratory, that the material or product meets or exceeds all requirements of the performance 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 MILITARY PACKAGING 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 military preservation procedure should be accomplished without interruption. When interruptions are unavoidable, temporary wraps, covers or enclosures shall be provided to insure against contamination or deterioration of the items.

5.2.1 Cleaning and drying. Items shall be cleaned and dried by any suitable process or processes which are not injurious to the item.

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 applicable 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 inhibitor preservative treatment shall be applied 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) defined herein:

Method 10 (formerly Method III)	Physical protection
Method 20 (formerly Method I)	Preservative coating only
Method 30 (formerly Method IC)	Waterproof protection
Method 40 (formerly Method IA)	Watervaporproof protection
Method 50 (formerly Method II)	Watervaporproof protection with desiccant

Various specific techniques, also defined herein, have been developed to meet the basic Methods 30, 40, and 50 which may 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 will apply:

a. Protection from physical damage and mechanical malfunction is required for all methods of preservation in addition to the specific environment protection provided.

b. Where methods provide both transparent and 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. Where applicable, protection shall include the use of packaging materials to counteract electro-static 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 the item's projections and sharp edges as well as to restrict its movement within the unit pack.

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

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

h. All cushioning and dunnage used 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 effecting the final seal. Caution shall be taken to prevent rupture of the bag.

5.2.3.1 Surfaces coated with preservatives. Preliminary wrapping materials in contact with the preservative coated item shall be greaseproof and shall conform to MIL-B-121, Grade A, or QQ-A-1876. Preliminary grease-proof 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-B-121, Grade A,

MIL-B-131, or MIL-B-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 FED-STD-101, Test Method 3005, shall be used in contact with metal surfaces of the item. Materials also must be as dry and clean as practicable at the time of use.

5.2.3.3 Method 10 (formerly Method III) - Physical protection. The unpreserved item(s) shall be provided protection 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. Materials shall be clean and as dry as practicable. Blocking, bracing, etc., shall be accomplished in accordance with MIL-STD-1186.

5.2.3.4 Method 20 (formerly Method I) - Preservative coating only (with greaseproof wrap, as required). 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-B-121, Grade A, 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. Items preserved with VCI treated materials conforming to MIL-P-3420 or MIL-B-22019, securely taped or sealed, respectively, to form an airtight enclosure, are also exempted from wrapping. Projections, sharp edges, or other features of the item, which may damage the barrier wrap, shall be cushioned as required in accordance with 5.2.3. The type of cushioning and barrier material used shall be commensurate with the size, weight and configuration of the preserved part or item.

5.2.3.5 Method 30 (formerly Method IC) - Waterproof or waterproof-greaseproof protection with preservative as required. Items protected in accordance with Method 30 shall be sealed within a waterproof or waterproof-greaseproof enclosure. Projections, sharp edges or other physical characteristics of the item, which 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, thereby preventing physical and functional damage to the item. Unless otherwise specified, preservative coating requirements shall be determined in accordance with 5.2.2.1.

5.2.3.5.1 Method 31 (formerly Submethod IC-3) - Waterproof bag, sealed. The item, preserved, wrapped and cushioned as required in 5.2.3.5, shall be enclosed in a sealed bag conforming to MIL-B-117, Type I, Class B, Style 2, or MIL-B-22020 as limited by MIL-I-8574. When specified, a designated bag, other than noted herein, shall be provided. (Note: When specified in the contract or purchase order, a carton or box shall be required to effect the unit container and the primary cushioning specified in the contract or purchase

order shall be placed between the outside of the bag and the inside of the carton or box.)

5.2.3.5.2 Method 32 (formerly Submethod IC-2) - Container, waterproof bag, 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 sealed waterproof bag conforming to MIL-B-117, Type I, Class B, Style 2. When specified, a protective wrap of heavy duty kraft paper or equivalent material (tape sealed) shall be provided to protect the barrier material during handling and storage.

5.2.3.5.3 Method 33 (formerly Submethod IC-1) - Greaseproof-waterproof bag, sealed. The item, preserved, wrapped and cushioned as required in 5.2.3.5, shall be enclosed in a close fitting sealed bag conforming to MIL-B-117, Type I, Class C, Style 1, 2 or 3; or Type II, Class C, Style 1; or bags conforming to MIL-B-22020 as limited by MIL-I-8574. When specified in the contract or purchase order, a designated bag, other than noted herein, shall be provided. (Note: When specified in the contract or purchase order, a carton or box shall be required to effect the unit container, and the primary cushioning specified in the contract or purchase order shall be placed between the outside of the bag and the inside of the carton or box.)

5.2.3.6 Method 40 (formerly Method IA) - Watervaporproof protection with preservative as required. Items protected in accordance with Method 40 shall be sealed within a watervaporproof enclosure. Projections, sharp edges or other physical characteristics of the item, which may damage the water-vaporproof enclosure, shall be cushioned as required in accordance with 5.2.3. The item shall also be cushioned as required to mitigate shock, thereby preventing physical and functional damage to the item. Unless otherwise specified, preservative coating requirements shall be determined in accordance with 5.2.2.1.

5.2.3.6.1 Method 41 (formerly Submethod IA-8) - Watervaporproof bag, sealed. The item, wrapped and cushioned as required in 5.2.3.6, shall be enclosed in a close fitting heat sealed bag conforming to MIL-B-117, Type I, Class E, Style 1, 2 or 3; or Type I, Class F, Style 1; or Type II, Class E, Style 1 or 3 or Type III, Class E, Style 1. (Note: For electrostatic protection refer to 5.2.4.1.) When specified in the contract or purchase order, a designated bag, other than noted herein, shall be furnished. (Note: When specified in the contract or purchase order, a carton or box shall be required to effect the unit container and the primary cushioning specified in the contract or purchase order shall be placed between the outside of the bag and the inside of the carton or box.)

5.2.3.6.2 Method 42 (formerly Submethod IA-14) - Container, watervapor-proof bag, sealed, container. The item, 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 sealed bag conforming to MIL-B-117, Type I, Class E, Style 1; or Type II, Class E, Style 1; or Type III, Class E, Style 1. Bags in accordance with MIL-E-6060 shall be used when the construction

limitations of MIL-B-117 are exceeded. When specified in the contract or purchase order, a designated bag, other than noted herein, shall be furnished. The sealed bag shall then be enclosed within an appropriate outer container (box), selected from Tables C.I or C.II, unless otherwise specified in the contract or purchase order. When fiberboard containers are selected or specified for the outer container of this method, they shall conform to the weather resistant class and grade of ASTM-D5118 or ASTM-D5168 as applicable. When wood, wood cleated plywood, wood cleated fiberboard, paper overlaid veneer, etc., are specified as the outer container of this method, 6 mil polyethylene conforming to L-P-378 or equivalent material shall be used as an overwrap (tape sealed) around the sealed bag to prevent chafing or rupture by the outer container. When the primary cushioning is located between the sealed bag and the outer container, the barrier protective wrap specified herein is not required. Closure, banding, or sealing of the outer container shall be performed in accordance with the applicable container specification procedures or ASTM-D1974, making certain that no damage is inflicted on the bag. (Note: When the outer container becomes the shipping container, 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 (formerly Submethod IA-16) - Floating watervaporproof bag, sealed. The item, preserved, wrapped and cushioned as required in 5.2.3.6 and anchored or shock mounted as required in MIL-STD-1186, shall be enclosed in a sealed bag conforming to MIL-E-6060. (Note: When the outer container becomes the shipping container, 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 (formerly Submethod IA-13) - 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. For contents not exceeding 20 pounds, fiber containers conforming to MIL-C-3955, Type I, Grade B, Style and Class as applicable, may be used. When a greaseproof liner is required, material shall conform to MIL-L-45973. For heavier items, fiber containers conforming to PPP-D-723, Type III, Grade A, Class 2 may be used. Other sealed rigid containers (other than all metal) including reusable plastic or fiberglass containers may be used when the container body and closure mating surfaces afford a water-vaporproof barrier with a watervapor transmission rate (WVTR) not exceeding 0.075 grams per 100 square inches per 24 hours, as established by government specifications or when tested in accordance with ASTM-D1008 as appropriate.

5.2.3.6.5 Method 45 (formerly Submethod IA-5) - 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 reusable gasketed closure may be used if the container provides a WVTR not exceeding 0.075 grams per 100 square inches per 24 hours, when tested in accordance with ASTM-D1008 unless a specific type of container and closure is specified in the contract or purchase order. When specified in the contract or purchase order or when

dictated by the requirements of the item, the metal container may be vacuum sealed.

5.2.3.7 Method 50 (formerly Method II) - Watervaporproof protection with desiccant. Items protected in accordance with Method 50 shall be sealed in a watervaporproof enclosure with activated desiccant as required. Unless otherwise stated in the contract or purchase order, unit packs of all of these methods shall include a humidity indicator. Projections, sharp edges, or other physical characteristics of the item which 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, thereby preventing physical and functional damage to the item. Unless otherwise specified, preservative coating requirements shall be determined in accordance with 5.2.2.1. When bags are used, the bag size shall be of sufficient surface area to permit two subsequent resealings after item inspection, unless otherwise specified. Unless prohibited in the contract or purchase order, carrying cases, housings, etc., 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 must be prominently noted on the item cases or housings that the desiccant and indicator cards must 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 should 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 effecting the final seal 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) must 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 grams per 24 hours per 100 square inches, tested in accordance with ASTM-D1008 as appropriate.

c. Humidity indicators. Humidity indicators shall conform to MS20003, unless otherwise specified in the contract or purchase order. 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. Unless otherwise specified, externally mounted color change humidity indicating devices shall conform to MIL-I-26860.

5.2.3.7.1 Method 51 (formerly Submethod IIc) - Watervaporproof bag, sealed. The item, preserved, wrapped, cushioned and desiccated as required in 5.2.3.7, shall be enclosed within a sealed bag conforming to MIL-B-117, Type I, Class E, Style 1, 2 or 3; or Type II, Class E, Style 1 or 3; or Type III, Class E, Style 1. When specified in the contract or purchase order, a designated bag, other than noted herein, shall be furnished. (Note: When specified in the contract or purchase order, a carton or box shall be required to effect the unit container, and the primary cushioning specified in the contract or purchase order shall be placed between the outside of the bag and the inside of the carton or box.)

5.2.3.7.2 Method 52 (formerly Submethod IIb) - Container, watervaporproof bag, sealed, container. The item, preserved, wrapped, cushioned and desiccated 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 sealed bag conforming to MIL-B-117, Type I, Class E, Style 1; or Type II, Class E, Style 1; or Type III, Class E, Style 1. When specified in the contract or purchase order, a designated bag, other than noted herein, shall be furnished. Bags in accordance with MIL-E-6060 shall be used when the construction limitations of MIL-B-117 are exceeded. The sealed bag shall then be enclosed within an appropriate outer container (box) selected from Tables C.I or C.II. When fiberboard outer containers are used, they shall conform to the weather resistant Class and Grade of ASTM-D5118 or ASTM-D5168 as applicable. When wood, wood cleated plywood or wood cleated fiberboard, paper overlaid veneer, etc., boxes are specified as the outer container, a 6 mil polyethylene film conforming to L-P-378 or equivalent material shall be used as an overwrap (tape sealed) around the sealed bag to prevent chafing or rupture by the outer container. When the primary cushioning is located between the sealed bag and the outer container, the barrier protective wrap specified herein is not required. Closure sealing or banding (as applicable) shall be in accordance with the applicable container specification procedures or ASTM-D1974, making certain that the bag is not damaged. (Note: When the outer container becomes the shipping container, 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.)

5.2.3.7.3 Method 53 (formerly Submethod IIa) - Floating watervaporproof bag, sealed. The item, wrapped, cushioned, and desiccated as required in 5.2.3.7 and anchored or shock mounted as required in MIL-STD-1186, shall be enclosed in a sealed bag conforming to MIL-E-6060. When specified in the

contract or purchase order, a window of material conforming to MIL-B-22191, Type I shall be provided in the bag in accordance with MIL-E-6060 procedures for packs 15 cubic feet or larger. When specified, externally mounted plug type humidity indicators conforming to MIL-I-26860 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 (formerly Submethod IIf) - Rigid container (other than metal), sealed. The item, preserved, wrapped, cushioned and desiccated as required in 5.2.3.7, shall be enclosed in a sealed, close fitting, rigid container other than all metal. For items not exceeding 20 pounds, fiber containers conforming to MIL-C-3955, Type I, Grade B (style and class as applicable) may be used. When a greaseproof liner is required, material shall conform to MIL-L-45973. For heavier items, fiber containers conforming to PPP-D-723, Type III, Grade A, Class 2 may be used. Other sealed, rigid containers other than all metal may be used as long as the sealed container provides a WVTR not exceeding 0.075 grams per 100 square inches per 24 hours when tested in accordance with ASTM-D1008.

5.2.3.7.5 Method 55 (formerly Submethod IId) - Rigid metal container, sealed. The item, preserved, wrapped, cushioned and desiccated as required in 5.2.3.7, shall be enclosed within a sealed, close fitting, metal container. Any selected type of rigid metal container with machine seamed or welded closure or reusable container with gasketed or threaded closure may be used if the container provides a WVTR not exceeding 0.075 grams per 100 square inches per 24 hours, when tested in accordance with ASTM-D1008, unless a specific type of rigid metal container and closure is specified in the contract or purchase order.

5.2.4 Military preservation requirements for items with specific characteristics.

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

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.

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 will prevent deformation or set to the item during long term storage.

5.2.4.4 Wheeled items. Rubber tired wheels, pneumatic or solid, shall be blocked clear of the floor of the crate or the skid and shall not be load bearing. When specified, wheeled items shall be shipped uncrated as mobile packs.

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

5.2.4.6 Items with mounts. Equipment with 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, a suitable cushioning system shall be provided.

5.2.4.7 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 dusted with technical talcum (soapstone) conforming to commercial standards, or separated by kraft or plastic film separators.

5.2.4.8 Hazardous items. Hazardous items shall be packaged in accordance with Table J.Ia, Code "HM".

5.3 Level A and B packing requirements.

5.3.1 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.

5.3.2 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.

5.3.2.1 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 will provide the required protection for any given military packing application.

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.IXa.

5.5 Marking. All unit, intermediate and exterior packs and consolidated loads 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 effect a unit pack (see Table G.I, Note 2), shall also be marked as specified for unit pack identification in MIL-STD-129.

5.6 Military packaging design validation provisions. Unless otherwise specified in the contract or purchase order, the contractor shall be required to perform packaging design validation tests on selective and special group items in accordance with Appendix F unless one of the following conditions exist:

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 or similar item.

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

d. Multiapplication containers - Items meet the weight, dimension and fragility requirements of Table C.IV and are packed in the appropriate multi-application container.

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

5.7 Quality assurance provisions. Unless otherwise specified in the contract or purchase order, the contractor is responsible for establishing a

quality system as required in Appendix G that gives full consideration to the examinations/inspections outlined in G.4 (see 6.4).

6. NOTES

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

6.1 Acquisition requirements. Acquisition documents must specify the following:

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

b. Level of military packing required (see 3.10 and 5.3).

6.2 Issue of DoDISS. When this standard is used in acquisition, the applicable issue of the DoDISS should be cited in the solicitation (see 2.2.1 and 2.3).

6.3 Associated Data Item Descriptions (DIDs). This standard is cited in DOD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), 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), except where the DOD Federal Acquisition Regulation Supplement exempts the requirement for a DD Form 1423.

Reference paragraph	DID Number	DID title
4.1	DI-PACK-80120	Preservation and Packing Data
4.1	DI-PACK-80121	Special Packaging Instructions
C.5.1.2/H.3.1	DI-PACK-80683	Container Design Retrieval System (CDRS)
C.5.1.2/H.3.3.1.1	DI-PACK-80684	Container Design Retrieval System (CDRS) Data Input
F.3.2	DI-PACK-81059	Performance Oriented Packaging (POP) Test Report

The above DIDs were current as of the date of this standard. The current issue of the AMSDL must be researched 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 he has the necessary facilities and capabilities of performing all or part of the testing required or that he will subcontract that which he is unable to perform to an outside packaging concern with the necessary facilities and identify the specific taskings.

6.5 Changes in methods of preservation designations. The following are the current and superseded method of preservation designators:

Method of Preservation Designators		Remarks
In MIL-P-116J	In MIL-STD-2073-1C	
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	

6.6 Subject term (keyword) listing.

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

6.7 Copies of regulations. Copies of AFJMAN24-204/DLAM 4145.3/TM 38-250/NAVSUP PUB 505/MCO P4030.19 should be available from the applicable system program office and/or the USAF Material Command's hazardous material bulletin board on the internet world wide web.

6.8 Supersession. In addition to the documents listed on the front cover, this standard also supersedes the following documents:

MIL-STD-647	-	Preparation and Use of Packaging Standards.
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-P-14232	-	Parts, Equipment and Tools for Army Material, Packaging of.

6.9 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

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, gyros, 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. Unit container bag material cross reference.

Method of Preservation	MIL-B-117 Reference			Bag Material				
	Type	Class	Style	Specification	Type	Grade	Class	Characteristics
31 and 32	I	B	2	MIL-B-22191 L-P-378	III I or II	- A	- 1	Heavy duty; waterproof; transparent
33	I	C	1	MIL-B-121	I	A	1	Heavy duty; waterproof; greaseproof; opaque
	I	C	2	MIL-B-22191	II	-	-	Heavy duty; waterproof; greaseproof; transparent
	I	C	3	MIL-B-121 MIL-B-22191	I II	A -	1 -	Heavy duty; waterproof; greaseproof; one side opaque, other side transparent
	II	C	1	MIL-B-121	II	A	1	Medium duty; waterproof; greaseproof; opaque
41 and 51	I	E	1	MIL-B-131	I	-	1	Heavy duty; watervaporproof; greaseproof; opaque
	I	E	2	MIL-B-22191	I	-	-	Heavy duty; watervaporproof; greaseproof; transparent
	I	E	3	MIL-B-131 MIL-B-22191	I I	- -	1 -	Heavy duty; watervaporproof; greaseproof; one side opaque, other side transparent
	I	F	1	MIL-B-81705	I	-	1	Heavy duty; watervaporproof; electrostatic free; opaque (Method 41 only)
	II	E	1	MIL-B-131	I	-	3	Medium duty; watervaporproof; greaseproof; opaque
	II	E	3	MIL-B-131 MIL-B-22191	I I	- -	3 -	Medium duty; watervaporproof; greaseproof; one side opaque, other side transparent
	III	E	1	MIL-B-131	I	-	2	Light duty; watervaporproof; greaseproof; opaque
42 and 52	I	E	1	MIL-B-131	I	-	1	Heavy duty; watervaporproof; greaseproof; opaque
	II	E	1	MIL-B-131	I	-	3	Medium duty; watervaporproof; greaseproof; opaque
	III	E	1	MIL-B-131	I	-	2	Light duty; watervaporproof; greaseproof; opaque

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.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 documents cited in sections A.3 through A.5 of this appendix, whether or not they are listed.

A.2.2 Government documents.

A.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 listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

APPENDIX A

SPECIFICATIONS

FEDERAL

VV-L-800	-	Lubricating Oil, General Purpose, Preservative (Water-Displacing, Low Temperature).
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 Shipping Cycle Applications).
PPP-C-2020	-	Chemicals, Liquid, Dry, and Paste: Packaging of.
PPP-H-1581	-	Hardware (Fasteners and Related Items), Packaging of.
PPP-P-40	-	Preservation and Packing of Hand Tools; Tools and Tool Accessories for Power Driven, Metal and Woodworking Machinery.
PPP-P-1132	-	Packaging of Woolen, Worsted and Wool Blend (Synthetic Fiber; Cotton) Fabrics.
PPP-P-1136	-	Packaging of Coated (Plastic; Rubber) and Laminated Fabrics.
PPP-P-1892	-	Paint, Varnish, Lacquer, and Related Materials; Packaging, Packing, and Marking of.
PPP-T-360	-	Time Measuring Instruments: Packaging of.

MILITARY

MIL-V-3	-	Valves, Fittings, and Flanges (Except for Systems Indicated Herein) (Non-Aircraft); Packaging of.
MIL-T-4	-	Tires and Inner Tubes; Packaging of.
MIL-E-75	-	Electron Tubes, Packaging of.
MIL-S-196	-	Support Items, Accessories, and Kits, Mechanical; Packaging of.
MIL-B-197	-	Packaging of Bearings, Antifriction, Associated Parts and Subassemblies.
MIL-P-2845	-	Propulsion Systems, Boat and Ship; Main Shafting, Propellers, Bearings, Gauges, Special Tools, and Associated Repair Parts; Packaging of.
MIL-C-3131	-	Cordage; Packaging of.
MIL-L-3150	-	Lubricating Oil, Preservative, Medium.
MIL-B-3180	-	Boilers and Related Equipment, Packaging of.
MIL-M-3184	-	Machinery: Deck and Vehicle Mounted With Associated Equipment and Provisioned (Repair Parts) Items; Packaging of.

APPENDIX A

SPECIFICATIONS (continued)

MILITARY (continued)

MIL-H-3280	-	Hoists, Chain, Manually Operated, Packaging of.
MIL-C-3600	-	Compressors, Rotary, Power-Driven; and Compressors, Reciprocating, Power-Driven: Air and Gas (Except Oxygen and Refrigerant), Packaging of.
MIL-A-3816	-	Abrasives and Abrasive Products; Packaging of.
MIL-B-3865	-	Blocks, Rope, Tackle: Packaging of.
MIL-C-3993	-	Copper and Copper-Base Alloy Mill Products; Packaging of.
MIL-P-4861	-	Packing, Preformed, Rubber: Packaging of.
MIL-W-5013	-	Wheel and Brake Assemblies, Aircraft, General Specification for
MIL-E-5607	-	Engine, Gas Turbine, Preparation for Storage and Shipment of, Process for.
MIL-P-5610	-	Parachute Assemblies and Subassemblies, Packaging and Packing of.
MIL-E-6058	-	Engines, Aircraft, Reciprocating, Preparation for Shipment and Storage of.
MIL-P-6063	-	Packaging of Batteries, Storage, Charged and Dry Uncharged and Moist, General Specification for.
MIL-P-6074	-	Preservation, Packaging and Packing of Propellers, Propeller Spares, and Propeller Accessories.
MIL-L-6081	-	Lubricating Oil, Jet Engine.
MIL-H-6083	-	Hydraulic Fluid, Petroleum Base, for Preservation and Operation.
MIL-L-6085	-	Lubricating Oil: Instrument, Aircraft, Low Volatility.
MIL-C-6529	-	Corrosion Preventive, Aircraft Engine.
MIL-L-7808	-	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base.
MIL-L-7870	-	Lubricating Oil: General Purpose, Low Temperature.
MIL-E-10062	-	Engines: Preparation for Shipment and Storage of.
MIL-W-10430	-	Welding Rods and Electrodes; Packaging of.
MIL-P-10603	-	Pumps and Pumping Units, Centrifugal, Power-Driven for Water, Packaging of.
MIL-C-11796	-	Corrosion Preventive Compound, Petrolatum, Hot Application.

SPECIFICATIONS (continued)

MILITARY (continued)

MIL-C-12000	-	Cable, Cord, and Wire, Electric; Packaging of.
MIL-S-12134	-	Synchros, Resolvers, and Servo Motors; Packaging of.
MIL-R-12323	-	Refrigerators and Related Equipment, Packaging and Packing of.
MIL-L-14362	-	Lumber: Unitizing and Loading 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-O-16898	-	Optical Elements; Packaging of.
MIL-E-17555	-	Electronic and Electrical Equipment, Accessories, and Provisioned Items (Repair Parts); Packaging of.
MIL-P-17667	-	Paper, Wrapping, Chemically Neutral (Non-Corrosive).
MIL-S-19491	-	Semiconductor Devices, Packaging of.
MIL-L-21260	-	Lubricating Oil, Internal Combustion Engine, Preservative and Break-In.
MIL-P-23199	-	Packaging and Packing Requirements for Special Purpose Components and Repair Parts.
MIL-S-23665	-	Sonobuoys, Detection Devices, Preservation, Packaging and Packing, Procedures for.
MIL-G-23827	-	Grease, Aircraft and Instrument, Gear and Actuator Screw, NATO Code Number G-354, Metric.
MIL-S-28786	-	Switches, Electrical and Fiber Optic, Packaging of.
MIL-C-39028	-	Capacitors, Packing of.
MIL-R-39032	-	Resistors, Packaging of.
MIL-T-45542	-	Tool Sets, Shop Sets and Kits, Maintenance, Modification and Tool, Packaging of.
MIL-L-46010	-	Lubricant, Solid Film, Heat Cured, Corrosion Inhibiting.
MIL-H-46170	-	Hydraulic Fluid, Rust Inhibited, Fire Resistant, Synthetic Hydrocarbon Base.
MIL-C-55330	-	Connectors, Electrical and Fiber Optic, Packaging of.
MIL-C-55442	-	Cable Assemblies and Cord Assemblies, Packaging of.
MIL-B-55521	-	Batteries, Nonrechargeable, Packaging of.

SPECIFICATIONS (continued)

MILITARY (continued)

MIL-M-55565	-	Microcircuits, Packaging of.
MIL-V-62038	-	Vehicles, Wheeled: Preparation for Shipment and Storage of.
MIL-G-81322	-	Grease, Aircraft, General Purpose, Wide Temperature Range.
MIL-G-81559	-	Gyroscope Assemblies and Attitude and Directional Reference Instruments for Aircraft; Packaging of
MIL-H-83282	-	Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Aircraft, Metric, NATO Code Number H-537.

STANDARDS

MILITARY

MIL-STD-163	-	Steel Mill Products, Preparation for Shipment and Storage.
MIL-STD-290	-	Packaging of Petroleum and Related Products.
MIL-STD-758	-	Packaging Procedures for Submarine Support Items.
MIL-STD-1169	-	Packaging, Packing and Marking for Shipment of Inert Ammunition Components.
MIL-STD-1816	-	Preservation, Packaging, and Packing of Rubber and Nylon Fuel, Oil, and Water-Alcohol Cells.

(Unless otherwise indicated, copies of the above documents are available from the Defense Printing Service Detachment Office, Bldg 4D (NPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094).

A.2.2.2 Other Government documents, drawings and publications. The following other Government documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

CODE OF FEDERAL REGULATIONS

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

APPENDIX A

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington, DC 20402.)

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 the documents which are DOD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

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

(Application for copies should be addressed to the American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959).

INTERNATIONAL DOCUMENTS

INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO)

Technical Instruction for the Safe Transport of Dangerous Goods by Air.

INTERNATIONAL MARITIME ORGANIZATION (IMO)

International Maritime Dangerous Goods Code.

(These publications are normally available from the organizations that prepare or distribute the documents. They may also be available in or through libraries or other informational services and from commercial booksellers.)

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 Civil Aviation Organization (ICAO) Technical Instructions
- International Maritime Dangerous Goods Code (IMDG)
- Code of Federal Regulations (CFR) Title 29, Title 40 and Title 49
- Joint Service Regulation AFJMAN24-204/TM38-250/NAVSUPPUB 505/MCO P4030.19/DLAM 4145.3 (for military air shipments).

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, 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) and/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 (Table 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 surfaces (see 3.6b) or application.

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 surface/application criteria. Items will be classified as having critical surfaces or critical applications if they meet one or more of the following conditions:

a. The metallic surface(s) of the item is machined to close tolerances or high finish. The surface is prepared for close fit and intimate contact when assembled with the surface(s) of a mating part. Operationally, these surfaces:

   (1) Are mating parts of driving gears, bushings, shafts, bearings, etc.

   (2) Are secured to the surface of a mating part to obtain a seal (metal to metal).

   (3) Are threaded with closely controlled dimensions and geometry and are utilized in the controlled varied movement of components or assemblies for adjustment, calibration, etc.

b. Surfaces of the item have been worked by grinding or polishing to attain highly polished surfaces as in optical and reflective devices.

c. Items whose application, either in assembly or operation, provides an essential attribute to attaining critical military objectives.

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 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, therefore, 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 codes for common items. If categorization of an item can be accomplished by a four digit code without resorting to 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 must 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.5.5 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. Otherwise, code "XX" is sufficient to define the MOP.

A.5.6 Recording of coded requirements. Developed military packaging codes shall be recorded in accordance with the requirements contained in Appendix E.

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.

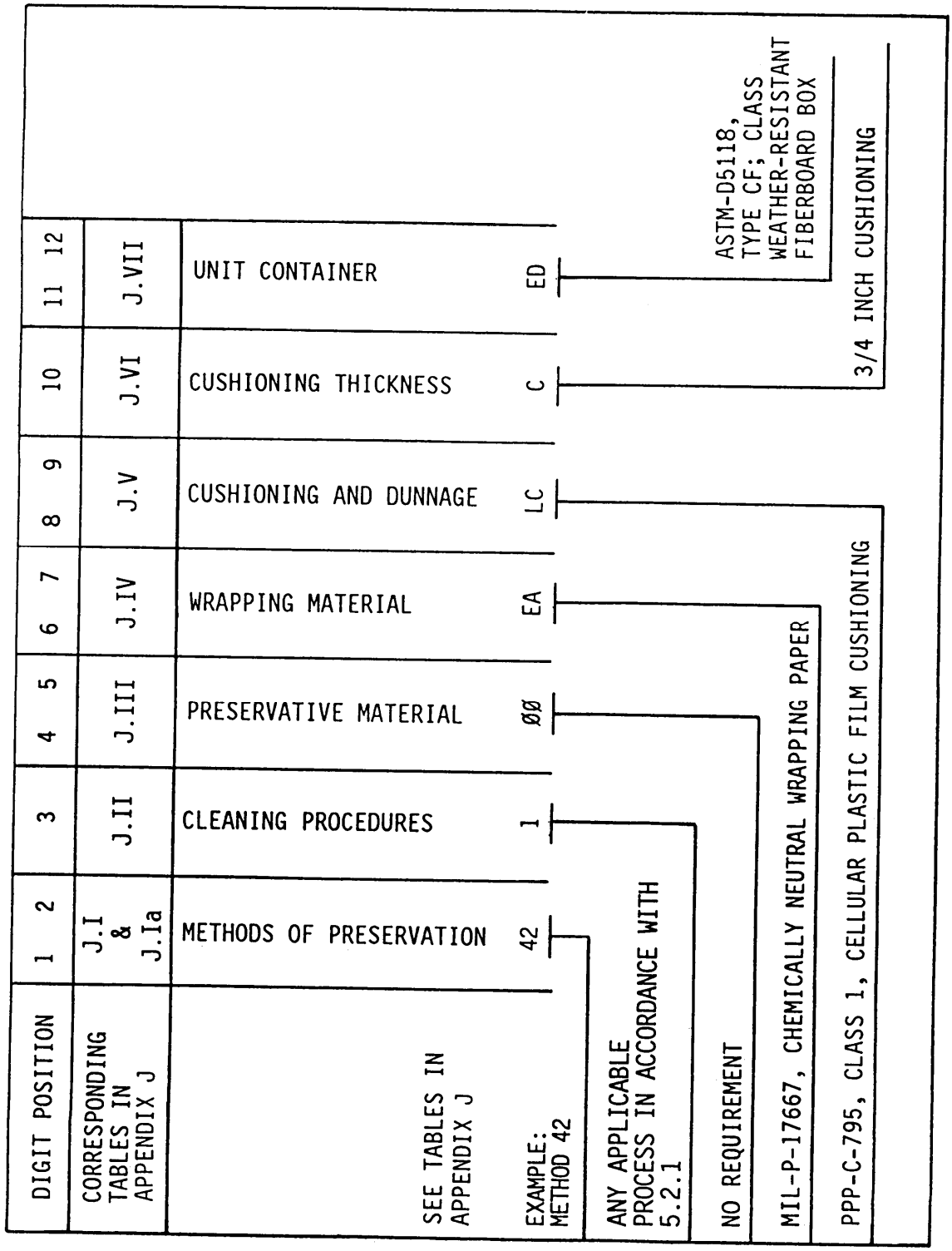

FIGURE A.1. Format for interpretation of packaging code sequence.

APPENDIX A

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

BARE METAL ITEMS

Item Composition/Properties (See Note 1)	Contact Preservative Prohibited	Has 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			Ø1	20
		X	Ø3	40
	X		Ø5	30
	X	X	Ø7	50
Magnesium (bare or chromated)			Ø9	30
	X	X	11	50
	X		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	X		15	10/See Note 3
	X	X	16	30
		X	18	20
Ferrous and non-ferrous combined	X	X	2Ø	50
			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).

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

PLATED COATED ITEMS

Item Composition/Properties (See Note 1)	Contact Preservative Prohibited	Has 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	X	X	22	30
	X		24	10/See Note 3
		X	25	20
Non-ferrous metals that have been plated	X		27	10/See Note 3
	X	X	28	30
		X	30	20
Iron or steel which has a phosphate coating, copper or brass which has chromate or black oxide finish over entire surface	X		32	30/See Note 3
	X	X	33	30
		X	35	20
Anodized aluminum; zinc or zinc-plated iron or steel; zinc alloy castings; alclad aluminum	X		37	10/See Note 3
	X	X	38	30
Anodized aluminum combined with passivated corrosion resistant steel	X		40	10
Metals that are painted, varnished, lacquered or enameled	X		41	10/See Note 3
Porous metal, oil impregnated	X		42	30
None of above			ZZ	

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

NONMETALS

Item Composition/Properties (See Note 1)	Contact Preservative Prohibited	Has Critical Surfaces or Application	1st and 2nd Digit of Category Code	Basic Method of Preservation (See Note 2)
Plastics or plastic-fiber composites	X		43	10
	X	X	44	30
Natural or synthetic rubber (other than shelf-life items)	X	X	45	30
	X		46	30
Leather	X		47	10
	X	X	48	30
Optical glass, quartz, mica and assemblies using these as component parts	X	X	49	40
Carbon, graphite, asbestos, ceramics and glass (other than optical)	X		5Ø	10
	X	X	51	30
Paper	X		52	30
	X	X	53	30
Wood or cork	X		54	10
	X	X	55	30
Cordage and items made of cloth (includes shelf-life clothing)	X		56	10
	X	X	57	30
Textiles	X	X	58	30
None of above			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)	Contact Preservative Prohibited	Has 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	X		6Ø	10
Assembly may contain any material and is sealed; external surfaces need protection against corrosion			61	40
Assembly may contain any material and is not sealed.			62	50
None of above			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)	Contact Preservative Prohibited	Has Critical Surfaces or Application	1st and 2nd Digit of Category Code	Basic Method of Preservation (See Note 2)
Steel, iron and magnesium	X		64	40
	X	X	65	50/See Note 4
Electrical nonmetallic combination with gold plating			67	30
Optical glass, quartz and mica (includes plug type electronic connectors, resistors, capacitors, etc.)	X		68	30
	X	X	69	40
Electrostatic discharge, electromagnetic, magnetic or radioactivity sensitive devices or parts	X		ZZ	40/See Note 5
Copper, bronze, brass, beryllium	X	X	72	40
Gold, silver, platinum and iridium and other precious metals	X		73	40
Parts move on bearings (any material)	X	X	74	50
None of above			ZZ	

APPENDIX A

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

ELECTRICAL-MECHANICAL ASSEMBLIES

Item Composition/Properties (See Note 1)	Contact Preservative Prohibited	Has 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	X		77	50
End product may contain any material (not sealed)	X		8Ø	40
		X	81	40
	X	X	83	50/See Note 4
End product may contain any material (sealed)		X	84	30
	X		85	10
None of above apply			ZZ	

APPENDIX A

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 which have irregularities or protrusions which require cushioning to protect the package shall be coded F or G.
Note 2. Items which 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	Ø1
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	Ø2
MIL-C-11796	Class 3, Soft Film	Petrolatum base corrosion preventive; dries soft and greasy	Bearing preservation; machined surfaces that are brushable	C	Ø6
VV-L-800	One grade only	Light, low viscosity oil containing rust inhibitors	Small arms and automatic weapons protection; components of internal combustion engines	D	Ø9
MIL-L-21260	Type I, Grades 10, 30 or 50	Light, medium or heavy viscosity oil with additives	Reciprocating spark-ignition and compression-ignition engines preser-vation; also all types of ground equipment; oils are operational and need not be drained	E	1Ø

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

Preser-vative Specifi-cation	Grade, Type or Class	Description	Uses	Cate-gory Code	Corres-ponding Appendix J Code
MIL-G-23827	One grade only	Smooth homogenous mix-gelling agent	Ball, roller and needle bearings, gears, electronic items and aircraft control systems	F	11
MIL-L-7808	One type only	Synthetic based lubricating oil	Operating lubricating oil for aircraft turbine engines, helicopter transmissions and accessory equipment	G	33
MIL-H-46170	Type I or II	Synthetic hydro-carbon base hydraulic fluids	Intended for use in tank recoil mechanism and hydraulic systems	H	15
MIL-L-6085	One grade only	Synthetic oil with additives for anti-oxidation and corrosion protection	Aircraft instruments and electronic equipment	I	17
MIL-G-81322	Grade A	Wide temperature range liquid lubricant (grease)	Operating lubricant for aircraft related equipment	J	12
MIL-PRF-16173	Grade 4, trans-parent 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.

Preser-vative Specifi-cation	Grade, Type or Class	Description	Uses	Cate-gory Code	Corres-ponding Appendix J Code
MIL-H-83282	One grade only	Hydraulic fluid, fire resistant, synthetic hydro-carbon 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-L-7870	One grade only	Clear transparent lubricating oil suitable for low temperature operations	General purpose	M	5Ø
MIL-PRF-16173	Grade 3, Water Displac-ing, 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	Ø3
MIL-L-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	Ø7

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

Preser-vative Specifi-cation	Grade, Type or Class	Description	Uses	Cate-gory Code	Corres-ponding 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-L-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-L-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
MIL-M-6083	One grade only	Petroleum base oil with additives	Used in aircraft and ordnance hydraulic systems and as a testing and flushing oil for hydraulic components	V	92
---	---	Preserve with normal operating lubricant	---	W	89

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

Preser-vative Specifi-cation	Grade, Type or Class	Description	Uses	Cate-gory Code	Corres-ponding Appendix J Code
---	---	See Method of Preservation code for this requirement	---	X	XX
---	---	Packager’s option as long as all other contractual requirements are met	---	Y	YY
Special require-ment	---	---	---	Z	Appro-priate preser-vative material code from Appendix J
No require-ment	---	---	---	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)			
Ø5,16,22,28,32,33,38,42,44, 45,46,48,51,52,53,55,57,58, or 68	A	Ø	311ØØØØØØXX
	B	Ø	321ØØØØØØXX
	C	Ø	321ØØØØNAAXX
	D	Ø	321ØØØØNABXX
	E	Ø	321ØØØØNACXX
	F	Ø	311ØØØØNAAXX
	G	Ø	311ØØØØNABXX
	H	Ø	321ØØØØNABXX
	J	Ø	321ØØØØNACXX
	K	Ø	321ØØØØNADXX
	L	Ø	321ØØØØNAFXX
METHOD 30 (WITH PRESERVATIVE)			
Ø9,21,67,or 84	A	*	331**GHØØØXX
	B	*	321**GHØØØXX
	C	*	321**GHNAAXX
	D	*	321**GHNABXX
	E	*	321**GHNACXX
	F	*	331**GHNAAXX
	G	*	331**GHNABXX
	H	*	321**GHNABXX
	J	*	321**GHNACXX
	K	*	321**GHNADXX
	L	*	321**GHNAFXX

* = 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	4110000000XX
	B	0	4210000000XX
	C	0	4210000NAAXX
	D	0	4210000NABXX
	E	0	4210000NACXX
	F	0	4110000NAAXX
	G	0	4110000NABXX
	H	0	4210000NABXX
	J	0	4210000NACXX
	K	0	4210000NADXX
	L	0	4210000NAFXX
METHOD 40 (WITH PRESERVATIVE)			
03,61,or 81	A	*	411**GH000XX
	B	*	421**GH000XX
	C	*	421**GHNAAXX
	D	*	421**GHNABXX
	E	*	421**GHNACXX
	F	*	411**GHNAAXX
	G	*	411**GHNABXX
	H	*	421**GHNABXX
	J	*	421**GHNACXX
	K	*	421**GHNADXX
	L	*	421**GHNAFXX

* = 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)			
Ø7,11,2Ø,65,74,77,or 83	A	Ø	511ØØØØØØXX
	B	Ø	521ØØØØØØXX
	C	Ø	521ØØØØNAAXX
	D	Ø	521ØØØØNABXX
	E	Ø	521ØØØØNACXX
	F	Ø	511ØØØØNAAXX
	G	Ø	511ØØØØNABXX
	H	Ø	521ØØØØNABXX
	J	Ø	521ØØØØNACXX
	K	Ø	521ØØØØNADXX
	L	Ø	521ØØØØNAFXX
METHOD 50 (WITH PRESERVATIVE)			
62	A	*	511**GHØØØXX
	B	*	521**GHØØØXX
	C	*	521**GHNAAXX
	D	*	521**GHNABXX
	E	*	521**GHNACXX
	F	*	511**GHNAAXX
	G	*	511**GHNABXX
	H	*	521**GHNABXX
	J	*	521**GHNACXX
	K	*	521**GHNADXX
	L	*	521**GHNAFXX

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

TABLE A.V. Formulas for material weight and size calculations.

TABLE A.V. Formulas for material weight and size calculations - Continued.

Material weight and size requirement	Formula
Wrap	
a. Compute size of wrap in inches	a. LW = 2WI + 2HI + 2" WW = LI + HI + 1.5"
b. Compute weight of wrap in pounds	b. WtW = LW x WW x WWT
Cushioning *	c. Roll Cushioning Formula 1
c. Use formula 1 for roll cushioning; dimensions in inches	LC = NoT (2WI + 2HI + 1) WC = LI + HI + 1
d. Use formula 2 for cut cushioning; dimensions in inches	d. Cut Cushioning Formula 2 Bottom and top pads: LBP = LI WBP = WI + 2TC TBP = TC End pads: LEP = WI + 2TC WEP = HI + 2TC TEP = TC Side pads: LSP = LI WSP = HI TSP = TC
e. Compute weight of cushioning in pounds	e. Formula 1 WtC = LC x WC x TC x CD Formula 2 WtC = [2(LBP x WBP) + 2 (LEP x WEP) + 2(LSP x WSP)] x TC x CD
Unit container	
f. Compute inside dimensions of container in inches	f. ILC = LI + 2TC IWC = WI + 2TC IHC = HI + 2TC
g. Compute outside dimensions of container in inches	g. OLC = ILC + 2TF OWC = IWC + 2TF *OHC = IHC + 2TF + thickness of skids (if present) *Note: If container is RSC fiberboard, replace 2TF with 4TF
h. Compute weight of fiberboard container in pounds	h. Wt Con = 2 x fiberboard wt. factor (lbs/sq. in.)[(ILC x IWC) + (ILC x IHC) + (IWC x IHC)(+ 1/2 flap area)] + no. of skids x wood wt. factor (lbs/sq. in.) x skid thickness x skid width x skid length + no. of sleeves x 2 x fiberboard wt. factor [(ILC x IHC) + (IWC x IHC)]
i. Compute flexible barrier size NOTE: a. Minimum size bag shall be 2-1/2 x 3 inches regardless of formula. b. After the size has been calculated extend the dimension of the width to the nearest inch, except for minimum size bag. c. Bag sizes may be adjusted to adequately contain items when automatic packaging equipment is utilized.	i. METHODS 30 and 40 LB = 2W + 2D + 3 inches. WB = L + D + 3 inches. METHOD 50 LB = 2W + 2D + 5 inches WB = L + D + 5 inches

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

APPENDIX A

TABLE A.VI. Procedural packaging specifications.

Commodity	Specification
Abrasives	MIL-A-3816
Aluminum	ASTM-B660
Automobiles	MIL-V-62038
Batteries, dry	MIL-B-55521
Batteries, storage, general	MIL-P-6063
Batteries, storage, industrial and lead acid	PPP-B-140
Bearings	MIL-B-197
Block, rope, tackle	MIL-B-3865
Boilers	MIL-B-3180
Cable and cord assemblies	MIL-C-55442
Cable, electric	MIL-C-12000
Capacitors	MIL-C-39028
Cells, fuel	MIL-STD-1816
Chemicals	PPP-C-2020
Compressors	MIL-C-3600
Connectors	MIL-C-55330
Copper	MIL-C-3993
Cordage	MIL-C-3131
Electric machines	MIL-E-16298
Electron tubes	MIL-E-75
Electronic equipment	MIL-E-17555
Engine repair parts	MIL-S-196
Engines, aircraft reciprocating	MIL-E-6058
Engines, gas turbine	MIL-E-5607
Engines other than aircraft	MIL-E-10062
Fabrics, coated	PPP-P-1136
Fabrics, woolen	PPP-P-1132
Fittings and flanges	MIL-V-3
Fuel cells	MIL-STD-1816
Gyroscopes	MIL-G-81559
Hardware	PPP-H-1581
Hoists, chain	MIL-H-3280
Inert ammunition components	MIL-STD-1169
Lumber	MIL-L-14362
Machinery, deck and vehicle mounted	MIL-M-3184
Magnesium	ASTM-B660
Microcircuits	MIL-M-55565
Optical elements	MIL-O-16898

TABLE A.VI. Procedural packaging specifications - Continued.

Commodity	Specification
Packing, rubber preformed	MIL-P-4861
Paint	PPP-P-1892
Parachutes	MIL-P-5610
Petroleum products	MIL-STD-290
Propellers	MIL-P-6074
Propellers, ship	MIL-P-2845
Pumps	MIL-P-16789
Pumps, centrifugal	MIL-P-10603
Refrigerators	MIL-R-12323
Resistors	MIL-R-39032
Semiconductors	MIL-S-19491
Sonobuoys	MIL-S-23665
Special purpose components and repair parts	MIL-P-23199
Steel mill products	MIL-STD-163
Submarine repair parts	MIL-STD-758
Support items	MIL-S-196
Switches	MIL-S-28786
Synchros	MIL-S-12134
Time measuring instruments	PPP-T-360
Tires and tubes	MIL-T-4
Tool sets	MIL-T-45542
Tools, hand	PPP-P-40
Trucks	MIL-V-62038
Valves	MIL-V-3
Welding rods	MIL-W-10430
Wheeled vehicles	MIL-V-62038
Wheel and brake assemblies, aircraft	MIL-W-5013
Wire, electric	MIL-C-12000

APPENDIX B

FACTORS AND FORMULAE 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 restrictions of Title 49 CFR. 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, sets, etc. 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 which 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 factor and formulas contained herein are not applicable to lumber, raw stock, paints, oils and dope.

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

B.3.8.1 Formula A.

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 standard commercial 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 or classes for which actual use factors and replacement factors are not available, estimated factors will be used, and the appropriate numerical rate assigned.

B.3.8.2 Formula B.

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 or classes for which actual use factors and replacement factors are not available, estimated factors will be used, and the appropriate numerical rate assigned.

B.4 QUANTITY PER UNIT PACK DETERMINATION FORMULA

B.4.1 Formula A - (For consumable maintenance type items only)* (Includes items having both maintenance & overhaul application.)

	Cost per item in dollars					
	.01 to .50	.51 to 4.00	4.01 to 10.00	10.01	20.01	35.01 to 50.00
GROUP I - Cost factor	+4	+3	+2	+1	0	-2
Group 11 - 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**						
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***	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

* B.3.8.1.d
** B.3.8.1.f
*** B.3.8.1.c
**** B.3.8.1.e

B.4.2 Formula B - (consumable overhaul items).

	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 .15 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				
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	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.

APPENDIX B

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 pack.

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.

APPENDIX B

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

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	.125
8	5.	.187
4	10.	.375

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 (IQP). When the controlling factor falls between any two values listed in the appropriate column, the ICQ will be 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.

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, as applicable.

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 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, standards and drawings form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

A-A-160	-	Sack, Shipping, Paper, Cushioned.
A-A-881	-	Bags, Shipping, Burlap.
A-A-1588	-	Sack, Shipping, Paper (Cushioned with Closed Cell Plastic Film).
A-A-2714	-	Bag, Cloth, Mailing.
PPP-B-26	-	Bag, Plastic (General Purpose).
PPP-B-566	-	Boxes, Folding, Paperboard.
PPP-B-576	-	Boxes, Wood-Cleated Panelboard.
PPP-B-585	-	Boxes, Wood, Wirebound.
PPP-B-601	-	Boxes, Wood, Cleated-Plywood.
PPP-B-621	-	Boxes, Wood, Nailed and Lock-Corner.
PPP-B-665	-	Boxes: Paperboard, Metal Edged and Components.
PPP-B-676	-	Boxes, Setup.
PPP-B-1672	-	Boxes, Shipping, Reusable With Cushioning.

SPECIFICATIONS (continued)

FEDERAL (continued)

PPP-C-96	-	Cans, Metal, 28 Gage and Lighter.
PPP-D-723	-	Drums, Fiber.
PPP-D-729	-	Drums, Shipping and Storage, Steel, 55-Gallon (208 Liters).
PPP-T-495	-	Tubes, Mailing, and Filing.

MILITARY

MIL-C-104	-	Crates, Wood: Lumber and Plywood Sheathed, Nailed, and Bolted.
MIL-B-117	-	Bags, Sleeves and Tubing.
MIL-B-2427	-	Box, Ammunition Packing, Wood, Nailed.
MIL-C-3774	-	Crates, Wood; Open, 12,000- and 16,000-Pound Capacity.
MIL-C-3955	-	Cans, Composite, Spirally Wound.
MIL-C-4150	-	Cases, Transit and Storage, Waterproof and Water-Vaporproof.
MIL-D-6054	-	Drum, Metal-Shipping and Storage.
MIL-D-6055	-	Drum, Metal Reusable, Shipping and Storage (Cap. 88 to 510 cubic inches).
MIL-C-9897	-	Crate, Slotted Angle, Steel or Aluminum, for Lightweight Airframe Components and Bulky Items (for Maximum Load of 1363 Kgs (3,000 Pounds)).
MIL-PRF-11264	-	Container: Shipping, Reusable - for Tank Automotive Engines, Transmissions, Differentials, Transfers, Final Devices, Driving Axles, and Similar Assemblies.
MIL-B-22020	-	Bags, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated.
MIL-B-26195	-	Boxes, Wood-Cleated, Skidded, Load-Bearing Base.
MIL-B-43666	-	Boxes, Shipping, Consolidation.
MIL-B-46506	-	Boxes, Ammunition Packing, Wood, Wirebound.
MIL-C-52950	-	Crates, Wood, Open and Covered.

APPENDIX C

STANDARDS

FEDERAL

FED-STD-101	-	Test Procedures for Packaging Materials.

MILITARY

MS24347	-	Drums, Metal, Reusable Shipping and Storage.
MS27683	-	Drums, Metal - Shipping and Storage 16 to 80 Gallons.
MS27684	-	Drums, Metal Shipping and Storage 3 to 12 Gallons.

(Unless otherwise indicated, copies of these documents are available from the Defense Printing Service Detachment Office, Bldg 4D (NPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094).

DRAWINGS

NAVICP DRAWINGS (see Table C.II, Note 3)

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

(These drawings may be obtained from NAVICP (Attn: 0712), 700 Robbins Avenue, Philadelphia, PA 19111-5098).

WARNER ROBBINS 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 document forms a part of this document to the extent specified herein. Unless otherwise specified, the issue of the document which is DOD adopted is that listed in the issue of the DoDISS cited in the solicitation.

APPENDIX C

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM-D1974	-	Methods of Closing, Sealing and Re-inforcing Fiberboard Boxes (DOD adopted).
ASTM-D5118	-	Fabrication of Fiberboard Shipping Boxes (DOD adopted).
ASTM-D5168	-	Fabrication and Closure of Triple Wall Corrugated Fiberboard Containers (DOD adopted).

(Application for copies should be addressed to the American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959).

C.3 GENERAL

C.3.1 Unit container size. Flexible and rigid containers shall be sized so that the wrapped and cushioned item(s) being packaged fills at least 80 percent of the container volume. 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 may 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 protection 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 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 must 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.5.2 Multiapplication containers.

C.5.2.1 Design and selection. Multiapplication 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 multiapplication container for an item based on the size, weight, and fragility parameters listed in Table C.IV.

C.5.2.2 Identification. All multiapplication 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 multiapplication 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 multiapplication 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 multiapplication 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 multiapplication 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, attitude 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, 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 multiapplication containers. These containers are briefly described as follows:

a. Type VI. Consists of two halves of a polyethylene blow molded container with polyurethane cushioning and an electrostatic protective cushioned bag. 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 which forms a cavity.

c. Type VIII. Consists of a plastic type container with a coiled steel cable shock mounted 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 shock mounts 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 shock mounts 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 Multiapplication container availability.

C.5.2.7.1 General Services Administration (GSA). Types I through IV and Type IX multiapplication 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 Inventory Control Point (NAVICP). Types VI through VIII and X are stocked by the NAVICP. DoD and Federal Agencies may obtain them from NAVICP, 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 multiapplication containers are located nationwide. Names of these suppliers are available from the Contract Administration Activity.

APPENDIX C

TABLE C.I. Interior containers.

Specification	Description
A-A-160	Sack, Shipping, Paper, Cushioned
A-A-881	Bags, Shipping, Burlap
A-A-1588	Sack, Shipping, Paper (Cushioned with Closed Cell Plastic Film)
A-A-2714	Bag, Cloth, Mailing
PPP-B-26	Bag, Plastic, (General Purpose)
PPP-B-566	Boxes, Folding, Paperboard: Variety 1, Process I or II Variety 2, Process I Variety 2, Process II
PPP-B-665	Boxes: Paperboard, Metal Edged and Components
PPP-B-676	Boxes, Setup
PPP-C-96	Cans, Metal, 28 Gage and Lighter
PPP-T-495	Tubes, Mailing, and Filing
MIL-B-117	Bags, Sleeves and Tubing (Interior Packaging)
MIL-C-3955	Cans, Composite, Spirally Wound
MIL-B-22020	Bags, Transparent, Flexible, Sealable, VCI Treated
ASTM-D5118	Fiberboard Shipping Boxes: Class weather resistant Class domestic

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-576	Boxes, Wood-Cleated Panelboard Class 2	350	B	
PPP-B-585	Boxes, Wood, Wire-bound Class 2 Class 3	400 300	B A,B	
PPP-B-601	Boxes, Wood, Cleated-Plywood Domestic Overseas	1,000 (See Note 1) 1,000	B A,B	Weight limitation of specification shall apply to style selection.
PPP-B-621	Boxes, Wood, Nailed and Lock-corner Overseas Domestic	1,000 600	A,B B	May be modified by inclusion of skids
PPP-B-1672	Box, Shipping, Reusable with Cushioning		B	See Table C.IV, Type I thru IV for weight and size restrictions
PPP-D-723	Drums, Fiber	550	B	
PPP-D-729	Drums, Shipping and Storage, Steel, 55-Gallon (208 Liters)		A,B	
MIL-C-104	Crates, Wood: Lumber and Plywood Sheathed, Nailed, and Bolted	30,000	A,B	Size limitation 30’Lx9’Wx10’H (unless otherwise specified)

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-B-2427	Box, Ammunition Packing: Wood, Nailed		A,B	Top opening or end opening with or without handles
MIL-C-3774	Crates, Wood; Open Type I Type II	 12,000 16,000	A,B	Bolted or nailed assembly; size limitations: Type I-16'x8'x8' Type II-40'x8'x16'
MIL-C-4150	Cases, Transit and Storage, Waterproof and Water-Vaporproof	250	A,B	Reusable, heavy duty, size as specified
MIL-D-6054	Drum, Metal-Shipping and Storage		A,B	MS27683, MS27684; exterior use; 3 to 80 gal. capacity
MIL-D-6055	Drum, Metal Reusable, Shipping and Storage (Cap. 88 to 510 cubic inches)		A,B	MS24347; exterior use
MIL-C-9897	Crates, Slotted Angle, Steel or Aluminum, for Lightweight Airframe Components and Bulky Items	3,000	A,B	Open or sheathed, with or without skids

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-PRF-11264	Containers, Shipping, Reusable		A,B	For vehicular assemblies weighing over 1600 pounds
MIL-B-26195	Boxes, Wood-Cleated, Skidded, Load-Bearing Base Domestic Overseas	 2,500 2,500	 B A,B	Size limitation - 16'L Only plywood superstructure shall be used for Level A.
MIL-B-43666	Boxes, Shipping, Consolidation Type I - wood cleated Type II - plywood wirebound Type III - fiberboard	 Weight varies with size	 A,B A,B B	Used as insert in cargo transporters such as CONEX, SEAVAN, or MILVAN or as separate exterior shipping containers
MIL-B-46506	Boxes, Ammunition Packing, Wood, Wirebound		A,B	Top opening, with or without handles
MIL-C-52950	Crates, Wood, Open and Covered	4,000	A,B	For size and weight restrictions, see MIL-C-52950
NAVICP Dwg. P069	Container, Molded, Reusable	4	A,B	For circuit boards and modules; See Table C.IV, Type VI

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
NAVICP Dwg. 13414	Container, Modular, Reusable	120	A,B	For major repairables; See Table C.IV, Type VII
NAVICP Dwg. 15024	Container, Shipping and Storage	40	A,B	For gyroscopic instruments; See Table C.IV, Type VIII
NAVICP Dwg. 15450	Container, Shipping and Storage	75	A,B	For depot level repairables; see Table C.IV, Type X
WRALC Dwg. 11214-5002-100	Container, Shipping and Storage	16.5	A,B	For gyroscopic instruments; See Table C.IV, Type IX
WRALC Dwg. 11214-5002-200	Container, Shipping and Storage	25	A,B	For gyroscopic instruments; see Table C.IV, Type IX
WRALC Dwg. 11214-5002-300	Container, Shipping and Storage	54	A,B	For gyroscopic instruments; see Table C.IV, Type IX
WRALC Dwg. 11214-5002-400	Container, Shipping and Storage	91	A,B	For gyroscopic instruments; see Table C.IV, Type IX

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-D5118	Fiberboard Shipping Boxes Weather resistant	See appropriate table in ASTM-D5118	B	
ASTM-D5168	Boxes, Fiberboard, Corrugated, Triple Wall, Weather Resistant	See ASTM-D5168	B	

Note 1. Greater weights of contents may be permitted. Refer to PPP-B-601.

APPENDIX C

TABLE C.III. Fiberboard container size list.

Container Inside Dimensions (inches)	National Stock No.	Container Wt. (lbs.)	Container Outside 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	400
4x4x16	8115-00-200-6954	.72	4.3x4.3x16.5	.177	CF	V3c	WR	RSC	SW	400
5x5x20	8115-01-030-3532	.88	5.3x5.3x20.5	.333	CF	W5c	WR	RSC	SW	275
6x4x8	8115-00-190-4888	.45	6.3x4.3x8.5	.135	CF	W6c	WR	RSC	SW	175
6x6x6	8115-00-183-9503	.52	6.3x6.3x6.5	.149	CF	W6c	WR	RSC	SW	175
6x6x10	8115-00-417-9440	.68	6.3x6.3x10.5	.241	CF	V3c	WR	RSC	SW	400
6x6x15	8115-01-166-6458	.88	6.3x6.3x15.5	.356	CF	V3c	WR	RSC	SW	400
6x6x18	8115-00-190-4920	1.00	6.3x6.3x18.5	.425	CF	V3c	WR	RSC	SW	400
6x6x24	8115-00-190-4921	1.25	6.3x6.3x24.5	.563	CF	V3c	WR	RSC	SW	400
8x4x4	8115-00-183-9500	.38	8.3x4.3x4.5	.093	CF	W6c	WR	RSC	SW	175
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	400
8x8x14	8115-01-166-6459	1.25	8.3x8.3x14.5	.578	CF	V3c	WR	RSC	SW	400
8x8x16	8115-00-190-4936	1.35	8.3x8.3x16.5	.658	CF	V3c	WR	RSC	SW	400
8x8x24	8115-00-417-9442	1.80	8.3x8.3x24.5	.977	CF	V3c	WR	RSC	SW	400
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	400
10x6x4	8115-00-183-9496	.60	10.5x6.3x4.5	.172	CF	W5c	WR	RSC	SW	275
10x6x10	8115-00-255-1341	.85	10.3x6.3x10.5	.394	CF	V3c	WR	RSC	SW	400
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	400
10x10x12	8115-01-034-0370	1.50	10.5x10.5x12.5	.798	CF	V3c	WR	RSC	SW	400
11x11x11	8115-00-417-9406	1.70	11.5x11.5x11.5	.880	CF	V3c	WR	RSC	SW	400
11.25x8.75x4	8115-01-012-5003	.93	11.5x9.0x6.5	.270	CF	V3c	WR	RSC	SW	400
11-1/4x8-3/4x18	8115-00-190-4969	1.86	11.5x9.0x18.5	1.108	CF	V3c	WR	RSC	SW	400
12x6x6	8115-00-183-9492	.78	12.5x6.3x6.5	.296	CF	V3c	WR	RSC	SW	400
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	400
12x9x6	8115-01-011-3626	1.10	12.3x9.3x6.5	.430	CF	V3c	WR	RSC	SW	400
12x12x4	8115-00-190-4860	1.35	12.5x12.5x4.5	.407	CF	W6c	WR	RSC	SW	175
12x12x8	8115-00-417-9378	1.50	12.5x12.5x8.5	.769	CF	V3c	WR	RSC	SW	400
12x12x10	8115-00-183-9490	1.81	12.5x12.5x10.5	.949	CF	V3c	WR	RSC	SW	400
12x12x12	8115-00-183-9491	1.97	12.5x12.5x12.5	1.130	CF	V3c	WR	RSC	SW	400
12x12x14	8115-00-409-3807	2.14	12.5x12.5x14.5	1.311	CF	V3c	WR	RSC	SW	400
13x13x13	8115-01-166-6461	2.48	13.3x13.3x13.5	1.382	CF	V3c	WR	RSC	SW	400
14x10x6	8115-00-495-5458	1.35	14.5x10.5x6.5	.573	CF	V3c	WR	RSC	SW	400
14x10x10	8115-01-030-3537	1.68	14.5x10.5x10.5	.925	CF	V3c	WR	RSC	SW	400
14x12x8	8115-00-183-9488	1.80	14.5x12.5x8.5	.892	CF	V3c	WR	RSC	SW	400
14x14x12	8115-00-183-9489	2.22	14.5x14.5x12.5	1.521	CF	V3c	WR	RSC	SW	400
14x14x14	8115-00-417-9321	2.68	14.5x14.5x14.5	1.764	CF	V3c	WR	RSC	SW	400
14x14x16	8115-00-585-4906	2.75	14.5x14.5x16.5	2.008	CF	V3c	WR	RSC	SW	400
14x14x18	8115-00-417-9320	3.00	14.5x14.5x18.5	2.251	CF	V3c	WR	RSC	SW	400
15x15x10	8115-00-417-9318	2.55	15.5x15.5x10.5	1.460	CF	V3c	WR	RSC	SW	400
16x10x10	8115-01-030-4249	1.80	16.5x10.5x10.5	1.053	CF	W5c	WR	RSC	SW	275
16x12x8	8115-00-183-9487	1.93	16.5x12.5x8.5	1.015	CF	V3c	WR	RSC	SW	400
16x12x12	8115-00-418-4653	2.28	16.5x12.5x12.5	1.492	CF	V3c	WR	RSC	SW	400
16x16x12	8115-00-451-7853	3.09	16.5x16.5x12.5	1.969	CF	V3c	WR	RSC	SW	400
16x16x16	8115-00-190-5002	3.50	16.5x16.5x16.5	2.600	CF	V3c	WR	RSC	SW	400
18x12x12	8115-00-514-2409	2.50	18.5x12.5x12.5	1.673	CF	V3c	WR	RSC	SW	400
18x15x10	8115-00-190-5007	2.81	18.5x15.5x10.5	1.742	CF	V3c	WR	RSC	SW	400
18x15x15	8115-00-417-9292	3.34	18.5x15.5x15.5	2.572	CF	V3c	WR	RSC	SW	400
18x18x12	8115-00-183-9482	3.64	18.5x18.5x12.5	2.476	CF	V3c	WR	RSC	SW	400
18x18x18	8115-00-428-4185	4.38	18.5x18.5x18.5	3.664	CF	V3c	WR	RSC	SW	400
20x10x10	8115-01-166-6462	2.05	20.5x10.5x10.5	1.308	CF	V3c	WR	RSC	SW	400

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

Container Inside Dimensions (inches)	National Stock No.	Container Wt. (lbs.)	Container Outside Dimensions (inches)	Container Cube (cu. ft.)	Type	Grade	Class	Style	Variety	Bursting Strength (lbs/in.^{2})
20x12x12	8115-01-008-3645	2.60	20.3x12.3x12.5	1.806	CF	V3c	WR	RSC	SW	400
20x16x16	8115-00-275-5777	3.90	20.5x16.5x16.5	3.230	CF	W6c	WR	RSC	SW	175
20x20x12	8115-00-428-4183	4.30	20.5x20.5x12.5	3.040	CF	V3c	WR	RSC	SW	400
20x20x20	8115-00-428-4158	5.35	20.5x20.5x20.5	4.986	CF	V3c	WR	RSC	SW	400
22X22X12	8115-00-428-4145	5.00	22.5x22.5x12.5	3.662	CF	V3c	WR	RSC	SW	400
24x12x12	8115-01-166-6464	2.90	24.5x12.5x12.5	2.215	CF	V3c	WR	RSC	SW	400
24x14x14	8115-01-071-2972	3.60	24.3x14.3x14.5	2.916	CF	V3c	WR	RSC	SW	400
24x16x12	8115-00-183-9481	3.80	24.5x16.5x12.5	2.924	CF	V3c	WR	RSC	SW	400
24x16x16	8115-00-292-0123	4.32	24.5x16.5x16.5	3.860	CF	V3c	WR	RSC	SW	400
24x18x18	8115-01-163-9189	5.00	24.5x18.5x18.5	4.853	CF	V3c	WR	RSC	SW	400
24x20x16	8115-00-417-9236	5.30	24.5x20.5x16.5	4.796	CF	V3c	WR	RSC	SW	400
24x24x10	8115-00-428-4124	5.45	24.5x24.5x10.5	3.647	CF	V3c	WR	RSC	SW	400
24x24x12	8115-00-174-2354	5.75	24.5x24.5x12.5	4.342	CF	V3c	WR	RSC	SW	400
24x24x16	8115-01-119-2523	6.05	24.5x24.5x16.5	5.732	CF	V3c	WR	RSC	SW	400
24x24x20	8115-01-166-6451	6.70	24.5x24.5x20.5	7.121	CF	V3c	WR	RSC	SW	400
24x24x24	8115-00-417-9416	7.62	24.5x24.5x24.5	8.510	CF	V3c	WR	RSC	SW	400
26x12x8	8115-01-166-6450	3.00	26.5x12.5x8.5	1.629	CF	V3c	WR	RSC	SW	400
26x12x10	8115-01-166-6449	3.30	26.5x12.5x10.5	2.013	CF	V3c	WR	RSC	SW	400
26x18x18	8115-01-166-6454	5.50	26.5x18.5x18.5	5.249	CF	V3c	WR	RSC	SW	400
26x26x20	8115-01-166-6463	7.00	26.5x26.5x20.5	8.331	CF	V3c	WR	RSC	SW	400
29x14x14	8115-01-166-6447	4.00	29.5x14.5x14.5	3.589	CF	V3c	WR	RSC	SW	400
30x12x6	8115-00-190-5017	2.61	30.5x12.5x6.5	1.434	CF	V3c	WR	RSC	SW	400
30x12x12	8115-01-166-6448	3.50	30.5x12.5x12.5	2.758	CF	V3c	WR	RSC	SW	400
30x16x16	8115-00-292-0120	5.00	30.5x16.5x16.5	4.805	CF	V3c	WR	RSC	SW	400
30x20x12	8115-01-163-3446	4.80	30.5x20.5x12.5	4.523	CF	V3c	WR	RSC	SW	400
34x14x10	8115-00-564-8053	3.75	34.5x14.5x10.5	3.040	CF	V3c	WR	RSC	SW	400
34x20x15	8115-01-166-6455	6.00	34.5x20.5x16.0	6.549	CF	V3c	WR	RSC	SW	400
34x20x20	8115-01-166-6456	6.50	34.5x20.5x20.5	8.390	CF	V3c	WR	RSC	SW	400
36x12x12	8115-01-166-6457	3.82	36.5x12.5x12.5	3.300	CF	V3c	WR	RSC	SW	400
36x14x14	8115-00-190-5020	4.70	36.5x14.5x14.5	4.441	CF	V3c	WR	RSC	SW	400
36x24x22	8115-01-166-5118	7.20	36.5x24.5x22.5	11.644	CF	V3c	WR	RSC	SW	400
36x26x18	8115-01-166-6453	6.80	36.5x26.5x18.5	10.355	CF	V3c	WR	RSC	SW	400
40x14x14	8115-01-166-6452	6.00	40.5x14.5x14.5	4.928	CF	V3c	WR	RSC	SW	400

TABLE C.IV. Multiapplication container selection.

TYPE I

PPP-B-1672, Vertical Star (Table J.VII, Code NR)

Container ID (inches) (National Stock Number)	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)	3 Dia x 6	1.0 - 1.5	30 - 40	6.3 x 6.3 x 10.5	.242
		1.6 - 2.2	25 - 29		
		2.3 - 3.0	30 - 40		
	3 x 3 x 6	1.5 - 4.0	30 - 40		
8 x 8 x 12 (8115-00-192-1604)	3 x 3 x 8	1.5 - 4.0	30 - 40	8.3 x 8.3 x 12.5	.499
	4 Dia x 8	3.0 - 7.5	25 - 29		
		7.6 - 8.5	30 - 40		
	4 x 4 x 8	3.0 - 5.0	25 - 29		
		5.1 - 7.0	30 - 40		
	5 Dia x 8	3.5 - 5.5	30 - 40		
10 x 10 x 12 (8115-00-192-1605)	4 Dia x 6	2.0 - 3.0	30 - 40	10.5 x 10.5 x 12.5	.798
		3.1 - 4.5	25 - 29		
		4.6 - 5.0	30 - 40		
	5 Dia x 6	3.0 - 6.0	30 - 40		
	6 Dia x 6	4.5 - 7.0	30 - 40		
	5 x 5 x 6	4.0 - 9.0	30 - 40		
12 x 12 x 14 (8115-00-134-3655)	5 Dia x 8	3.5 - 4.5	25 - 29	12.5 x 12.5 x 14.5	1.312
		4.6 - 8.5	20 - 24		
	6 Dia x 8	5.0 - 7.0	25 - 29		
		7.1 - 13.0	20 - 24		
	5 x 5 x 8	3.0 - 5.0	30 - 40		
		5.1 - 7.0	25 - 29		
		7.1 - 11.0	20 - 24		
	6 x 6 x 8	5.0 - 7.0	30 - 40		
		7.1 - 10.0	25 - 29		
		10.1 - 12.0	20 - 24		
12 x 12 x 18 (8115-00-050-5237)	5 Dia x 10	4.0 - 5.0	25 - 29	12.5 x 12.5 x 18.5	1.673
		5.1 - 11.0	20 - 24		
	6 Dia x 10	6.0 - 8.0	25 - 29		
		8.1 - 16.0	20 - 24		
	5 x 5 x 10	4.0 - 6.0	30 - 40		
		6.1 - 8.0	25 - 29		
		8.1 - 13.0	20 - 24		
	6 x 6 x 10	8.0 - 10.0	30 - 40		
		10.1 - 14.0	25 - 29		
		14.1 - 20.0	20 - 24		
14 x 14 x 16 (8115-00-134-3656)	6 Dia x 10	6.0 - 15.0	25 - 29	14.5 x 14.5 x 16.5	2.008
	7 Dia x 10	8.0 - 14.0	20 - 24		
		14.1 - 17.0	24 - 29		
		17.1 - 20.0	30 - 40		
	6 x 6 x 10	5.0 - 7.0	30 - 40		
		7.1 - 9.0	24 - 29		
		9.1 - 12.0	20 - 24		
	7 x 7 x 10	6.5 - 9.0	30 - 40		
		9.1 - 12.0	25 - 29		
		12.1 - 21.0	20 - 24		
		21.1 - 23.0	25 - 29		

* Shock values in this table were determined by instrumented free fall drop testing in accordance with Method 5007 of FED-STD-101.

TABLE C.IV. Multiapplication container selection - Continued.

TYPE II

PPP-B-1672, folding convoluted (Table J.VII, Code NS)				
Container ID (inches) (National Stock Number)	Recommended max. bare item dimensions (in.)	Typical item weight (lbs.)	Packaged Outside Dimensions (inches)	Packaged Cube (cu. ft.)
6 x 5 x 2-1/2 (8115-00-787-2142)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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.

APPENDIX C

TABLE C.IV. Multiapplication container selection - Continued.

TYPE III

PPP-B-1672, telescoping encapsulated (Table J.VII, Code NV)					
Container ID (inches) (National Stock Number)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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. Multiapplication container selection - Continued.

TYPE IV

PPP-B-1672, horizontal star (Table J.VII, Code NW)					
Container ID (inches) (National Stock Number)	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 (8115-00-010-8956)	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)	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. Multiapplication 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	0.347
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		14.0 x 12.0 x 5.0	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

* Includes wrap, barrier, bag, cushioned pouch and other packaging materials as required.

TABLE C.IV. Multiapplication 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
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
34 x 24 x 17 (8145-00-514-2798)	28 x 18 x 11	78	40 - 50	37.0 x 27.0 x 19.0	10.984
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

* Includes interior carton and associated blocking and bracing when applicable.

TABLE C.IV. Multiapplication 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 No.)	*Max. load size without handling case (in.)	Handling Case, OD (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 Length - 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				

* Includes wrap and cushioning as required to protect the barrier bag when applicable.

TABLE C.IV. Multiapplication container selection - Continued.

TYPE IX

Type IX. Shipping and Storage Containers for Avionics Instruments and Shock Sensitive Items; Warner Robbins Air Logistics Center Drawing Nos. 11214-5002-100, 11214-5002-200, 11214-5002-300, 11214-5002-400 (Table J.VII, Code WY)					
Container ID (inches) (National Stock No.)	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

TABLE C.IV. Multiapplication 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	Min. 8x4x4 Max. 12x8x8	3-10	19.0x15.0x12.0	1.979
8145-01-262-2983	Min. 12x8x6 Max. 14x12x9	10-20	21.0x19.0x15.0	3.464
8145-01-262-2984	Min. 14x12x7 Max. 16.5x15x10	15-30	23.5x22.0x16.0	4.787
8145-01-262-2985	Min. 14x12x9 Max. 28x13x12	20-40	35.0x20.0x18.0	7.292
8145-01-262-2986	Min. 14x14x10 Max. 16.5x16.5x15	30-60	23.5x23.5x21.0	6.711
8145-01-262-2987	Min. 14x14x10 Max. 28x21x14.5	30-60	35.0x28.0x20.5	11.626
8145-01-262-2988	Min. 25x14x10 Max. 34x21x14	45-75	41.0x28.0x20.0	13.287

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, as applicable.

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.

D.3.1 Consolidation of different items within a method of preservation. Hazardous items will 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 and/or electro-magnetic 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 will 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 will be used to ensure that items which would be difficult to identify by visual observation are kept segregated and individually identified. Also, it is desirable to segregate components of two related repairable assemblies within the kit. For example, in a kit for an air-to-air missile, components for the arming and fusing subsystem shall not be intermingled with components for the guidance subsystem. 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 non-corrosive 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, gaskets, etc.. Kit items such as thin shims, paper gaskets, etc., 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 and 5.5, respectively.

APPENDIX E

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.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 documents cited in sections 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 standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

STANDARDS

MILITARY

MIL-STD-100	-	Engineering Drawing Practices.
MIL-STD-129	-	Marking for Shipment and Storage.
MIL-STD-961	-	DOD Standard Practice for Defense Specifications.

(Unless otherwise indicated, copies of these standards are available from the Defense Printing Service Detachment Office, Bldg 4D (NPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

E.3 GENERAL REQUIREMENTS

E.3.1 Development of military packaging data. Data submitted by contractors shall be prepared in accordance with the requirements of this standard. Each element of the code shall be completed, indicating the type, kind of material, or processes used. These data and codes shall be supplemented as outlined herein.

E.3.2 Recording military packaging data.

E.3.2.1 Manual 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 on forms he uses for his internal operation 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 Appendix J. 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). A copy of the "Kit Contents List" prepared in accordance with Appendix D, shall be attached thereto.

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 through E.IV prescribes the procedures for inserting data on DD Form 2326. This is a manual 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 code (CAGE) and design activity's part number
Approval stamp (E.6.1.5)
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 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.

E.4.2.3 Configuration item (CI). Show configuration item specification number for the item in the designated block on the Figure E.1 format when the contract requires development of a CI specification for the item in accordance with MIL-STD-961.

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 described 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 is 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 will 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 PREPARATION OF SPECIAL PACKAGING INSTRUCTION (SPI)

E.5.1 General. Special packaging instructions shall be developed in accordance with the appropriate CDRL item (see 6.3). SPIs shall be prepared when the following conditions exist:

a. When the preservation-packing data area of DD Form 2326 (Figure E.1) does not contain all necessary packaging requirements and

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

E.5.2 Format. Unless otherwise specified, DD Form 2169 (Figure E.2) shall be used when a SPI is required. When continuation sheets are required, DD Form 2169C shall be used. When other engineering drawings are required, they shall be referenced on, and attached to, the SPI. In no instance shall the drawing size impair the clarity or legibility of the SPI.

E.5.2.1 SPI preparation instructions. (DD Form 2169, DD Form 2169C)

a. Part or drawing number - Enter part or drawing number if no NSN is available.

b. Commercial and Government Entity (CAGE) Code - Provide the 5-digit numerical code of the packaging design activity assigned in conformance with 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 the SPI number only when provided by the service or agency.

d. National stock number - Provide the 13-position National Stock Number consisting of the 4-position Federal Supply Classification Code, the 9-position National Item Identification Number and the 2-position Material Management Aggregation Code (MMAC), Service Management Code or Special Material Identification Code (SMIC), as applicable. 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. Unless otherwise specified, enter multiple NSNs if more than one NSN applies.

e. Date - Enter the ordinal date, reflecting the two-position year and three-position day of the latest revision of the SPI (e.g., February 5, 1996 would be "96036").

f. 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 that the letters I, O, Q, S, X and Z shall not be used.

g. QUP - State quantity per unit pack (QUP) in-the-clear.

h. ICQ - State intermediate container quantity (ICQ) in-the-clear, e.g., the number of unit packs to be included in the intermediate container.

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

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

k. Unit pack size - Provide the unit container outside dimensions to the nearest one tenth of an inch in order by length, width and depth (i.e., 15.2 x 14.1 x 12.7) (not required for SPIs covering more than one size shipping container).

l. Preservation - Include the method of preservation required (see 5.2.3), including any modification thereto.

m. Cleaning - Provide cleaning requirements in accordance with 5.2.1.

n. Drying - Provide drying requirements in accordance with 5.2.1.

o. Packing - Provide all applicable packing requirements for levels A and B. Closure, sealing and reinforcement shall be in accordance with the applicable container specification or supplemental closure requirements document.

p. Marking - Marking shall be as specified in MIL-STD-129. Special markings (includes opening and closing instructions) must 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 multiapplication) containers.

q. Description (bill of materials) - List 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 should not be identified by trade name, commercial source, or commercial specification. Other details regarding materials are specified in E.5.2.2.3.

r. Steps - List in order of application the materials required for completing the package.

s. Required - Fill in the quantity of each material needed to complete the package.

E.5.2.2 Details of completion of SPI. The data given shall be in sufficient detail to enable the package to be duplicated by the lowest skilled packer. Coding of packaging requirements in accordance with Appendix J is not permitted unless specified by the requiring activity. Information contained on government-owned engineering drawings need not be duplicated on the SPI. When applicable, source maintenance and recoverability codes and drawing number must appear on all SPIs that do not contain sufficient information to be duplicated and on preconstructed manufactured containers where the SPI shows assembly methods only. When details are required for shipping containers, packing data shall be shown for Levels A and B.

E.5.2.2.1 Additional information. The following additional information shall be shown or itemized on each SPI:

a. All intimate wraps.

b. All cushioning or dunnage, or both (when applicable) with dimensions. Indicate the specification, style, type, and class.

c. Special markings (e.g., opening and closing instructions when special type containers or securing media are used, marking of the SPI number on exterior containers where required, warning markings, etc.).

d. Bill of materials (as necessary; see Form 2169C).

e. Preservative compound (when applicable).

f. Inside and outside dimensions of container or completed package. Indicate the specification, style, type and class of the container or completed package.

g. Drawing numbers (when applicable).

h. Maximum fragility factor for which the SPI is designed, if available.

E.5.2.2.2 Details. 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. When the instruction covers blocking and bracing of unpacked items, all details necessary to indicate 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 some instances clarity is best effected by showing the item in phantom lines.

E.5.2.2.3 Materials.

E.5.2.2.3.1 Lumber and plywood. Grades or types of lumber and plywood to be used shall be specified. Direction of surface grain of plywood shall be shown when it is a pertinent factor. Unless otherwise specified, dimensions listed for lumber cross sections will be nominal while those listed for lengths are actual. Similarly, cut sizes of plywood sheeting are always expressed as actual.

E.5.2.2.3.2 Fiberboard. Fiberboard shall be identified as to type, class, variety, and grade if a particular type is required. Flute size and direction will also be reflected when required for design of the pack.

E.5.2.2.3.3 Isolation system. Specification, type, grade, class, thickness and density with load relationship of cushioning materials shall be specified. When shear mounts, vibration isolators, or other shock mitigation devices are used, they shall be identified and described.

E.5.2.2.3.4 Hardware. Unless otherwise specified, bolts, lag screws, etc., shall be of standard commercial grade with MS equivalency indicated, if available. Types of bolts, such as "carriage" and "machine" shall be indicated.

E.5.2.2.4 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 MIL-STD-100 shall not be shown. However, the engineering drawing numbers shall be indicated.

E.5.2.2.5 Trade names. All items listed on the bill of materials shall be identified, whenever possible, to applicable federal, military, or commercial specifications including types, grades, classes, styles, etc. Such items will not be identified by trade name or commercial source. 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. When trade names, commercial sources, specification, or part numbers are used, the phrase "or equal" shall be added to the item identification.

E.5.2.2.6 Application of additional items. Similar items may be applied to a single SPI provided all interior supports or restraining media of the container as designed for the original item can be used for these items.

E.5.2.3 Styles. SPIs shall be developed using any one or a combination of the following:

a. Short narrative.

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

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

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

e. Computer graphics.

f. Orthographic drawings (prepared in accordance with MIL-STD-100).

E.5.2.4 Variations in style and format. Unless otherwise specified, DD Form 2169 (Figure E.2) shall be used when a SPI is required. When data is to be received or delivered through an electronic digital media or on an approved contractor's format, a variation in style and format may be used provided that the applicable information specified above is included therein.

E.6 APPROVAL OF CONTRACTOR DEVELOPED PACKAGING DATA

E.6.1 Procedures for submitting data for approval. Unless otherwise specified in the contract, the contractor shall submit for approval the packaging data prepared for each item in accordance with E.4 and E.5. 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 below.

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 a 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. When specified, certified

laboratory test reports may be used as justification for approval and copies of the report shall be furnished to the contracting activity (packaging organization).

E.6.1.5 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.6.1.5.1 Authentication. SPIs for hazardous materials shall be authenticated by the responsible DOD activity.

E.6.1.6 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 Transmittal of data. The data required by this standard shall be in accordance with the applicable data item description and must be referenced on the applicable Contract Data Requirements List (DD Form 1423). Necessary modification to the data item descriptions must be shown on the DD Form 1423.

E.6.2.1 Preservation and packing data. The contractor shall submit the DD Form 2326 data as outlined below:

a. Unless otherwise specified on the DD Form 1423, two (2) copies of either DD Form 2326 or tape, when specified, shall be forwarded, along with a letter of transmittal showing quantity of items for which forms are 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.6.2.2 Special packaging instructions. When special packaging instructions are required, one full sized reproducible master and one reproduced copy of Figure E.2, unless otherwise specified on the DD Form 1423, shall be forwarded to the DoD contracting activity (packaging organization). Submittals shall be suitably protected to assure delivery of legible copy. Folding of the master copies is not permitted. When specified, aperture cards may be used. Aperture cards shall be in a form from which prints can be made. In instances where more than one sheet is required to describe the packaging, an aperture card shall be prepared for each sheet. Reproduction of engineering drawings shall be accomplished using standard drawing sheet sizes A, B, C or D (MIL-STD-100). Sizes A, B or C are preferred. When reduced, the drawing size shall not impair the clarity of the drawing. The DoD contracting activity (packaging organization) shall retain the full size master

reproducible and return the approved reproduced copy to the contractor. In the event the contractor requires an approved reproducible master, he shall submit two masters instead of one.

E.6.2.2.1 Computerized format. SPIs and drawings submitted in computerized format shall be as specified by the acquiring activity.

E.6.2.3 Method of transmission. Unless otherwise specified, the method of transmission of data shall be routine mail.

APPENDIX E

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; 20-21 for Material Management Aggregation Code (MMAC), Service Management code or Special Material Identification Code (SMIC), as applicable). When NSN (Columns 7-19) is not available, completion of columns 56-79 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: (a) 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 (e.g., A9999=99,990 pounds). (b) 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 (e.g., 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.)	(c) 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 (e.g., 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 (e.g., 0024, 0001, etc.) 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 "ØØØ".

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

Column Number	Element of Data	Explanation or Instructions
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.
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; 20-21 for Material Management Aggregation Code (MMAC), Service Management Code or Special Material Identification Code (SMIC), as applicable.
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.

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

Column Number	Element of Data	Explanation or Instructions
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 protection limitations of Table C.II must be met.
41	Not used	
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.IX.
49	Minimal packing	If applicable, select code from Table J.IXa.
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:

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

Column Number	Element of Data	Explanation or Instructions
		(a) Show "A" in column 44 and the whole pounds in columns 45-48. The "A" will indicate that the numbers entered are to be multiplied by ten to determine the actual weight (e.g., A9999=99,990 pounds). (b) Show "B" in column 44 and the whole pounds in columns 45-48. The "B" will indicate that the numbers listed should be multiplied by one hundred to determine the actual weight (e.g., B9999=999,900 pounds). (c) Show "C" in column 44 and the whole pounds in columns 45-48. The "C" will indicate that the numbers listed should be multiplied by 1000 to determine the actual weight (e.g., C9999= 9,999,000 pounds).
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 (e.g., "0024", "0001", etc.).
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.

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

Column Number	Element of Data	Explanation or Instructions
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; 20-21 for Material Management Aggregation Code (MMAC), Service Management Code or Special Material Identification Code (SMIC), as applicable.
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-X-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 instruc-tions 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) (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.)

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; 20-21 for Material Management Aggregation Code (MMAC), Service Management Code or Special Material Identification Code (SMIC), as applicable.
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 D - DLA F - Air Force M - Marine Corps N - Navy
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 (e.g., April 15, 1997 would be "97105"). 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	

APPENDIX E

APPROVAL STAMP

PRESERVATION AND PACKING DATA

FORM APPROVED
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 5 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses.

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

ITEM IDENTIFICATION DATA (PART A)

	DOC CON	NATIONAL STOCK NUMBER FSC	NATIONAL STOCK NUMBER NIIN	NATIONAL STOCK NUMBER ADDL	ITEM WEIGHT POUNDS	ITEM WEIGHT 10Th	LENGTH INCHES	LENGTH 10Th	WIDTH INCHES	WIDTH 10Th	DEPTH INCHES	DEPTH 10Th	CAT-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 WSF	CODE P	QUP	ICQ	CAGE	DRAWING OR PART NUMBER	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

PRESERVATION-PACKING DATA (PART B)

	DOC CON	NATIONAL STOCK NUMBER FSC	NATIONAL STOCK NUMBER NIIN	NATIONAL STOCK NUMBER ADDL	PRES METH	C	PRES MTL	WRAP MTL	CUSH DUNN	C T	UNIT CONT
	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 (LBS.)	UNIT PACK WT 10Th	UNIT PACK SIZE (IN.) LENGTH	UNIT PACK SIZE (IN.) 10Th	UNIT PACK SIZE (IN.) WIDTH	UNIT PACK SIZE (IN.) 10Th	UNIT PACK SIZE (IN.) DEPTH	UNIT PACK SIZE (IN.) 10Th	UNIT PACK CUBE (CU. FT.) WHOLE CUBE	UNIT PACK CUBE (CU. FT.) 1000Th	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 FSC	NATIONAL STOCK NUMBER NIIN	NATIONAL STOCK NUMBER ADDL	SUPPLEMENTAL INSTRUCTIONS
	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 FSC	NATIONAL STOCK NUMBER NIIN	NATIONAL STOCK NUMBER ADDL	PKG DESIGN ACT CAGE	SPI NUMBER	REV
	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	CONTAINER NATIONAL STOCK NUMBER NIIN	CONTAINER NATIONAL STOCK NUMBER 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 96 DRAFT

FIGURE E.1. Preservation and packing data.

SPECIAL PACKAGING INSTRUCTION				Form Approved OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 30 days per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses.

1. PART OR DRAWING NO.			2. CAGE	3. SPI NO.
4. NATIONAL STOCK NO.			5. DATE	6. REVISION
7. QUP	8. ICQ	9. UNIT PACK WT.	10. UNIT PACK CU	11. UNIT PACK SIZE

	18. STEPS	19. REQD	20. DESCRIPTION
12. MILITARY PRESERVATION			
13. CLEANING			
14. DRYING			
15. PACKING			
a. LEVEL A			
b. LEVEL B			
16. MARKING			

17. NOTES/DRAWING

OD FORM 2169 SEP 96 DRAFT *Previous editions are obsolete.* Page of pages
165/094

FIGURE E.2. Special packaging instruction.

SPECIAL PACKAGING INSTRUCTION *(Continuation Sheet)*		*Form Approved* *OMB No. 0704-0188*
Public reporting burden for this collection of information is estimated to average 30 days per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses.		
1. PART OR DRAWING NO.	2. CAGE	3. SPI NO.
4. NATIONAL STOCK NO.	5. DATE	6. REVISION

DD FORM 2169C SEP 96 DRAFT *Previous editions are obsolete.* Page of pages

FIGURE E.2. Special packaging instruction - Continued.

APPENDIX F

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, as applicable.

F.2 APPLICABLE DOCUMENTS

F.2.1 General. The documents listed in this section are specified in sections F.3, F.4, and F.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 documents cited in sections F.3, F.4, and F.5 of this appendix whether or not they are listed.

F.2.2 Government documents.

F.2.2.1 Standards. The following standard forms a part of this document to the extent specified herein. Unless otherwise specified, the issue of this document is that listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

STANDARDS

MILITARY

MIL-STD-1660 - Design Criteria for Ammunition Unit Loads.

(Unless otherwise indicated, copies of these documents are available from the Defense Printing Service Detachment Office, Bldg 4D (NPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

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 are those cited in the solicitation.

CODE OF FEDERAL REGULATIONS

29 CFR - Labor

40 CFR - Protection of Environment

49 CFR - Transportation

APPENDIX F

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington, DC 20402.)

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 the documents which are DOD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

INTERNATIONAL DOCUMENTS

INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO)

Technical Instruction for the Safe Transport of Dangerous Goods by Air

INTERNATIONAL MARITIME ORGANIZATION (IMO)

International Maritime Dangerous Goods Code

(These publications are normally available from the organizations that prepare or distribute the documents. They may also be available in or through libraries or other informational services and from commercial booksellers.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM-D4169 - Performance Testing of Shipping Containers and Systems (DOD adopted).

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

F.3 GENERAL

F.3.1 Packaging design validation tests. Except for hazardous materials package testing, packaging design validation tests shall consist of the following tests and examinations in sequence:

a. The applicable performance tests of ASTM-D4169

b. The applicable preservation inspections of Appendix G

F.3.2 Hazardous material. Testing of hazardous material packages shall be in accordance with the applicable requirements for performance packaging contained in the International Civil Aviation Organization (ICAO)

Technical Instructions, or the International Maritime Dangerous Goods Code (IMDG), and with the Code of Federal Regulations (CFR) Title 29, Title 40, and Title 49. These test results shall be documented as specified on the Contract Data Requirements List (see 6.3).

F.3.3 Ammunition unit loads. Ammunition unit load test requirements are stated in MIL-STD-1660.

F.4 TEST METHODS

F.4.1 Container performance tests. The container shall be subjected to the tests specified for Distribution Cycle 18 of ASTM-D4169 and the following Assurance Levels:

a. For Level A packs - Assurance Level 1

b. For Level B packs - Assurance Level 2.

F.4.2 Preservation tests. Preservation tests shall be in accordance with G.4.

F.5 OTHER

F.5.1 Acceptance criteria and disposition of test samples. Procedures as specified in ASTM-D4169 for Government shipments shall apply.

APPENDIX G

QUALITY ASSURANCE 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, as applicable.

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 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 extend specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

L-P-378	-	Plastic Sheet and Strip, Polyolefin

MILITARY

MIL-B-121	-	Barrier Material, Greaseproofed, Waterproofed, Flexible.
MIL-B-131	-	Barrier Materials, Watervaporproof, Greaseproof, Flexible, Heat Sealable.
MIL-D-16791	-	Detergent, General Purpose (Liquid, Nonionic).
MIL-B-22020	-	Bags, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated.
MIL-B-22191	-	Barrier Material, Transparent, Flexible, Heat Sealable.

APPENDIX G

STANDARDS

FEDERAL

FED-STD-101	-	Test Procedures for Packaging Materials.

MILITARY

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

(Unless otherwise indicated, copies of these documents are available from the Defense Printing Service Detachment Office, Bldg 4D (NPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

G.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 the document which is DOD adopted is that listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR QUALITY CONTROL

ANSI/ASQC-Q9002	-	Quality Systems - Model for Quality Assurance and Production Installation and Servicing. (DOD adopted)

(Application for copies should be addressed to the American Society for Quality Control, 611 East Wisconsin Avenue, Milwaukee, WI 53202.)

G.3 GENERAL

G.3.1 Quality system. The contractor shall implement and maintain a quality system that satisfies program objectives and meets the requirements of ANSI/ASQC-Q9002 or an equivalent quality system model.

G.3.2 Military packaging examinations/inspections. Due to the unique environment that packages are exposed to in the military distribution system, it is suggested that the examinations/inspections of G.4 and G.5 be considered when developing the quality system in accordance with ANSI/ASQC-Q9002.

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 should be tested for leaks in accordance with one of the following techniques (tests) of Method 5009, FED-STD-101. Containers, wraps and cushioning used outside the waterproof or watervaporproof barrier 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 recommend by Method 5009, FED-STD-101, 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 must 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 by 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. Requirements for conducting the test are also based on the method of preservation utilized in the packaging process. Applicable methods of preservation are listed in Table G.II.

G.4.3.1 Selection of samples for heat-sealed seam tests. Sections of the heat seals shall be obtained from sealed unit packs. Only one heat seal specimen shall be obtained from one sealed unit pack.

G.4.3.1.1 Alternate sampling procedure for heat-sealed seam test. When heat seals are made with equipment designed to control the temperature, dwell time and pressure, test samples may be prepared from specimen heat seals in lieu of taking samples directly from heat sealed packs as specified in G.4.3.1. Specimen heat seals shall all be prepared daily prior to production from sample(s) of each material sealed on each sealing device. Machine settings used in production shall be identical with the settings used in fabrication of test specimens. In cases where any of the alternately prepared heat seal specimens fail the seam strength test, tests of heat seals from

actual unit packs shall be performed as necessary to assure that unit pack seals meet the requirements of G.4.3.2.

G.4.3.2 Performance of heat-sealed seam test. The heat-sealed seam test shall be performed in accordance with Method 2024 of FED-STD-101, at normal room (ambient) temperature using the static load weight as specified therein, except that when barrier materials conform to MIL-B-121, the static load weight shall be 36 ± 2 ounces. When barrier materials conform to L-P-378, MIL-B-131 or MIL-B-22191, the static load weight shall be 50 ounces ± 2 ounces. A five percent reduction in static load weight is permitted when the room temperature in the test area exceeds 90°F. Heat seals shall not separate during the final three minutes of the test. Partial separation in the area of partial fusion adjacent to the actual seal is acceptable within the first two minutes of the test.

G.5 PACKING INSPECTIONS

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

Container material(s) not as specified.
Container construction not as specified.
Container size not as specified.
Closure material(s) not as specified.
Closure locations not as specified.
Markings incomplete.
Markings illegible.
Markings incorrectly located.

TABLE G.I. Preservation inspection provisions.

Criteria	Method of 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 Method 4004 of Federal Test Method Standard 101	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	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 and/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 cube of unit pack exceeds maximum allowable	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 1/ 2/ 3/	Visual	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

NOTES:

1/ 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.
2/ 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.
3/ When the unit pack is also used as the shipping container, then the marking applicable for shipping shall be applied in accordance with MIL-STD-129 to the exterior container.

TABLE G.II. Leakage and/or 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-B-22020 shall be substituted in cases where a VCI treated cold-sealed bag is employed as the unit container.

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, as applicable.

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 (CDRS/MO). The CDRS/MO mailing address is ASC/VXYC, Eglin AFB, FL 32542-5000. DOD in-house container development activities shall submit the search request directly to CDRS/MO. 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/MO 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/MO 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/MO. 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/MO. 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 Office 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 insure adequate configuration management coordination and control in the future. This requirement extends to individual piece parts of the container which are being used as-is in the new design and a new drawing is not being made.

APPENDIX J

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 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, standards and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

A-A-160	-	Sack, Shipping, Paper (Cushioned).
A-A-203	-	Paper, Kraft, Untreated.
A-A-550	-	Bags, Paper (Grocery, Self Opening).
A-A-881	-	Bags, Shipping, Burlap.
A-A-1051	-	Paperboard, Wrapping and Cushioning.
A-A-1249	-	Paper, Wrapping, Tissue.
A-A-1507	-	Chipboard.
A-A-1588	-	Sack, Shipping, Paper (Cushioned with Closed Cell Plastic Film).
A-A-1898	-	Cushioning Material, Cellulosic, Packaging.
A-A-2714	-	Bag, Cloth, Mailing.
A-A-50177	-	Paper, Lens.
A-A-55057	-	Panels, Wood/Wood Based; Construction and Decorative.
L-P-378	-	Plastic Sheet and Strip, Polyolefin.
QQ-A-1876	-	Aluminum Foil.
VV-L-800	-	Lubricating Oil, General Purpose, Preservative (Water Displacing, Low Temperature).

SPECIFICATIONS (continued)

FEDERAL (continued)

MMM-A-260	-	Adhesive, Water-Resistant, (For Sealing Waterproofed Paper).
PPP-B-26	-	Bag, Plastic (General Purpose).
PPP-B-566	-	Boxes, Folding, Paperboard.
PPP-B-576	-	Boxes, Wood-Cleated, Panelboard.
PPP-B-585	-	Boxes, Wood, Wirebound.
PPP-B-601	-	Boxes, Wood, Cleated-Plywood.
PPP-B-621	-	Boxes, Wood, Nailed and Lock-Corner.
PPP-B-665	-	Boxes: Paperboard, Metal Edged and Components.
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 Shipping Cycle Applications).
PPP-C-850	-	Cushioning Material, Polystyrene Expanded, Resilient (for Packaging Uses).
PPP-C-1120	-	Cushioning Material, Uncompressed Bound Fiber for Packaging.
PPP-C-1752	-	Cushioning Material, Packaging, Polyethylene Foam.
PPP-C-1797	-	Cushioning Material, Resilient, Low Density, Unicellular, Polypropylene Foam.
PPP-C-1842	-	Cushioning Material, Flexible Open Cell Plastic Film (for Packaging Applications).
PPP-D-723	-	Drums, Fiber.
PPP-D-729	-	Drums, Shipping and Storage, Steel, 55 Gallon (208 Liters).
PPP-T-495	-	Tubes, Mailing and Filing.

MILITARY

MIL-C-104	-	Crates, Wood: Lumber and Plywood Sheathed, Nailed, and Bolted.
MIL-B-117	-	Bags, Sleeves and Tubing.
MIL-B-121	-	Barrier Material, Greaseproofed, Waterproofed, Flexible.
MIL-P-130	-	Paper, Wrapping, Laminated and Creped.
MIL-B-131	-	Barrier Materials, Watervaporproof, Greaseproof, Flexible, Heat-Sealable.
MIL-P-149	-	Plastic Coating Compound, Strippable (Hot Dipping).

SPECIFICATIONS (continued)

MILITARY (continued)

MIL-B-2427	-	Box, Ammunition Packing, Wood, Nailed.
MIL-L-3150	-	Lubricating Oil, Preservative, Medium.
MIL-P-3420	-	Packaging Materials, Volatile Corrosion Inhibitor Treated, Opaque.
MIL-C-3774	-	Crates, Wood; Open 12,000- and 16,000-Pound Capacity.
MIL-C-3955	-	Cans, Composite, Spirally Wound.
MIL-C-4150	-	Cases, Transit and Storage, Waterproof and Watervaporproof.
MIL-C-5501	-	Caps and Plugs, Protective, Dust and Moisture Seal.
MIL-D-6054	-	Drum, Metal - Shipping and Storage.
MIL-D-6055	-	Drum, Metal Reusable, Shipping and Storage (Cap. 88 to 510 cubic inches).
MIL-L-6081	-	Lubricating Oil, Jet Engine.
MIL-L-6085	-	Lubricating Oil: Instrument, Aircraft, Low Volatility.
MIL-C-6529	-	Corrosion Preventive, Aircraft Engine.
MIL-L-7808	-	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base, NATO Code Number 0-148.
MIL-L-7870	-	Lubricating Oil: General Purpose, Low Temperature.
MIL-C-8188	-	Corrosion-Preventive Oil, Gas Turbine Engine, Aircraft Synthetic Base.
MIL-C-9897	-	Crate, Slotted Angle, Steel or Aluminum, for Lightweight Airframe Components and Bulky Items (for Maximum Loads of 1363 Kgs (3000 Pounds)).
MIL-G-10924	-	Grease, Automotive and Artillery.
MIL-PRF-11264	-	Container: Shipping, Reusable, for Tank Automotive Engines, Transmissions, Differentials, Transfers, Final Devices, Driving 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-P-17667	-	Paper, Wrapping, Chemically Neutral (Non-Corrosive).
MIL-P-19644	-	Plastic Molding Material (Polystyrene Foam, Expanded Bead).

SPECIFICATIONS (continued)

MILITARY (continued)

MIL-R-20092	-	Rubber or Plastic Sheets and Assembled and Molded Shapes, Synthetic, Foam or Sponge, Open Cell.
MIL-L-21260	-	Lubricating Oil, Internal Combustion Engine, Preservative and Break-In.
MIL-B-22019	-	Barrier Materials, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated.
MIL-B-22020	-	Bags, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated.
MIL-B-22191	-	Barrier Materials, Transparent, Flexible, Heat Sealable.
MIL-L-23699	-	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base, NATO Code Number 0-156.
MIL-G-23827	-	Grease, Aircraft and Instrument, Gear and Actuator Screw, NATO Code Number G-354, Metric.
MIL-G-25537	-	Grease, Aircraft, Helicopter Oscillating Bearing.
MIL-B-26195	-	Boxes, Wood-Cleated, Skidded, Load-Bearing Base.
MIL-PRF-26514	-	Polyurethane Foam, Rigid or Flexible; for Packaging.
MIL-B-43666	-	Boxes, Shipping, Consolidation.
MIL-P-46002	-	Preservative Oil, Contact and Volatile Corrosion-Inhibited.
MIL-L-46010	-	Lubricant, Solid Film, Heat Cured, Corrosion Inhibiting.
MIL-P-46161	-	Plastic Molding Material, Polyterephthalate Thermoplastic, Glass Fiber Reinforced.
MIL-H-46170	-	Hydraulic Fluid, Rust Inhibited, Fire Resistant, Synthetic Hydrocarbon Base.
MIL-B-46176	-	Brake Fluid, Silicone, Automotive, All Weather, Operational and Preservative, Metric.
MIL-B-46506	-	Boxes, Ammunition Packing, Wood, Wirebound.
MIL-C-52950	-	Crates, Wood, Open and Covered.
MIL-P-53030	-	Primer Coating, Epoxy, Water Reducible, Lead and Chromate Free.
MIL-G-81322	-	Grease, Aircraft, General Purpose, Wide Temperature Range.
MIL-B-81705	-	Barrier Materials, Flexible, Electrostatic Protective, Heat Sealable.
MIL-P-81997	-	Pouches, Cushioned, Flexible, Electrostatic Free, Reclosable, Transparent.

SPECIFICATIONS (continued)

MILITARY (continued)

MIL-H-83282	-	Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Aircraft, Metric, NATO Code No. H-537.
MIL-F-83671	-	Foam-in-Place Packaging Materials, General Specification for.
MIL-C-83933	-	Corrosion Preventive Compound, Cold Application for Motor Vehicles.

STANDARDS

MILITARY

MIL-STD-129	-	Marking for Shipment and Storage.
MIL-STD-1186	-	Cushioning, Anchoring, Bracing, Blocking and Waterproofing, with Appropriate Test Methods.

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Defense Printing Service Detachment Office, Bldg 4D (NPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

DRAWINGS

WARNER ROBBINS 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 NAVICP (Attn: 0712), 700 Robbins Avenue, Philadelphia, PA 19111-5098.)

J.2.2.2 Other Government documents, drawings and publications. The following other Government documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

CODES OF FEDERAL REGULATIONS

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

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington, DC 20402.)

J.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 the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM-D4169	-	Performance Testing of Shipping Containers and Systems (DOD adopted).
ASTM-D4727	-	Specification for Corrugated and Solid Fiberboard Sheet Stock (Container Grade) and Cut Shapes (DOD adopted).
ASTM-D5118	-	Fabrication of Fiberboard Shipping Boxes (DOD adopted).
ASTM-D5168	-	Fabrication and Closure of Triple Wall Corrugated Fiberboard Containers (DOD adopted).
ASTM-D5486	-	Pressure Sensitive Tape for Packaging, Box Closure and Sealing (DOD adopted).

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

INTERNATIONAL DOCUMENTS

INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO)

Technical Instruction for the Safe Transport of Dangerous Goods by Air.

APPENDIX J

INTERNATIONAL MARITIME ORGANIZATION (IMO)

International Maritime Dangerous Goods Code.

(These publications are normally available from the organizations that prepare or distribute the documents. They may also be available in or through libraries or other informational services and from commercial booksellers.)

SOCIETY OF AUTOMOTIVE ENGINEERS

SAE-J1966 - Lubricating Oil, Aircraft Piston Engine (Non-Dispersant Mineral Oil)

(Application for copies should be addressed to the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096.)

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 desiring to have a requirement added 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 physical limitations of the code system, new codes will not be established unless a substantial need is indicated. Copies of all correspondence relative to the 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 will be defined by use of the codes associated therewith. When using these codes, a symbol must be used in each digit position in every

field of the total code. To distinguish between alphabetical and numerical "0" and "00", 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 of code "X" or "XX" (depending on the number of digit spaces in the code field) indicates that the requirement is contained within the method of preservation.

c. Use the code "Y" or "YY" (depending on the number of digit spaces in the code field) to indicate that the packager (contractor) is responsible for selecting the appropriate requirement. When this code is used, the packager is required to limit his selection to requirements included in the tables of this standard unless prior written permission to use unlisted materials has been obtained from contracting officer.

d. 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 are 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 that indicate packaging procedures which are regularly used but which cannot be conveniently or adequately described without amplification of the basic method and material symbols.

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

Code	Quantity
In clear	ØØ1 through 999
BLK	Bulk
YYY	Packager’s option as long as all other requirements are met.
ZZZ	Special requirements - refer to supplemental data, special instructions or drawings provided.

J.4.4 Cleaning. Table J.II lists cleaning requirement codes in alpha-numerical 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 alphabetical 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 alpha-numerical 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 thickness of cushioning material.

J.4.9 Unit and intermediate container. Table J.VII lists the unit and intermediate container codes in alpha-numerical 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 will 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	ØØØ through 1ØØ
AAA	See B.5
XXX	See Method of Preservation
YYY	Packer’s option as long as all other contractual requirements are met.
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. Codes for non-military packing (minimal) are listed in Table J.IXa.

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 must 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	Superseded codes from:	
		MIL-P-116J	MIL-STD-2073-2C
1Ø	Physical protection	III	1Ø
2Ø	Preservative coating only (with greaseproof wrap, as required)	I	11
	30 Waterproof protection	IC	2Y
31	Waterproof bag, sealed	IC-3	2D
32	Container, waterproof bag, sealed	IC-2	2M
33	Greaseproof-waterproof bag, sealed	IC-1	2E
	40 Watervaporproof protection	IA	3Y
41	Watervaporproof bag, sealed	IA-8	3G
42	Container, watervaporproof bag, sealed, container	IA-14	3Q
43	Floating watervaporproof bag, sealed	IA-16	3H
44	Rigid container (other than metal), sealed	IA-13	3T
45	Rigid metal container, sealed	IA-5	3V
	50 Watervaporproof protection with desiccant	II	4Y
51	Watervaporproof bag, sealed	IIc	4G
52	Container, watervaporproof bag, sealed, container	IIb	4Q
53	Floating watervaporproof bag, sealed	IIa	4H
54	Rigid container (other than metal), sealed	IIf	4T
55	Rigid metal container, sealed	IId	4V
ZZ	See J.4.1.d		

Table J.Ia. Specialized preservation codes (see J.4.2.1).

Code	Packaging procedure
AA	Preservation and unit packing identical to commercial package used by supplier for prevention of deterioration and mechanical damage.
AE	Seal or plug all openings with approved noncorrosive materials to prevent entrance of moisture, dirt and foreign matter. Package to meet requirements of 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-B-121, Grade A material, secured in place with ASTM-D5486 tape. Commutators shall be wrapped with MIL-B-121, Grade A 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-B-121, Grade A 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-B-121, Grade A 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-B-117, using stiffening material internally if needed to maintain rigidity. b. Preservation method 42 or 44.

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

Code	Packaging procedure
	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.
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-B-121, Grade A 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, and/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 Method 20.

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

Code	Packaging procedure
DB	Preserve by Method 10 modified as follows: Preserve in transparent barrier bag made of L-P-378 or type III MIL-B-22191 material. L-P-378 or MIL-B-22191, type III material, PPP-C-1842 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-B-22191 or L-P-378 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.
DC	Preserve by Method 20 modified as follows: Preserve in a transparent barrier wrap made of Type II, MIL-B-22191 barrier material, or bag conforming to Type I, Class C, Style 2 of MIL-B-117. MIL-B-22191, Type II barrier material shall be used to cushion sharp edges and protrusions of item to prevent bag puncture. PPP-C-1842 or PPP-C-795 may also be used to cushion sharp edges and protrusions if item is first wrapped in MIL-B-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-B-22191 or L-P-378 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 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 MIL-C-5501 or equivalent. All

Table J.Ia. Specialized Preservation codes (see J.4.2.1) - Continued.

Code	Packaging procedure
	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-B-121, Grade A 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 (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.
DW	Preserve Method 52 as follows: Item shall be cleaned, wrapped, blocked and braced in an interior carton fabricated in accordance with ASTM-D5118, Class domestic. MIL-B-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 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-B-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-B-22020. The interleaf furnished inside each Class 2L, cold sealable bag shall be withdrawn after inserting item and prior to final sealing in accordance with MIL-B-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-B-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-B-22019, Type II as indicated above and

Table J.Ia. Specialized Preservation codes (see J.4.2.1) - Continued.

Code	Packaging procedure
	further preserved in a transparent barrier bag conforming to Type I, Class C, Style 2 of MIL-B-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.
GX	Preserve by Method 41 as follows: Items subject to damage by electromagnetic and electrostatic field forces shall be initially wrapped in material conforming to MIL-B-81705, Type II or Type III, or cushioned in material conforming to PPP-C-1842, Type III, Style A or B, or PPP-C-795, Class 2, or PPP-C-1752, Type VII, Class 1, Grade B, or PPP-C-1797, Type II, to prevent bag puncture, and unit packed in a heat-sealed bag conforming to MIL-B-117, Type I, Class F, Style 1. Reclosable cushioned pouches conforming to MIL-P-81997, Type I or II, may be used in lieu of initial wrap or 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 Civil Aviation Organization (ICAO) Technical Instructions 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 ICAO or IMDG requirements shall be incorporated on the DD Form 250, Material 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.

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

Code	Packaging procedure
JF	Preserve 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 roils thickness after draw. Class domestic fiberboard meeting the requirements of ASTM-D4727 shall be used as a stiffener.
JM	Preserve Method 10 as follows: Unit container shall consist of one piece of 3/8-inch plywood and one piece of double wall fiberboard meeting the requirements of ASTM-D4727, each 4 inches longer and wider than the item dimensions. Place item on plywood, cover with fiberboard and staple fiberboard to plywood on sides and end. For items longer than 96 inches, frame panel in accordance with PPP-B-601 (used for backing boards and similar flat items.)
KD	Preserve Method 31. Apply VV-L-800 preservative. Place item in a bag conforming to MIL-B-22020 and place bagged item into a weather resistant fiberboard box fabricated in accordance with ASTM-D5118. Fill voids with fiberboard meeting the requirements of ASTM-D4727 or A-A-1898, Grade II material as required.
KF	Clean each item in accordance with any applicable process. Use non-corrosive material to plug any crevices, holes or cavities. Preserve by directly applyig to the clean dry metal surface of the item, strippable, plastic coating compound (hot dipping) conforming to MIL-P-149 or equivalent. Apply the compound in such a way that upon removal, no compound will be retained in the voids. The compound shall be a Type II, transparent, cellulose acetate butyrate variety. Apply as many layers of the plastic coating compound as necessary to protect the item from contact damage and to seal it from moisture. Wrap the individually coated items in MIL-B-121 greaseproof, waterproof, barrier material. (Use on labyrinth rings and similar items in sets.)
KG	Each fully buttoned shirt shall be neatly folded, secured with stainless steel (AISI Type 304 or 316) pins, aluminum clips or plastic fasteners, and inserted into a snug-fitting, clear plastic bag. The bag shall be closed by heat sealing, taping (provided the back panel overlaps the front panel), or by a bag designed to effect a reverse tuck closure.

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

Code	Packaging procedure
KH	Each pair of shoes or boots shall be individually wrapped prior to being placed in a shoe box. Each pair of individually wrapped shoes or boots shall be packaged in a set-up style shoe box or a mailer type box.

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

Code	Procedure
1	Any suitable process that is not injurious to the item.
x	See Method of Preservation code for this requirement.
Y	Packager's option as long as all other contractual requirements are met.
z	Special requirements - See specific instructions or drawings provided.
0	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-L-3150, medium preservative oil, cold application
09	VV-L-800, very light preservative oil, water displacing, cold application
10	MIL-L-21260, preservative and break-in lubricating oil, internal combustion engine, Grade 10, 30 or 50
11	MIL-G-23827, grease, aircraft and instrument, gear and actuator screw
12	MIL-G-81322, grease, aircraft, general purpose
13	MIL-G-10924, grease, automotive and artillery
15	MIL-H-46170, hydraulic fluid, synthetic, rust inhibited, fire resistant
17	MIL-L-6085, lubricating oil, instrument, aircraft, low volatility
19	MIL-PRF-16173, Grade 4, corrosion preventive, solvent cutback, cold application, transparent, non-tacky
20	MIL-P-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
26	MIL-C-83933, corrosion preventive, cold application, for motor vehicles
27	MIL-C-16555, Type I, sprayable strippable coating, aluminum and aluminum gray
28	MIL-C-16555, Type II, Class 1, sprayable strippable coating, olive drab
29	MIL-C-16555, Type II, Class 2, sprayable strippable coating, Marine Corps green
30	MIL-L-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-L-7808, lubricating oil, synthetic base, for aircraft turbine engines

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

Code I	Material
38	MIL-P-149, strippable plastic coating (hot dipping)
43	MIL-G-25537, grease, helicopter oscillating bearing
49	Vendor's protective grease or oil coating
50	MIL-L-7870, lubricating oil, low temperature
51	MIL-L-6081, lubricating oil, jet engine, Grade 1010
52	MIL-C-8188, corrosion preventive oil, synthetic base, for aircraft gas turbine engines
53	SAE-J1966, lubricating oil, aircraft piston engine
56	MIL-L-23699, lubricating oil, synthetic base, for aircraft turbine engines
57	MIL-L-21260, Grade 10, light viscosity preservative and break-in lubricating oil, internal combustion engine
58	MIL-L-21260, Grade 2, medium viscosity preservative and break-in lubricating oil, internal combustion engine
59	MIL-L-21260, Grade 3, heavy viscosity preservative and break-in lubricating oil, internal combustion engine
65	MIL-H-83282, hydraulic fluid, synthetic, fire retardant
79	MIL-B-46176, brake fluid, silicone, automotive, operational and preservative
80	MIL-P-53030, primer coating, epoxy, water reducible
89	Preserve with normal operating lubricant
xx	See Method of Preservation code for this requirement
YY	Packager's option as long as all other contractual requirements are met
ZZ	Special requirement - See specific instructions or drawings provided
00	No requirement

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

Specification	Code
VV-L-800, very light preservative oil, water displacing (cold application).	09
MIL-P-149, strippable plastic coating (hot dipping).	38
MIL-L-3150, medium preservative oil, cold application.	07
MIL-L-6081, lubricating oil, jet engine, Grade 1010.	51
MIL-L-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-L-7808, lubricating oil, synthetic base, for aircraft turbine engines.	33
MIL-L-7870, lubricating oil, low temperature.	50
MIL-L-8188, corrosion preventive oil, synthetic base, for aircraft gas turbine engines.	52
MIL-G-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-C-16555, Type I, sprayable, strippable coating, aluminum and aluminum gray.	27
MIL-C-16555, Type II, Class 1, sprayable, strippable coating, olive drab.	28
MIL-C-16555, Type II, Class 2, sprayable, strippable coating, Marine Corps green.	29
MIL-L-21260, preservative and break-in lubricating oil, internal combustion engine, Grade 10, 30 or 50.	10

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

Specification	Code
MIL-L-21260, Grade 2, medium viscosity preservative and break-in lubricating oil, internal combustion engine.	58
MIL-L-21260, Grade 3, heavy viscosity preservative and break-in lubricating oil, internal combustion engine.	59
MIL-L-21260, Grade 10, light viscosity preservative and break-in lubricating oil, internal combustion engine.	57
MIL-L-23699, lubricating oil, synthetic base, for aircraft turbine engines.	56
MIL-G-23827, grease, aircraft and instrument.	11
MIL-G-25537, grease, helicopter oscillating bearing.	43
MIL-P-46002, preservative, volatile corrosion inhibited.	20
MIL-L-46010, corrosion inhibiting lubricant, solid film, heat cured.	30
MIL-H-46170, hydraulic fluid, synthetic, rust inhibited, fire resistant.	15
MIL-B-46176, brake fluid, silicone, automotive, operational and preservative.	79
MIL-P-53030, primer coating, epoxy, water reducible.	80
MIL-G-81322, grease, general purpose, aircraft.	12
MIL-H-83282, hydraulic fluid, synthetic, fire retardant.	65
MIL-C-83933, corrosion preventive, cold application, for motor vehicles.	26
SAE-J1966, lubricating oil, aircraft piston engine	53

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

Code	Material
BA	QQ-A-1876, aluminum foil
CA	UU-P-268, kraft wrapping paper
DA	A-A-1249, paper, tissue
EA	MIL-P-17667, neutral wrapping paper
EB	MIL-P-17667, Type I, neutral wrapping paper, flat
EC	MIL-P-17667, Type II, neutral wrapping paper, creped
FA	MIL-P-130, laminated and creped wrapping paper
GB	MIL-B-121, Grade A, greaseproof, waterproof barrier
GC	MIL-B-121, Grade A, Type I, heavy duty, greaseproof, waterproof barrier
GH	MIL-B-121, Grade A, Type II, medium duty, greaseproof, waterproof barrier
JA	L-P-378, plastic sheet and strip, polyolefin, 2 mil
JL	MIL-B-22019, transparent volatile corrosion inhibitor treated barrier material
JV	MIL-B-22191, Type III, transparent waterproof barrier material
K3	MIL-B-81705, Type II, transparent electrostatic protective barrier material
LA	A-A-50177, lens paper
MB	MIL-P-3420, volatile corrosion inhibitor treated material
N9	MIL-B-81705, Type III, transparent, electrostatic protective, static shielding barrier material
xx	See Method of Preservation code for this requirement
YY	Packager's option as long as all other contractual requirements are met
ZZ	Special requirements - see specific instructions or drawings provided
00	No requirement

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

Specification	Code
A-A-1249, tissue paper.	DA
A-A-50177, lens paper.	IA
L-P-378, plastic sheet and strip, polyolefin.	JA
QQ-A-1876, aluminum foil.	BA
UU-P-268, kraft wrapping paper	CA
MIL-B-121, Grade A, greaseproof, waterproof barrier.	GB
MIL-B-121, Grade A, Type I, heavy duty, greaseproof, waterproof barrier.	GC
MIL-B-121, Grade A, Type II, medium duty, greaseproof, waterproof barrier.	GH
MIL-P-130, creped paper.	FA
MIL-P-3420, volatile corrosion inhibitor treated material.	MB
MIL-P-17667, neutral wrapping paper.	EA
MIL-P-17667, Type I, flat neutral wrapping paper.	EB
MIL-P-17667, Type II, creped neutral wrapping paper.	EC
MIL-B-22019, transparent VCI-treated barrier material.	JL
MIL-B-22191, Type III, transparent waterproof barrier material.	JV
MIL-B-81705, Type II, transparent electrostatic protective barrier.	K3
MIL-B-81705, Type III, class 1, transparent, electrostatic Protective. static shielding barrier material	N9

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

Code	Material
AD	Cushion, anchor, block or brace in accordance with MIL-STD-1186
BG	A-A-1898, Grade II, water resistant cellulosic cushioning
BN	PPP-C-850, polystyrene cushioning
DA	A-A-1051, paperboard cushioning
DH	MIL-R-20092, latex foam rubber
FA	PPP-C-1120, Class A, water resistant bound fiber
FE	PPP-C-1120, Class A, Type II, medium soft density, water resistant bound fiber
FH	PPP-C-1120, Class A, Type III, medium firm density, water resistant bound fiber
FL	PPP-C-1120, Class A, Type IV, firm density, water resistant bound fiber
GA	PPP-C-1752, polyethylene foam cushioning
GC	MIL-P-19644, expanded polystyrene foam
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
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	Domestic fiberboard meeting the requirements of ASTM-D4727 used as a stiffener on one side of item
JB	Domestic fiberboard meeting the requirements of ASTM-D4727 used as a stiffener on both sides of item
JC	Domestic fiberboard meeting the requirements of ASTM-D4727 used as pads, cells, die cuts or sleeves
LC	PPP-C-795, Class 1, cellular plastic film cushioning
LE	MIL-PRF-26514, Type 1, Class 2, flexible polyurethane foam used as corner pads
LF	MIL-C-3955, spirally wound composite can (material used as tubing without metal ends)

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

Code	Material
LK	Wood blocking and bracing, fasteners, and/or steel strapping, for tie-down purposes. Rubber tired 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
LP	A-A-55057, plywood, padded as required
LT	PPP-C-795, Class 2, antistatic cellular plastic film cushioning
MA	MIL-F-83671, Class 2, flexible foam-in-place polyurethane
MB	MIL-F-83671, Class 1, rigid foam-in-place polyurethane
NA	PPP-C-795, cellular plastic film cushioning; or PPP-C-1842, open cell plastic cushioning; or PPP-C-1797, polypropylene foam cushioning; or PPP-C-1752, polyethylene foam cushioning
NB	PPP-C-1842, Type III, Style A or B, anti-static open cell plastic cushioning; or PPP-C-1797, Type II, polypropylene foam cushioning. Other electrostatic free cushioning is acceptable provided it meets the static decay rate test requirement of PPP-C-1842
NG	PPP-C-1842, open cell plastic cushioning
NS	Weather resistant fiberboard meeting the requirements of ASTM-D4727 used as pads, cells, die cuts or sleeves; or plastic molding material conforming to MIL-P-19644; or polyurethane foam conforming to MIL-PRF-26514
P4	MIL-P-81997, cushioned pouch, electrostatic protective, transparent
xx	See Method of Preservation code for this requirement
YY	Packager’s option as long as all other contractual requirements are met
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-55057, plywood, padded as required	LP
PPP-C-795, Class 1, cellular plastic film cushioning	LC
PPP-C-795, Class 2, anti-static cellular plastic film cushioning	LT
PPP-C-850, polystyrene cushioning	BN
PPP-C-1120, Class A, water resistant bound fiber	FA
PPP-C-1120, Class A, Type II, medium soft density, water resistant bound fiber	FE
PPP-C-1120, Class A, Type III, medium firm density, water resistant bound fiber	FH
PPP-C-1120, Class A, Type IV, firm density, water resistant bound fiber	FL
PPP-C-1752, polyethylene foam cushioning	GA
PPP-C-1797, polypropylene foam cushioning	GT
PPP-C-1842, open cell plastic cushioning	NG
MIL-C-3955, spirally wound composite can	LF
MIL-P-19644, expanded polystyrene foam	GC
MIL-R-20092, latex foam rubber	DH
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
MIL-PRF-26514, Type I, Class 2, Grade C, flexible polyurethane foam, heavy load range	GH
MIL-PRF-26514, Type I, Class 2, flexible polyurethane foam used as corner pads	LE
MIL-P-81997, cushioned pouch, electrostatic protective, transparent	P4
MIL-F-83671, Class 1, rigid foam-in-place polyurethane	MB
MIL-F-83671, Class 2, flexible foam-in-place polyurethane	MA
ASTM-D4727, domestic fiberboard as a stiffener on one side of item	JA
ASTM-D4727, domestic fiberboard as a stiffener on both sides of item	JB
ASTM-D4727, domestic fiberboard used as pads, cells, die cuts or sleeves	JC

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

Code	Minimum Thickness	Code	Minimum Thickness
0	Not applicable	R	4 inches thick
A	1/4 inch thick	s	4-1/4 inches thick
B	1/2 inch thick	T	4-1/2 inches thick
c	3/4 inch thick	u	4-3/4 inches thick
D	1 inch thick	v	5 inches thick
E	1-1/4 inches thick	w	5-1/4 inches thick
F	1-1/2 inches thick	x	As required to protect the item or elements of the package
G	1-3/4 inches thick		
H	2 inches thick		
J	2-1/4 inches thick	Y	Packager's option as long as all other contractual requirements are met
K	2-1/2 inches thick		
L	2-3/4 inches thick		
M	3 inches thick	z	Special requirements - See specific instructions or drawings provided
N	3-1/4 inches thick		
P	3-1/2 inches thick		
Q	3-3/4 inches thick		

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)
Al	Bags made of material conforming to MIL-P-130, MIL-P-17667, MIL-B-121 Grade A, or any material authorized by MIL-B-117. Closure maybe by staples, tape, adhesive or heat seal.
A2	Any bag or sack used by the vendor
AA	A-A-2714, mailing bags, cloth
AC	A-A-160 or A-A-1588, sacks, shipping, paper (cushioned)
AH	A-A-881, bags, textile, shipping
AN	A-A-550, bags, paper, grocers
B1	MIL-B-117, Type I, Class B, Style 3, heavy duty, waterproof, one side opaque and other side transparent bag
B2	MIL-B-117, Type I, Class C, Style 3, heavy duty, waterproof, greaseproof, one side opaque and other side transparent bag
B3	MIL-B-117, Type I, Class E, Style 3, heavy duty, watervaporproof, greaseproof, one side opaque and other side transparent bag
B4	MIL-B-117, Type II, Class E, Style 3, medium duty, watervaporproof, greaseproof, one side opaque and other side transparent bag
B8	MIL-B-117, Type I, Class A, Style 2, heavy duty, waterproof, electrostatic protective, transparent bag
B9	MIL-B-117, Type I, Class F, Style 1, heavy duty, watervaporproof, electrostatic protective; opaque bag
BD	MIL-B-117, bag
BE	MIL-B-117, Type I, Class C, Style 1, heavy duty, waterproof, greaseproof, opaque bag
BL	MIL-B-117, Type I, Class B, Style 2, heavy duty, waterproof, transparent bag
BS	MIL-B-117, Type I, Class E, Style 1, heavy duty, watervaporproof, greaseproof, opaque bag
BT	MIL-B-22020, bag, transparent, heat sealable, VCI treated
BV	MIL-B-117, Type II, Class C, Style 1, medium duty, waterproof, greaseproof, opaque bag
BW	MIL-B-117, Type II, Class E, Style 1, medium duty, watervaporproof, greaseproof, opaque bag
CG	PPP-D-723, Type I, domestic type fiber drum
CH	PPP-D-723, Type II, normal overseas type fiber drum
D1	PPP-B-566 or PPP-B-676, folding or setup box
D2	PPP-B-566, PPP-B-665, or PPP-B-676, folding, metal-edged or setup box
D3	PPP-B-566, PPP-B-665, PPP-B-676, or ASTM-D5118, folding, metal edged, setup or fiberboard box
D4	Vendor’s setup or folding box

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

Code	Container
DA	PPP-B-566, folding paperboard box
DB	MIL-B-43666, Type III, box, consolidation
DE	PPP-B-676, setup box
DJ	PPP-B-665, metal-edged paperboard box
DO	Any suitable fiber box included in this table may be used (see 5.9.1)
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, fiberboard box
E6	Vendor's fiberboard box
E7	ASTM-D5118, Type CF, Class domestic, single wall, corrugated fiberboard box
E8	ASTM-D5118, Type CF, Class domestic, double wall, corrugated fiberboard box
E9	ASTM-D5118, Class weather resistant fiberboard box; or PPP-B-566, water resistant folding box; or PPP-B-676, water resistant setup box
EC	ASTM-D5118, Type CF, Class domestic, corrugated fiberboard box
ED	ASTM-D5118, Type CF, Class weather resistant, corrugated fiberboard box
EE	ASTM-D5118, Type CF, Class weather resistant, single wall, corrugated fiberboard box
EN	ASTM-D5118, Type SF, Class domestic, solid fiberboard box
EP	ASTM-D5118, Type SF, Class weather resistant, solid fiberboard box
EZ	PPP-B-601, cleated plywood box, domestic or overseas, remountable, assembled with fasteners other than nails and screws. Inspection door for reading humidity indicator provided for Method 50 packages. Top, one side and one end will be marked "REUSABLE CONTAINER AND CUSHIONING - USE FOR RETURN OF NRFI ASSEMBLY" in black letters a minimum2" high.
F2	PPP-B-601, overseas cleated plywood box or PPP-B-621, Class 2, overseas nailed wood box
F3	PPP-B-601, domestic cleated plywood box or PPP-B-621, Class 1, domestic nailed wood box
F5	Vendor's wood box
F6	PPP-B-601, Style I or J, cleated plywood box, surface treated in accordance with the requirements of the specification

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

Code	Container
F7	PPP-B-601 or PPP-B-621, overseas or domestic type, 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 MIL-C-104). 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 3.3.5, 3.3.5.2, 3.3.5.2.1 and 3.3.5.2.2, and Table VII of PPP-B-621 except exterior battens or cleats shall not be used on the top. Nailing pattern and size of nails used in fastening the top and bottom to the sides and ends shall conform to Table XII of PPP-B-621 for the Style 4 box.
FA	PPP-B-621, nailed wood box
FB	PPP-B-621, Class 1, domestic nailed wood box
FC	PPP-B-621, Class 2, overseas nailed wood box
FD	PPP-B-601, cleated plywood box
FF	PPP-B-601, overseas type, cleated plywood box
FG	PPP-B-601, domestic type, cleated plywood box
FJ	PPP-B-601, cleated plywood box, domestic or overseas, remountable, assembled with fasteners other than nails or screws
FK	PPP-B-576, wood-cleated panelboard box
FL	PPP-B-576, Class 1, domestic, wood-cleated panelboard box
FM	PPP-B-576, Class 2, weather resistant, wood-cleated panelboard box
FO	Any suitable wood box included in this table may be used (see 5.9.1).
FU	MIL-B-26195, wood-cleated skidded box, load bearing base
FV	MIL-B-26195, Type I, domestic, wood-cleated skidded box
Fw	MIL-B-26195, Type II, overseas, wood-cleated skidded box

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

Code	Container
GB	MIL-B-26195, 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 in MIL-C-104). 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.
GC	MIL-P-46161, plastic molding material, thermoplastic, glass fiber reinforced
HA	PPP-C-96, metal can
JC	MIL-C-3955, spirally wound composite can
K1	MIL-D-60540 or MIL-D-6055, metal reusable drum, or MIL-C-4150, carrying case, depending upon size or capacity limits of container
KA	MIL-C-4150, carrying case, cushioned within a Class domestic fiberboard box fabricated in accordance with ASTM-D5118
KE	MIL-D-6054, reusable metal drum
KF	MIL-D-6055, reusable metal drum (capacity from 88 to 510 cu. in.)
Ml	MIL-C-9897, slotted angle crate, steel or aluminum
MA	MIL-C-104, wood crate, lumber or plywood sheathed, nailed or bolted
MB	MIL-C-104, Type I, Class 1, nailed wood crate, lumber sheathed
MC	MIL-C-104, Type II, Class 1, bolted wood crate, lumber sheathed
MF	MIL-C-104, Type I, Class 2, nailed wood crate, plywood sheathed
MG	MIL-C-104, Type II, Class 2, bolted wood crate, plywood sheathed
MH	MIL-C-104, 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.
MJ	MIL-C-3774, open wood crate
MO	Any suitable wood crate included in this table may be used (see 5.9.1).
MV	MIL-C-52950, open or covered wood crate
MX	MIL-C-52950, Style B, open or covered wood crate, light duty
MY	NAVICP Drawing No. 15024, for shipping and storage of gyroscopic instruments

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

Code	Container
NO	ASTM-D5118, 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
NY	NAVICP Drawing No. P069, molded reusable container for circuit cards and modules
NZ	NAVICP Drawing No. 13414, modular reusable container for packaging major repairable
PK	PPP-B-601, overseas type, cleated plywood box: PPP-B-621, Class 2, overseas type nailed wood box; or ASTM-D5168, Class 2, weather resistant triple wall fiberboard box. Provide with nominal 2" by 4" skids. See box specifications for weight limitations. The packaged item shall be centered and cushioned on all surfaces between the unit package and shipping container with cushioning conforming to PPP-C-1120, Type III or IV, Class C; PPP-C-1752; PPP-C-850, Type I; MIL-PRF-265140 or MIL-R-20092, Tye II, Class 4 as required. Cloase, seal and reinforce fiberboard boxes in accordance with the appendix to the box specification. Steel banding is not permitted for fiberboard boxes. Wood and plywood boxes shall have top panels secured with wood screws and boxes banded. The top, one side and one end of the shipping container shall be marked “REUSABLE CONTAINER AND CUSHIONING - USE FOR RETURN OF NRFI ASSEMBLY” in black letters, minimum 2“ high. In addition, mark box “TO OPEN - USE SCREWDRIVER” in black letters, minimum 1" high. Letter sizes may be appropriately reduced in proportion to size of container.
RC	NAVICP Drawing No. 15450, modular reusable container for packaging depot level repairable
RD	PPP-B-585, Class 2, wirebound wood box
RE	PPP-B-585, Class 3, wirebound wood box
RF	PPP-B-26, bag, plastic
RG	PPP-D-729, drum, steel, 55 gal

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

Code	Container
RH	MIL-B-2427, ammunition box, nailed wood
RJ	MIL-B-46506, ammunition box, wirebound wood
RK	MIL-PRF-11264, reusable wood containers, heavy duty
SD	MIL-B-117, Type I, Class C, Style 2, heavy duty, waterproof, greaseproof, transparent bag
SE	MIL-B-117, Type I, Class E, Style 2, heavy duty, watervaporproof, greaseproof, transparent bag
SF	MIL-B-117, Type III, Class E, Style 1, light 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-Robbins Air Logistics Center Drawing Nos. 11214-5002-100, 11214-5002-200, 11214-5002-300, or 11214-5002-400 for shipping and storage of avionics instruments
xx	See Method of Preservation code for this requirement
YY	Packager's option as long as all other contractual requirements are met
ZZ	Special requirement - See specific instructions or drawings provided
00	No requirement

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

Specification	Code
A-A-160, sack, paper (cushioned)	AC
A-A-550, bags, paper, grocers	AN
A-A-881, burlap shipping bag	AH
A-A-1588, sack, paper (cushioned)	AC
A-A-2714, mailing bag, cloth	AA
PPP-B-26, bag, plastic	RF
PPP-B-566, folding paperboard box	DA
PPP-B-576, wood-cleated panelboard box	FK
PPP-B-576, Class 1, wood-cleated panelboard box, domestic	FL
PPP-B-576, Class 2, wood-cleated panelboard box, weather resistant	FM
PPP-B-585, Class 2, wirebound wood box	RD
PPP-B-585, Class 3, wirebound wood box	RE
PPP-B-601, cleated plywood box	FD
PPP-B-601, cleated plywood box, domestic	FG
PPP-B-601, cleated plywood box, overseas	FF
PPP-B-601, Style I or J, cleated plywood box, surface treated in accordance with the requirements of the specification	F6
PPP-B-601, cleated plywood box, domestic or overseas, remountable, assembled with fasteners other than nails and screws	FJ
PPP-B-601, cleated plywood box, domestic or overseas, remountable, assembled with fasteners other than nails or screws. Inspection door for reading humidity indicator provided for Method 50 packages. Top, one side and one end will be marked “REUSABLE CONTAINER AND CUSHIONING - USE FOR RETURN OF NRFI ASSEMBLY” in black letters, minimum 2" high.	EZ
PPP-B-621, nailed wood box	FA
PPP-B-621, Class 1, nailed wood box, domestic	FB
PPP-B-621, Class 2, nailed wood box, overseas	FC
PPP-B-665, metal edged paperboard box	DJ
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-D-723, Type I, domestic fiber drum	CG
PPP-D-723, Type II, overseas fiber drum	CH
PPP-D-729, drum, steel, 55 gal	RG
PPP-T-495, mailing and filing tube	WM
MIL-C-104, wood crate, lumber and plywood sheathed, nailed or bolted	MA

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

Specification	Code
MIL-C-104, Type I, Class 1, nailed wood crate, lumber sheathed	MB
MIL-C-104, Type I, Class 2, nailed wood crate, plywood sheathed	MF
MIL-C-104, Type II, Class 1, bolted wood crate, lumber sheathed	MC
MIL-C-104, Type II, Class 2, bolted wood crate, plywood sheathed	MG
MIL-C-104, 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 2" high.	MH
MIL-B-117, bag	BD
MIL-B-117, Type I, Class A, Style 2, heavy duty, waterproof, electrostatic Protective, transparent bag	B8
MIL-B-117, Type I, Class B, Style 2, heavy duty, waterproof transparent bag	BL
MIL-B-117, Type I, Class B, Style 3, heavy duty, waterproof, one side opaque, other side transparent bag	B1
MIL-B-117, Type I, Class C, Style 1, heavy duty, waterproof, greaseproof, opaque bag	BE
MIL-B-117, Type I, Class C, Style 2, heavy duty, waterproof, greaseproof, transparent bag	SD
MIL-B-117, Type I, Class C, Style 3, heavy duty, waterproof greaseproof, one side opaque, other side transparent bag	B2
MIL-B-117, Type I, Class E, Style 1, heavy duty, watervaporproof, greaseproof, opaque bag	BS
MIL-B-117, Type I, Class E, Style 2, heavy duty, watervaporproof, greaseproof, transparent bag	SE
MIL-B-117, Type I, Class E, Style 3, heavy duty, watervaporproof greaseproof, one side opaque, other side transparent bag	B3
MIL-B-117, Type I, Class F, Style 1, heavy duty, watervaporproof electrostatic Protective. opaque bag	B9
MIL-B-117, Type II, Class C, Style l,-medium duty, waterproof, greaseproof, opaque bag	BV
MIL-B-117, Type II, Class E, Style 1, medium duty, watervaporproof, greaseproof, opaque bag	BW
MIL-B-117, Type II, Class E, Style 3, medium duty, watervapor-proof, greaseproof, one side opaque, other side transparent bag	B4
MIL-B-117, Type III, Class E, Style 1, light duty, watervaporproof, greaseproof, opaque bag	SF
MIL-B-2427, ammunition box, nailed wood	RH
MIL-C-3774, open wood crate	MJ
MIL-C-3955, spirally wound composite can	JC
MIL-C-4150, carrying case cushioned within a ASTM-D5118, Class domestic fiberboard box	KA

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

Specification	Code
MIL-D-6054, metal drum, reusable	KE
MIL-D-6055, metal drum, reusable (capacity from 88 to 510 cu. in.)	KF
MIL-C-9897, slotted angle crate, steel or aluminum	Ml
MIL-PRF-11264, reusable wood containers, heavy duty	RK
MIL-B-22020, bag, transparent, heat sealable, VCI treated	BT
MIL-B-26195, wood-cleated skidded box, load bearing base	FU
MIL-B-26195, Type I, domestic wood-cleated skidded box	FV
MIL-B-26195, Type II, overseas wood-cleated skidded box	FW
MIL-B-26195, 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 MIL-C-104). 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
MIL-B-43666, Type III, box, consolidation	DB
MIL-P-46161, plastic molding material, thermoplastic, glass fiber reinforced	GC
MIL-B-46506, ammunition box, wirebound wood	RJ
MIL-C-52950, open and covered wood crate	MV
MIL-C-52950, Style B, open and covered wood crate, light duty	MX
MIL-P-81997, cushioned pouch, electrostatic protective, transparent	SG
ASTM-D5118, fiberboard box	E5
ASTM-D5118, Type CF, Class domestic, corrugated fiberboard box	EC
ASTM-D5118, Type CF, Class domestic, single wall, corrugated fiberboard box	E7
ASTM-D5118, Type CF, Class domestic, double wall, corrugated fiberboard box	E8
ASTM-D5118, Type CF, Class weather resistant, corrugated fiberboard box	ED
ASTM-D5118, Type CF. Class weather resistant, single wall, corrugated fiberboard box	EE
ASTM-D5118, Type CF. Class weather resistant, double wall, corrugated fiberboard box	NO
ASTM-D5118, Type SF, Class domestic, solid fiberboard box	EN
ASTM-D5118, Type SF, Class weather resistant, solid fiberboard box	EP
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

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.
D	No container is required.
M	Unit container provides minimal packing protection (see 5.4).
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 a 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 and/or 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 .
F	For other than SPI items, optional use of flexible polyurethane foam-in-place cushioning is permitted. Cushioning shall conform to MIL-F-83671, Class 2, grade B. If F-I-P requires a larger container than conventional packaging would require, the F-I-P container requirements will be coded in place of the conventional data.
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 and/or packaging materials to be used. However, basic reservation 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.
R	For other than SPI items, optional use of rigid polyurethane foam-in-place cushioning is permitted. Cushioning shall conform to MIL-F-83671, Class 1. If F-I-P requires a larger container than conventional packaging would require, the F-I-P container requirements will be coded in place of the conventional data.

TABLE J.IX. Military packinq 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, or triplewall, corrugated fiberboard boxes, Class 2, conforming to ASTM-D5168.
B	Packing shall be accomplished using panelboard wood cleated boxes, Class 2, conforming to PPP-B-576 or wirebound wood boxes, Class 3, conforming to PPP-B-585.
c	Packing shall be accomplished using cleated-plywood wood boxes, Grade A, of PPP-B-601 or nailed and lock-corner wood boxes, Class 2, conforming to PPP-B-621 or covered wood crates, Style A or B conforming to MIL-C-52950 or lumber and plywood sheathed wood crates conforming to MIL-C-104, or steel or aluminum slotted angle crates, Type I, conforming to MIL-C-9897 or load-bearing base skidded wood-cleated boxes, Type 11, conforming to MIL-B-26195.
D	Packing shall be accomplished using open wood crates conforming to MIL-C-3774, or steel or aluminum slotted angle crates, type I, conforming to MIL-C-9897, or open wood crates, Type A or B open, conforming to MIL-C-52950.
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.
H	Packing shall be accomplished using boxes fabricated in accordance with ASTM-D5118, class weather-resistant. When size and weight limitations are exceeded, a suitable container shall be selected from Table C.II.
M	Packing shall be accomplished using wood cleated panelboard boxes, Class 1, conforming to PPP-B-576 or wirebound wood boxes, Class 1, conforming to PPP-B-585 or loadbearing base, skidded, wood-cleated boxes, Type I, conforming to MIL-B-26195.

TABLE J.IX. Military packing requirement codes (see J.4.13) - Continued.

Code	Requirement
N	Packing shall be accomplished using cleated plywood wood boxes, domestic type, conforming to PPP-B-601, or nailed and lockcorner wood boxes, Class 1, conforming to PPP-B-621, or covered wood crates, Style A or B (sheathed), domestic class, conforming to MIL-C-52950, or nailed and bolted sheathed, lumber and plywood, wood crates, non-weather resistant/domestic class conforming to MIL-C-104 or steel or aluminum slotted angle crates, domestic class, conforming to MIL-C-9897 (for lightweight airframe components and bulky items).
P	Packing shall be accomplished using open wood crates, nonweather resistant, domestic class, Style A or B conforming to MIL-C-52950 or open wood crates, nonweather resistant, domestic class conforming to MIL-C-3774 or for lightweight airframes, steel or aluminum slotted angle crates, Type I domestic class, conforming to MIL-C-9897.
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.
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, weather-resistant class, or ASTM-D5168, Class 2: or whenever practicable, by means of shrink-film conforming to L-P-378, Type IV.
Z	Special requirement. See specific instructions or drawings provided.
2	Packing shall be accomplished using cleated-plywood boxes, overseas type, conforming to PPP-B-601 or nailed wood boxes conforming to PPP-B-621, Class 2, Style 4
4	See method of preservation.

TABLE J.IX. Military packing requirement codes (see J.4.13) - Continued.

Code	Requirement
5	Packing shall be accomplished using cleated-plywood boxes, domestic type, conforming to PPP-B-601 or nailed wood boxes conforming to PPP-B-621, Class 1, Style 4.
7	Packing shall be accomplished using cleated-plywood boxes, domestic type, conforming to PPP-B-601 or nailed wood boxes conforming to PPP-B-621, Class 1, Style 4 or wirebound wood boxes conforming to PPP-B-585, Class 3, Style 2 or 3, or fiberboard boxes conforming to ASTM-D5168, Class 2, Style E.
0	Packing not authorized.

TABLE J.IXa. Minimal packing requirement codes (see J.4.13).

Code	Requirement
L	Packing shall be accomplished using fiberboard boxes fabricated in accordance with ASTM-D5118, Class domestic or ASTM-D5168, Class 1.
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/or international regulations in effect at time of shipment. Shipments by parcel post must comply with Postal Regulations.
Y	Packager's option, provided all other contractual requirements are met.
6	Packing shall be accomplished to meet the performance test requirements of ASTM-D4169, Distribution Cycle 18, Assurance Level 3.

APPENDIX J

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

Code	Explanation of code	Code	Explanation of code
ZZ	Special requirements	24	Open for inspection or use only
01	Fragile	25	Box of
02	Arrow up	26	Load bearing area
03	Method 50	28	Do not drop or throw
04	Fragile, Arrow up and Method 50	29	Do not hump
05	Delicate instrument	30	Top heavy
06	Delicate instrument and Arrow up	31	Center of gravity
07	Glass - do not drop	32	Type I, shelf life
08	Keep dry	33	Type II, shelf life
09	Perishable - keep frozen	34	Manufacturer's part number
10	Keep at 40 degrees temperature	36	Fragile, arrow up, and glass
11	Sling point	37	Fragile, arrow up
12	Fragile, Method 50	39	ESD sensitive electronic device requirements of MIL-STD-129 apply
13	Open this side	40	Omission of marking for sensitive, controlled or pilferable items per MIL-STD -129
14	Center of balance	51	Marking shall be accomplished in accordance with the marking requirements in the applicable procedural packaging specification
15	Use no hooks	52	Hardness critical
16	Top	60	Asbestos Warning Label
17	Reusable container	00	No special marking
18	Remove top first		
19	Method 50 reusable container		
20	Do not bend		
21	Do not sling		
23	Perishable biological, do not freeze		

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

Document No.	Table	Code
A-A-160	J.VII	AC
A-A-203	J.IV	CA
A-A-550	J.VII	AN
A-A-881	J.VII	AH
A-A-1051	J.V	DA
A-A-1249	J.IV	DA
A-A-1507	J.V	HA, HB, HD
A-A-1588	J.VII	AC
A-A-1898	J.Ia J.V	KD BG
A-A-2714	J.VII	AA
A-A-50177	J.IV	LA
A-A-55057	J.V	LP
L-P-378	J.Ia J.IV J.IX	DB, DC JA T
QQ-A-1876	J.IV	BA
VV-L-800	J.Ia J.111	KD 09
MMM-A-260	J.Ia	AM
PPP-B-26	J.VII	RF
PPP-B-566	J.VII	D1, D2, D3, DA, E9

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

Document No.	Table	Code
PPP-B-576	J.VII J.IX	FK, FL, FM B, M
PPP-B-585	J.VII J.IX	RD, RE B, M, 7
PPP-B-601	J.Ia J.VII J.IX	JM EZ, F2, F3, F6, F7, FD, FF, FG, FJ, PK C, N, 2, 5, 7
PPP-B-621	J.VII J.IX	F2, F3, F7, F9, FA, FB, FC, PK C, N, 2, 5, 7
PPP-B-665	J.VII	D2, D3, DJ
PPP-B-676	J.VII	D1, D2, D3, DE, E9
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 J.VII	BN PK
PPP-C-1120	J.V J.VII	FA, FE, FH, FL PK
PPP-C-1752	J.Ia J.V J.VII	GX GA, NA PK

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

Document No.	Table	Code
PPP-C-1797	J.Ia J.V	GX GT, NA, NB
PPP-C-1842	J.Ia J.V	DB, DC, GX NA, NB, NG
PPP-D-723	J.VII	CG, CH
PPP-D-729	J.VII	RG
PPP-T-495	J.VII	WM
MIL-C-104	J.VII J.IX	F7, GB, MA, MB, MC, MF, MG, MH C, N
MIL-B-117	J.Ia J.VII	AW, DC, GS, GX Al, B1, B2, B3, B4, B8, B9, BD BE, BL, BS, BV, BW, SD, SE, SF
MIL-B-121	J.Ia J.IV J.VII	AU, BC, DR, EK, KF GB, GC, GH A1
MIL-P-130	J.IV J.VII	FA A1
MIL-B-131	J.Ia	DW
MIL-P-149	J.Ia J.III	KF 38
MIL-B-2427	J.VII	RH
MIL-L-3150	J.III	07
MIL-P-3420	J.IV	MB

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

Document No.	Table	Code
MIL-C-3774	J.VII J.IX	MJ D, P
MIL-C-3955	J.V J.VII	LF JC
MIL-C-4150	J.VII	K1, KA
MIL-C-5501	J.Ia	DR
MIL-D-6054	J.VII	K1, KE
MIL-D-6055	J.VII	K1, KF
MIL-L-6081	J.III	51
MIL-L-6085	J.III	17
MIL-C-6529	J.III	31, 32
MIL-L-7808	J.III	33
MIL-L-7870	J.III	50
MIL-C-8188	J.III	52
MIL-C-9897	J.VII J.IX	M1 C, D, N, P
MIL-G-10924	J.III	13
MIL-PRF-11264	J.VII	RK
MIL-C-11796	J.Ia J.III	DR 06
MIL-PRF-16173	J.Ia J.III	AH, AU, BC, DR 01, 02, 03, 19, 21

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

Document No.	Table	Code
MIL-C-16555	J.III	27, 28, 29
MIL-P-17667	J.IV J.VII	EA, EB, EC A1
MIL-P-19644	J.V	GC, NS
MIL-R-20092	J.V J.VII	DH PK
MIL-L-21260	J.III	10, 57, 58, 59
MIL-B-22019	J.Ia J.IV	GS JL
MIL-B-22020	J.Ia J.VII	GS, KD BT
MIL-B-22191	J.Ia J.IV	DB, DC JV
MIL-L-23699	J.III	56
MIL-G-23827	J.III	11
MIL-C-25537	J.III	43
MIL-B-26195	J.VII J.IX	FU, FV, FW, GB C, M
MIL-PRF-26514	J.V J.VII	GD, GE, GF, GH, LE, NS PK
MIL-B-43666	J.VII	DB
MIL-L-46002	J.III	20
MIL-L-46010	J.III	30

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

Document No.	Table	Code
MIL-P-46161	J.VII	GC
MIL-H-46170	J.III	15
MIL-B-46176	J.III	79
MIL-B-46506	J.VII	RJ
MIL-C-52950	J.VII J.IX	MV, MX C, D, N, P
MIL-P-53030	J.III	80
MIL-G-81322	J.III	12
MIL-B-81705	J.Ia J.IV	GX K3, N9
MIL-P-81997	J.Ia J.V	GX P4
MIL-H-83282	J.III	65
MIL-F-83671	J.V J.VIIIa	MA, MB F, R
MIL-C-83933	J.III	26
MIL-STD-129	J.Ia J.X	BC, GS, GX 39, 40
MIL-STD-1186	J.V	AD
ASTM-D4169	J.IX J.IXa	E, R 6
ASTM-D4727	J.Ia J.V	JF, JM, KD JA, JB, JC, NS

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

Document No.	Table	Code
ASTM-D5118	J.Ia	DR, DW, KD
	J.VII	D3, E5, E7, E8, E9, EC, ED, EE, EN, EP, KA, NO
	J.IX	A, H, T
	J.IXa	L
ASTM-D5168	J.VII	DP, DQ, DR, PK
	J.IX	A, 7
	J.IXa	L
ASTM-D5486	J.Ia	AU, AW, DR
SAE-J1966	J.III	53

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Custodians:
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Navy - AS
Air Force - 69
DLA - DH

Review Activities:
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Navy - CG, EC, MC, OS, SA, SH, YD1
Air Force - 10, 11, 13, 18, 19, 69, 99
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Preparing activity:
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