MIL-P-7936A
19 NOVEMBER 1957

SUPERSEDING
MIL-P-7936(Aer)
1 MAY 1952

MILITARY SPECIFICATION

PARTS AND EQUIPMENT, AERONAUTICAL, PREPARATION FOR DELIVERY

This specification has been approved by the Department of Defense, and is mandatory for use by the Departments of the Army, the Navy, and the Air Force.

1. SCOPE

1.1 This specification covers the general requirements for the preparation for delivery of aeronautical parts and equipment subjected to domestic and overseas shipments, and varied storage conditions.

2. APPLICABLE DOCUMENTS

2.1 Specifications. The following specifications, standards, drawings, and publications, of the issue in effect on date of invitation for bids, shall form a part of this specification:

SPECIFICATIONS

FEDERAL

U-M-186	— Medicinal Products and Clinical Laboratory Reagents; General Specification for Containers (Packaging and Packing).
TT-P-143	— Paints, Varnish, Lacquer, and Related Materials, General Specifications for.
UU-T-81	— Tags, Shipping and Stock.
UU-P-271	— Paper, Wrapping, Waterproofed Kraft.
DDD-B-20	— Bags, Mailing (Cotton).
PPP-B-636	— Boxes; Fiber.
PPP-B-51	— Packaging, Packing and Marking of Textile Fabrics (Woolens, Worsteds, Cottons, Silks and Synthetics).
PPP-T-76	— Tape, Pressure Sensitive Paper, Water Resistant.
PPP-B-566	— Boxes, Folding Paperboard.
PPP-B-575	— Box, Paper-Overlaid Veneer; Strap-around Type.
PPP-B-585	— Boxes, Wood, Wirebound.

PPP-B-591 — Boxes, Fiberboard, Wood-Cleated.

PPP-B-601 — Boxes, Wood, Cleated Plywood.

PPP-B-621 — Boxes, Wood; Nail and Lock Corner.

PPP-B-640 — Boxes, Folding, Fiberboard, Corrugated, Triple Wall.

PPP-B-645 — Boxes, Folding, Fiber board, Heavy Duty.

PPP-B-676 — Boxes, Set-up, Paperboard.

PPP-C-96 — Cans, Metal, 28 Gage and Lighter.

PPP-D-723 — Drums, Fiber.

PPP-D-729 — Drums, Metal, 55-Gallon (For Shipment of Non-Corrosive Materials).

PPP-D-760 — Drums and Pails; Metal (5 and 16.64 Gallon).

PPP-C-843 — Cushioning Materials; Cellulosic.

LLL-F-291 — Fiberboard, Corrugated, Single Face (flexible).

MILITARY

MIL-P-3 — Packaging and Packing for Overseas Shipment of Valves, Fittings, and Flanges.

JAN-P-4 — Packing for Overseas Shipment; Tires, Tubes, and Flaps for Vehicles.

MIL-C-104 — Crates, Wood; Lumber and Plywood, Nailed and Bolted.

JAN-P-112 — Packaging and Packing for Overseas Shipment—Drums, Plywood.

JAN-P-113 — Packaging and Packing for Overseas Shipment — Bags, Shipping, Textile and Paper Laminated.

MIL-B-117 — Packaging and Packing for Overseas Shipment — Bags, Interior Packaging.

JAN-P-125 — Packaging and Packing for Overseas Shipment — Barrier-Materials, Waterproof, Flexible.

JAN-P-196 — Packaging and Packing for Overseas Shipment — Engines, Ground, Air Cooled (32 Horsepower and Under) — Spare Parts for (In U. S. 1-Gallon or Imperial 1-Gallon Bottles).

MIL-P-75 — Packaging, Packing and Container Marking; Tubes; Electron.

MIL-P-116 — Preservation, Methods of.

MIL-B-121 — Barrier Material, Grease-proofed, Flexible (Waterproofed).

MIL-B-130 — Barrier-Material, Paper, Non-corrosive.

MIL-B-131 —Barrier Material; Water Vapor-proof, Flexible.

MIL-C-132 — Packaging and Packing for Overseas Shipment — Crates, Unsheathed Wood, Nailed.

MIL-B-138 — Boxes, Wood, Fiberboard-Lined for Overseas Shipment (For Weight of Contents not Exceeding 500 Pounds).

MIL-A-148 — Aluminum Foil.

MIL-P-197 — Preservation, Packaging and Packing of Anti-Friction Bearings, Associated Parts, and Sub-Assemblies.

MIL-P-207 — Packaging and Packing for Domestic and Overseas Shipment and Storage, Electrolyte, Storage Battery.

MIL-P-775 — Packaging and Packing for Overseas Shipment and Domestic Shipment Involving Storage of Hose, Rubber, or Fabric (Including Tubing), and Fittings, Nozzles and Strainers.

MIL-P-3280 — Packaging of Hoists, Chain, Manually Operated, Overseas Shipment.

MIL-P-3296 — Packaging of Forges, Furnaces, and Ovens (Exclusive of Space Heating and Cooking) for Overseas Shipment.

MIL-P-3345 — Packaging of Full Trailers, Semi-Trailers, and Trailer Dollies for Overseas Shipment.

MIL-P-3435 — Packaging of Truck Chassis, Motorized, for Overseas Shipment.

MIL-P-3454 — Packaging of Life Preservers.

MIL-C-3769 — Crates, Intermediate, Sheathed, Wood, Nailed (For Maximum Net Loads of 3000 Pounds).

MIL-C-3774 — Crates, Open, Wood (2,500 to 10,000 Pounds).

MIL-C-3955 — Cans, Fiber, Spirally Wound.

MIL-C-4116 — Containers; Shipping, Reusable, Wood, Aircraft Engines.

MIL-P-4185 — Paper, Tissue, Wrapping.

MIL-B-4229 — Boxes, Paperboard, Metal-Stayed.

MIL-C-4329 — Crates; Wood, 1.000 Pounds Maximum Load, Open Domestic.

MIL-C-4470 — Cans, Metal, Non-Re-usable, Rectangular.

MIL-P-5069 — Packaging and Packing of Flight Clothing.

MIL-R-5001 — Rubber; Latex Foam Sponge.

MIL-C-5405 — Container; Shipping, Fiber Tube, Spirally Wound.

MIL-C-5406 — Crates; Wood, Open, Demountable, 10,000 lb Maximum Load.

MIL-C-5584 — Container; Shipping, Aircraft Engine, Metal, Reusable.

MIL-P-5610 — Packaging and Packing of Parachutes and Parachute Component Parts for Shipment and Storage.

MIL-P-5806 — Preservation and Packaging of Helicopter Rotor Blades.

MIL-C-6054 — Container, Steel Shipping.

MIL-D-6055 — Drums: Metal, with Removable Head, Reusable Interior Shipping.

MIL-C-6057 — Crates and Boxes; Aircraft and Airframe Component Parts (General Specification for).

MIL-E-6060 — Envelopes; Moisture-Impervious (for Aircraft Engines).

MIL-P-6063 — Packaging of Batteries, Storage, Aircraft (Charged and Dry Uncharged and Moist).

MIL-P-6065 — Packaging, Packing and Marking of Cloth, Fabric and Webbing.

MIL-P-6072 — Preservation and Packaging of Turbosupercharges.

MIL-P-6074 — Preservation, Packaging, Packing of Propellers, Propeller Spares and Propeller Accessories.

MIL-W-6110 — Wood, Determination of Moisture Content of.

MIL-C-7769 — Cushioning Material, Bound Fiber.

MIL-C-9282 — Container, Shipping, Metal, Reusable 5 cu. ft. Volume.

MIL-C-9361 — Container, Shipping, Metal, Fuel Tank, Aircraft, External Nested.

MIL-P-9437 — Packaging and Packing, Fuel Tank Aircraft, External, Assemblied.

MIL-C-10301 — Containers, Shipping, Reusable, (Boxes, Crates) For Transmission or Transfer, Assemblies of Tank and Automotive Vehicles.

MIL-C-10302 — Containers, Shipping, Reusable (Crates) For Driving Axle Assemblies of Automotive Vehicles.

MIL-B-10377 — Boxes, Wood, Cleated, Vener, Paper Overlaid.

MIL-L-10547 — Liners, Case, Waterproof.

MIL-C-11133 — Crates, Wood, Slatted Style, Wirebound, Domestic.

MIL-C-11264 — Containers, Shipping, Reusable, for Engine Assemblies (Except Radial).

MIL-B-13239 — Barrier Material, Waterproofed, Flexible, All-Temperatures.

MIL-P-15424 — Packaging of Hand Tools for Domestic and Overseas Shipment and Storage.

MIL-P-16298 — Preservation, Packaging, Packing and Marking of Electric Machines Having Rotating Parts (Includes Associated Repair Parts).

MIL-C-17435 — Cushioning Material, Fibrous Glass.

MIL-B-25305 (USAF) — Boxes, Metal and Plastic, Shipping, Exterior, Rectangular, Reusable.

MIL-P-17667 — Paper, Chemically, Wrapping, Neutral.

MIL-C-25010 — Containers; Air and Surface Shipment of Aircraft Components (2,000 Pound Load).

MIL-C-25139 — Crates, Wood, Open, Domestic, (For Light Bulky Airframe Items).

MIL-A-25175 (USAF) — Air Transport, Nontactical, Packing for.

MIL-D-26943 — Drums, Metal, Reusable, Shipping (For Air Force Procurement).

MIL-E-17555 (Ships) — Electronic Equipment and Associated Maintenance Parts; Preservation, Packaging, Packing, and Marking of.

STANDARDS

MIL-STD-105 — Sampling Procedures and Tables for Inspection by Attributes.

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

MS-24346 (USAF) — Drums, Metal Shipping, 2094 and 2915 Cu. In. Capacity.

PUBLICATIONS

AIR FORCE-NAVY AERONAUTICAL BULLETINS

302 — Preservation and Packaging Card List for Aeronautical Spares; Form and Instructions for.

AIR FORCE

AMC Manual No. 71-2 — Preservation, Packaging, Methods, and Instructions for Coding.

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification. Unless otherwise indicated, the issue in effect on date of invitation for bids shall apply.

AMERICAN SOCIETY FOR TESTING MATERIALS STANDARD

ASTM Designation D880 Impact Test, Incline, for Shipping Containers.

(Copies of American Society for Testing Materials Standard may be obtained from the Society, 1916 Race Street, Philadelphia 3, Pa.)

3. REQUIREMENTS

3.1 General. All items shall be processed in accordance with the specific process specification referenced in Table I, when applicable. When no process specification exists, items shall be processed in accordance with

an applicable method of MIL-P-116 and the requirements contained herein.

3.1.1 *Repairable assemblies.* Unless otherwise authorized by the designated activity, spare major components shall be packed individually and, if ordering data specifies, in reusable containers. Assemblies other than major aircraft components replaceable as a unit, where the displaced assembly is subject to overhaul, shall be packed in reusable containers. When required in the contract or order, design drawings and/or photographs shall be submitted for approval to the designated activity.

3.1.2 *Attaching parts.* When attaching parts, such as nuts, bolts, washers, etc., accompany the basic item, they shall be preserved, bagged, appropriately identified, and attached to or adjacent to the fitting for which intended.

3.1.3 *Disassembly.* Items shall be disassembled into component parts provided reassembly can be accomplished without the use of special tools or skills. All nuts, bolts, pins, screws, etc. removed during disassembly shall be secured in one of the mating parts. Concurrence by the procuring activity shall be obtained prior to disassembly.

3.1.4 *Matchmarking.* Disassembled parts which are not interchangeable shall be matchmarked to facilitate reassembly. Matchmarking shall be accomplished by means of tags conforming to type A, size 1, of Specification UU-T-81, with suitable identification printed thereon and with tags and printing waterproofed. Tags shall be securely attached to the removed parts and mating parts on the basic unit in such a manner that no damage occurs to the item nor the preservation thereof.

3.2 Materials and procedures.

3.2.1 *Cushioning.* Cushioning shall consist of shock-absorbing materials or devices that will protect the contents and packaging components from physical damage. The cushioning medium shall be placed, with relationship to other parts of the pack, as close to the contents as it is practicable, except that the amount of cushioning within a flexible barrier where Method II of MIL-P-116 is involved shall be kept to a minimum. Cushioning material shall conform to Specifications PPP-C-843, MIL-C-7769, MIL-C-17435, MIL-R-5001, or LLL-F-291. Other non-specification cushioning materials may be used on prior approval of the Procuring Activity. All cushioning material and devices regardless of whether they conform to the foregoing specifications shall be used in such a manner as to pass the performance tests of this specification. Cushioning materials must be separated, from all items to which a preservative compound has been applied, by a barrier material conforming to Specifications MIL-B-121, MIL-B-131, or MIL-A-148. Cushioning which has been treated to provide grease proofness and other surface chemical characteristics equivalent to Specification MIL-B-121 need not be separated from the item by barrier materials. Items which do not require the application of a contact preservative shall be separated from the cushioning medium by one of the aforementioned barriers or by materials conforming to Specifications MIL-B-130, MIL-P-4185, or MIL-P-17667, except that a barrier is not required if the cushioning meets the neutrality requirement of MIL-P-116. A barrier is not required between the cushioning and such items as textile, rubber, plastic, or items having permanent protection. Cushioning devices which provide a metal to metal contact between the item and the cushioning system do not require the use of the barrier material separators specified above. Unless otherwise specified by the procuring activity, excelsior, shredded newspaper and similar materials of vegetable origin are not acceptable for interior packaging.

3.2.2 *Blocking and bracing.* Articles which do not completely fill the shipping container shall be blocked, braced, fastened or other-

wise secured. Articles having projecting parts that may be broken or may puncture the container or barrier shall be rigidly supported, suspended, or otherwise protected. The clearance between the projecting parts and the adjacent inside face of the container shall be not less than 1 inch. Bracing or blocking shall be applied against structural members only that are of sufficient strength to resist damage. Bracing or blocking shall be prevented from coming in direct contact with the unprotected critical surfaces of the item supported, by the use of materials conforming to Specification MIL-B-130, MIL-B-121, or MIL-A-148. The blocking shall be adequate to prevent damage when tested, as described in Section 4. When special blocking and bracing or mounting systems of a complex construction are involved, instructions shall be attached by any suitable means so that they are immediately visible upon opening the container. The end of braces shall not be fastened to the container by end-grain or toe nailing. They shall be fastened to the edges or sides of blocks which are in turn securely fastened to sturdy parts of the container or held in grooves formed by parallel cleats, or securely socketed. Blocking of articles of comparatively light weight may be effected by use of corrugated or solid fiberboard pads, cells, partitions, trays, fiberboard built-up pads or composition board.

3.2.2.1 *Lumber and plywood.* The lumber used for interior blocking and bracing shall be free of defects which would impair its utility or interfere with fabrication and fastening. At time of fabrication, the moisture content shall be within the range of 7 to 19 percent of oven dry weight determined as specified in Specification MIL-W-6110. Slopes of grain shall not exceed 1 inch in 10 inches. No knots, knot clusters nor series of knots across the width of a piece within a length equal to the width of a piece shall have a diameter or a sum of diameters greater than one-third the width of the piece.

3.2.3 *Securing load.* Articles such as machines or subassemblies having bolt holes in a part of the article sturdy enough to resist breakage when rough handled as in Section 4, shall, if practicable, be bolted to one face of the shipping container or to a base which can be securely fastened to the container. If there are four or more available bolt holes, not less than four shall be used. The diameter

TABLE I. *Process Specifications*[1]

Paint, Varnish, Lacquer and related Materials; General Specification for Packaging, Packing and Marking	TT-P-143
Medicinal-Products and Clinical Laboratory Reagents: General Specification for Containers (Packaging and Packing)	U-M-186
Batteries (Aircraft)	MIL-P-6063
Cloth, Fabric & Webbing	MIL-P-6065
Electric Machines (Rotating)	MIL-P-16298
Electronic Equipment and Associated Maintenance Parts	MIL-E-17555 (Ships)
Electrolyte	MIL-P-207
Electron Tubes	MIL-P-75
Engine (small) Spares	JAN-P-196
Anti-Friction Bearings	MIL-P-197

[1] Exceptions to Tables I through IV will be granted for improved methods and materials provided significant savings and equivalent or improved performances result. In this case, proposed designs and also prototype packages where appropriate should be forwarded to the contracting activity for approval.

TABLE I. *Process Specifications*[1]

Flight Clothing	MIL-P-5069
Forges, Furnaces and Ovens	MIL-P-3296
Helicopter Rotor Blades	MIL-P-5806
Hand Tools	MIL-P-15424
Hoists, Chain	MIL-P-3280
Hose, Hose Fittings and Strainers	JAN-P-775
Life Preservers	MIL-P-3454
Parachutes	MIL-P-5610
Propellers and Spares	MIL-P-6074
Trailers and Trailer Dollies	MIL-P-3345
Turbosuperchargers	MIL-P-6072
Valves, Fittings and Flanges	MIL-P-3
Tires, Tubes and Flaps for Vehicles	JAN-P-4
Trucks chassis, Motorized	MIL-P-3435
Air Transport (Nontactical)	MIL-A-25175
Packaging, Packing, and Marking of Textile Fabrics	PPP-P-51

[1] Exceptions to Tables I through IV will be granted for improved methods and materials provided significant savings and equivalent or improved performances result. In this case, proposed designs and also prototype packages where appropriate should be forwarded to the contracting activity for approval.

of the bolts shall be the same diameter as the bolt holes. When precision bolt holes are involved, precision fitting bolts of proper characteristics shall be used to prevent marring or elongation. Reinforced fiber bushings may be used with the bolts to provide the required snug fit. Lag bolts (lag screws) shall not be used in any case. Standard cut washers shall be used under the nuts. Self-locking nuts, lock washers, or other suitable means shall be used to insure that the nuts will not loosen through handling or vibration. Lock washers in direct contact with wood is prohibited. Bolts and nuts without corrosion-resistant plating or finish shall, prior to use, be completely covered with a corrosion-preventive compound. The compound shall be thoroughly set before the bolts are used.

3.2.4 *Containers.* Containers shall conform to the applicable specifications listed in Tables II, III, and IV. The pack shall be of a minimum weight and cube consistent with the requirements of this specification. Proper utilization of the container shall be made for the type of load to be carried. (See 6.3) Where specified, metal or wire seals shall be applied to reusable metal containers in such a manner that the seal will be destroyed when the container is opened. Likewise when specified, fiberboard unit containers shall be sealed by terminating the ends of one strip of tape which encircles the container about the closure, under the label required by MIL-STD-129. (See 6.2)

3.2.5 *Closure of container.* The closure of all containers snall be in accordance with the procedures described in the respective container specification or appendices thereto. If the closure is not covered by the specification, the closure shall be in accordance with good commercial practice.

3.3 **Levels of preservation and packaging.** The levels of preservation and packaging shall be as specified by the procuring activity.

3.3.1 *Level A.*

3.3.1.1 *Cleaning.* Cleaning shall be in accordance with the applicable procedures of Specification MIL-P-116.

3.3.1.2 *Preservation.* Preservation shall be in accordance with applicable method of MIL-P-116 as specified by the contract or order.

3.3.1.3 *Unit packaging.* Unit packaging shall consist of packaging one or more identical items or quantities of material within a single container which may be subsequently intermediate packaged or overpacked. The quantity of the unit package shall be specified by the procuring activity. Unless otherwise specified, unit containers shall be those classified as interior grade in table II, when overpacking for shipping is required. When the unit container is also the shipping container, Table II exterior grade, and Table III and appropriate portions of Table IV will apply.

3.3.1.4 *Intermediate packaging.* Intermediate packaging shall consist of packaging two or more identical unit packages within a single container which is subsequently overpacked in an exterior container. Unless otherwise specified, the requirements for intermediate packaging including the quantity of unit packages shall be at the option of the contractor and as governed by the limitations of the intermediate container being used. Unless otherwise specified, intermediate containers shall conform to the specifications listed in table II. Only identical items shall be included in an intermediate container.

3.3.1.5 *Segregation of packages.* With the exception of kits, interior packages shall be segregated in the order listed and whatever practicable, each shipping container will contain:

(a) Items of the same contract.

(b) Items of the same Federal stock number.

(c) Items of the same Federal class *

(d) An identical number of packages of uniform size.

* For Navy procurement, the TSMC code shall be considered part of the Federal Stock Numbers.

3.3.2 *Level B.* When level B is required, the details of its accomplishment shall be as specified in the contract or order.

3.3.3 *Level C.* Preservation and packaging shall conform to the manufacturer's commercial practice, unless the procuring activity determines a modification to the manufacturer's commercial practice is required to provide adequate protection.

3.4 **Levels of packing.** The levels of packing to be used will be as specified by the procuring activity.

3.4.1 *Level A.* Exterior containers shall be in accordance with the applicable specification in tables III or IV. As far as practical, exterior shipping containers shall contain identical quantities. When the container(s) being overpacked, within the exterior container, are not water-resistant, case liners shall be provided with material conforming to UU-P-271, JAN-P-125 or MIL-B-13239 and fabricated in accordance with MIL-L-10547. All joints and seams shall be sealed in accordance with the Appendix of MIL-L-10547. A case liner is not required for PPP-B-636 containers when all seams and closures are sealed with water resistant tape of PPP-T-76.

3.4.2 *Level B.* Exterior containers shall be in accordance with the applicable specification in tables III or IV. As far as practical, exterior containers shall be of uniform shape and size and shall contain identical quantities.

3.4.3 *Level C.* Packages that require overpacking for acceptance by the carrier shall be packed in exterior type shipping containers in a manner that will insure safe trans-

portation 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:

Postal Regulations

Interstate Commerce Commission Regulations

Civil Air Regulations

Consolidated Freight Classification Rules

Truckers' Association Rules

Other applicable carrier's rules

3.4.4 *Weight limitations.* Unless the weight of a single item exceeds the specified limitation, the gross weight of each shipping container, when packed for shipment, shall not exceed for Navy procurement approximately 200 pounds for both domestic and overseas shipment and for Air Force procurement approximately 500 pounds for domestic and 200 pounds for overseas. This weight limitation does not apply to pack-ups containing quota spares, kits of parts, or several items forming an assembly carried under a single stock number. For items in this category, the gross weight shall not exceed 1000 pounds whenever practicable. The determination as to the practicability of so limiting the weight of the articles packed shall be made by the designated activity.

3.5 **Marking.** All unit, intermediate, and shipping containers shall be marked in accordance with MIL-STD-129. Pertinent precautionary markings necessary for full protection of the item packed shall be prominently located as specified in MIL-STD-129.

3.5.1 *Service bulletins and changes.* All shipping containers shall be so identified that it shall be unmistakably clear to the recipient, without opening the container, which service bulletins and changes have been incorporated prior to shipment. In the event that this is not clear by change of part number, or by using the latest change letter suffix to the part number (where such suffix letter is keyed to the pertinent service bulletin or change), the contractor shall apply marking similar to the following:

(a) Bureau of Aeronautics service change (insert number) incorporated.

(b) Bureau of Aeronautics bulletin (insert number) incorporated.

(c) MCR (insert number) incorporated.

(d) (Contractor's Designation) Engineering Change (or Design Change) incorporated.

(e) (Contractor's Designation) Service Bulletin (insert number) incorporated.

3.6 Examination of product. Packs examined as specified in Section 4, shall show compliance with the material, procedure, and container requirements specified herein and any applicable drawings for the submitted pack.

3.7 Cleaning, preservation and unit protection processes. When tested as specified in Section 4, the cleaning, preservation and unit protection processes, shall conform with the applicable requirements of MIL-P-116.

3.8 Rough handling. When tested as specified in Section 4, the contents shall show no functional or physical damage. Damage to the exterior shipping container which is the result of improper interior packaging, blocking, or bracing shall be cause for rejection. Structural failure of the exterior shipping container which would result in spilling of the contents or failure of the container in subsequent handling is cause for rejection. There shall be no evidence of a substantial amount of shifting of the contents within the exterior shipping container that would create conditions likely to cause damage during shipment, storage, and reshipment of the container. Minor container damage such as chipping of wood members, dents, paint chipping, is not cause for rejection.

TABLE II. *Interior Container*

Selection by Weight of Contents and Size of Container

Specification	Description	Maximum[1] Size Limitation	Under 5 lbs	6 to 10 lbs	11 to 20 lbs	21 to 40 lbs	41 to 70 lbs	71 to 100 lbs
PPP-B-566	Folding Carton	750 cu. in.	X	X				
PPP-B-676	Set-up Box	Any	X	X				
MIL-B-117								
Type I	Bags, Class b, c, and e	Over 90 sq. in.	X	X[4]				
Type II		50 to 90 sq. in.	X	X				
Type III		Under 50 sq. in.	X	X				
MIL-D-6055	Drums; AN8029	88 to 510 cu. in.						
MIL-C-5405	Can; Fiber; Metal end	7 in. dia. × 30 in. long	X	X	X			
MIL-B-4229	Box; Metal-stayed	2000 cu. in.						
DDD-B-20	Cotton Mailing Bag							
PPP-B-636	Box; Fiber, class 3 W5s & W5c	50 in.	X	X	X	40		
	class 3 W6s & W6c	30 in.	X	X	20			
	class 2 W5s & W5c	50 in.	X	X	X	40[2]	50[1]	
	class 2 W6s & W6c	30 in.	X	X	20[2]	30[1]		
	Interior or Exterior							
PPP-B-636	Box; Fiber, class 3 V3s & V3c	70 in.	X	X	X	40[2]	70[1]	
	Box; Fiber, class 2 V3s & V3c	80 in.	X	X	X	X	70[2]	90[1]
	Box; Fiber, class 3 V2s	70 in.	X	X	X	X	60[2]	70[1]
	Box; Fiber, class 2 V2s	90 in.	X	X	X	X	X	90[2] 100[1]
	Box; Fiber, class 1 Type I & II	120 in.	X	X	X	X	X	X 160
PPP-B-640	Boxes, Corrugated, Triple Wall		X	X	X	X	X	X
PPP-B-575	Boxes, Straparound							
JAN-P-113	Bags, Shipping, Textile and Paper Laminated							

[1] Applicable to type 1 load.

[2] Applicable to type 2 load.

[3] For boxes, figure denotes internal or sum of length, width and height. For bags, figure denotes total surface area (length × width × 2). For cylinders, figure denotes internal volume.

[4] Total weight of contents—10 lbs, unless otherwise specified.

TABLE III. *Exterior Container*

Selection by Maximum Weight of Contents

Specification	Description	To 100 lbs	101 to 150 lbs	151 to 200 lbs	201 to 250 lbs	251 to 300 lbs	301 to 500 lbs	501 to 1000 lbs	1001 to 3000 lbs
PPP-B-591	Box, Wood-Cleated, Fiberboard	X	X	X	X	X	400		
PPP-B-585	Box, Wood, Wirebound	X	X	X	X	X	500		
MIL-B-10377	Box, Wood, Cleated Veneer, Paper Overlaid (Overseas)	X	X	X	X	X	350		
Do	Box, Do (Domestic)	X	X	X	X	X	500		
MIL-B-138	Box, Wood, Fiberboard-Liner Style 4	X	X	200					
Do	Do Style 2, 2½, 3	X	X	X	X	X	500		
PPP-B-621	Box, Wood, Nailed, Lock Corner	X	X	X	X	X	X	1000	
PPP-B-601	Box, Wood, Cleated-Plywood	X	X	X	X	X	X	1000	
MIL-C-132	Crates, Unsheathed								2500
JAN-P-104	Crates, Sheathed, Wood, Nailed								
MIL-C-3769	Crates, Intermediate, Sheathed, Wood, Nailed								3000
MIL-C-3774	Crates, Open, Wood								2500
MIL-C-4349	Crates, Wood, Open, Domestic							1000	
MIL-C-5406	Crates, Wood, Open, Demountable								
MIL-C-6057	Crates and Boxes								

TABLE IV. *Special Containers*

Container	Specification	Size Limits	Weight Limits lbs	Remarks
Envelopes, Packaging, Waterproof Flexible	MIL-E-6060			Applicable Drawing for Aircraft Engines
Case Liner	MIL-L-10547			
Drum, Fiberboard	PPP-D-723			Domestic and Overseas Types
Drum, Plywood	JAN-P-112		200	Dry products only, Overseas Type
Drum, Metal	PPP-D-729			
Drum, Metal	PPP-D-760			
Box, Folding, Fiberboard	PPP-B-645			
Drum, Metal	MIL-D-6055	88 to 510 cu. in.		Reusable, Interior Type, AN8029-1 through -9
Drum, Metal	MIL-D-26943			MS24346
Container; Steel, Shipping	MIL-C-6054	4 to 19 gal.		Exterior use, AN8024 through AN8027
Container; Metal, Shipping	MIL-C-5584			Aircraft Engine, Reusable
Container; Wood, Shipping	MIL-C-4116			For Use in Lieu of MIL-C-5584
Container; Metal, Shipping	MIL-C-9282	5 to 50 cu. ft.		
Container; Metal, Shipping	MIL-C-9361	114" long	2000	Fuel Tank; External Use, Nested
Crate; Wood, Shipping	MIL-C-9437		1000	Fuel Tank; External Use, Aircraft
Cans, Fiber	MIL-C-3955			
Cans; Metal	MIL-C-4470	5 sizes		Interior Use, Non-reusable
Containers, Metal	PPP-C-96	2 oz. to 5 gal.		Cans, Pails
Container; 2 way, Air & Surface	MIL-C-25010		2000	Air Frame Components
Container; Metal, Rectangular	MIL-C-4470	11 sizes		Reusable, Exterior Shipping
Container; Shipping Reusable	MIL-C-10301			For Transmission Assemblies
Container; Shipping Reusable	MIL-C-10302			For Axle Assemblies
Container; Shipping Reusable	MIL-C-11264			For Engine Assemblies
Crates and Boxes	MIL-C-6057			Aircraft and Aircraft Component Parts
Crates, Wood	MIL-C-11133			Slatted Style, Wire Bound, Domestic
Crates; Wood, Open	MIL-C-25139			For Lightweight Bulky Items

3.8.1 When specified, the rough handling tests will be performed also directly on the unit or intermediate container in addition to the composite shipping pack.

3.8.2 *Dummy load.* When a dummy load is substituted for the item in performing the rough handling tests in Section 4, for preproduction testing, the fragility rating of the original item and details of instrumentation, i.e., location of accelerometers, shall be specified by the contractor. After instrumentation, the pack shall be tested in accordance with Section 4 and the recorded accelerations shall not exceed the limits established by the contractor. A report of the instrumentation and test results shall be furnished to the procuring activity for approval.

3.8.3 *Shear mount suspension systems.* When items employing shear mount suspension systems for shock isolation are used, the contractor shall furnish the procuring activity actual or calculated data on the characteristics of the suspension system. This data shall include such characteristics as: spring rate of mount, natural frequency of the system, and mounting configuration.

3.9 **Workmashinp.** Workmanship shall be in accordance with the best commercial practices. Defects, imperfections, or omissions which would tend to impair the effectiveness of the complete pack or any parts thereof shall not be permitted.

3.10 **Packaging data forms.** When specified, the contractor shall prepare and submit to the designated procuring activity a preservation, packaging and packing list completed in accordance with the applicable bulletin or other instructions specified below:

Procurement	Designated Activity	Preservation and Packaging List
Navy	Aviation Supply Office	ANA Bulletin #302
Air Force	Cognizant AMA or AF Depot	ANA Bulletin #302 or AMC Manual 71-2
Army	Transportation Supply and Maintenance Command, St. Louis, Mo.	

Unless specifically requested by the procuring activity, the contractor is not required to prepare a new list for any item which was included in lists previously approved by the government. However, the contractor shall prepare supplements to the existing approved preservation and packaging list for items which do not appear on the previously approved lists and shall submit these supplements for approval. It is further required:

(a) Unless otherwise specified in the contract, when the item is already listed in an approved list and shipment is to be direct from the plant, which submitted that list, then the packaging shall be in accordance with that list.

(b) When the item is not already listed on an approved list and shipment is to be direct from the vendor or subcontractor to the government, the prime contractor may request that the vendor or subcontractor submit the packaging data as a supplement to the prime contractor's approved list, to the activity monitoring his list for approval. After notification of approval the vendor or subcontractor shall furnish to the prime contractor one reproduced copy of the supplement to the list.

4. QUALITY ASSURANCE PROVISIONS

4.1 Classification of tests. The inspection and testing of a complete pack shall be classified as follows:

(a) *Acceptance tests.* Acceptance tests are those tests accomplished on the complete packs manufactured and submitted for acceptance under contract.

(b) *Preproduction tests.* Preproduction tests are those tests conducted, prior to production, on prototype packs of an intended identical production design to determine the design's capability to meet the rough handling test requirements of this specification.

4.2 Acceptance tests. Acceptance tests shall be conducted on parts selected as stated in the specific process specification used (see paragraph 3.1). The tests shall consist of those under 4.4.1 and 4.4.2. When specified, tests under paragraph 4.4.3 shall be also performed in which case the sampling procedures will be specified (see 6.2).

4.3 Preproduction tests. Preproduction tests shall consist of all the tests specified under 4.4. Preproduction tests are designed to prove the adequacy of the preservation, blocking, bracing, and cushioning for protecting the item. Each pilot pack which is to be tested shall be required to pass the rough handling tests specified in 4.4 followed by the applicable tests of MIL-P-116 before the final design is approved. Usually one pilot pack will suffice if it succeeds in passing the tests, unless otherwise specified. To pass the preproduction tests, the item after testing, shall indicate no evidence of damage to structural integrity and shall remain within all dimensional tolerances and shall contain no injury which would affect its utility. The exterior container shall not reveal any significant failure caused by improper application or design of interior cushioning, blocking, or bracing. Waterproof papers, moisture-vaporproof barriers, wrappings, interior containers, bracing, blocking, bolting, and cushioning shall be intact and capable of providing the intended protection. Preproduction testing shall be conducted under the supervision of the procuring activity at the Contractor's plant or at a laboratory, the selection of which shall be mutually agreeable to the Contractor or Procuring activity. A test report of the preproduction tests shall be prepared and submitted to the procuring activity.

4.3.1 A preproduction test will not be required when:

(a) Level C protection is specified.

(b) Detailed packaging instructions are furnished by the procuring activity.

(c) The procuring activity waives preproduction testing after establishing that prior successful preproduction tests were conducted on a like item similar in all respects to the new item and its packaging details .

(d) When for other reasons waived by the Procuring Activity.

4.4 Test methods.

4.4.1 *Examination of product.* Each pack shall be visually examined to determine compliance with the applicable requirements in Section 3.

4.4.2 *Cleaning, preservation and unit protection process tests.* Tests of cleaning, preservation and unit protection processes shall be performed in accordance with the applicable process specification or Specification MIL-P-116.

4.4.3 *Rough handling tests.* The rough handling tests of this specification shall apply in lieu of those of MIL-P-116.

4.4.3.1 *General.* If the container is of the cylindrical type, the top and bottom of the

cylindrical container shall be marked so that the circle of the top and bottom is quartered, the test shall be applied to each of the quartered sections. When applicable, use each of the quartered sections as an edge of the container to perform the required tests.

4.4.3.1.1 *Free-fall drop tests.* The pack of the applicable gross weights and dimensions specified in Table V shall be dropped cornerwise onto a hard, level, concrete floor or equal surface on each of its eight corners, falling freely through the vertical distances specified in Table V for Level A and Level B packs: Prior to each drop, the pack shall be suspended with its center of gravity vertically above the striking corner.

4.4.3.1.2 *Edgewise-drop tests.* The pack of the applicable gross weight specified in Table V shall be tested as follows: One end of the base of the pack shall be supported on a sill 5 to 6 inches in height. The opposite end shall be raised and allowed to fall freely to a hard level concrete floor or equal surface from the height of drop specified in Table V. This test shall be applied once to each end of the pack. If the size of the pack and the location of the center of gravity are such that this drop cannot be made from the prescribed height, the greatest attainable height shall be substituted. Height of drop specified in Table V apply to Levels A and B packs.

4.4.3.1.3 *Cornerwise-drop test.* The pack having the applicable gross weight specified in Table V shall be tested as follows: One corner of the base of the pack shall be supported on a block approximately 5 inches in height. A block nominally 12 inches in height shall be placed under the other corner of the same end. The opposite end of the pack shall be raised and allowed to fall freely to a hard level concrete floor or equal surface from the heights prescribed in Table V for Level A and Level B packs. This test shall be applied once to each of two diagonally opposite corners of the base. If the size of the pack and the location of the center of gravity are such that this drop can not be made from the prescribed height, the greatest attainable height shall be substituted. When the proportions of width and height of the pack are such to cause instability in the cornerwise drop test, edgewide drops shall be substituted for cornerwise drops. In such cases two edgewise drops on each end shall be conducted.

TABLE V. Height of drops for free-fall drop, edgewise-drop and cornerwise drop tests[1]

Gross Weight not exceeding	Dimensions on any edge or diameter not exceeding	Free-Fall Drop Test (Height of Drop)		Edgewise-Drop Test (Height of Drop)		Cornerwise-Drop Test (Height of Drop)	
		Level A	Level B	Level A	Level B	Level A	Level B
Pounds	*Inches*	*Inches*	*Inches*	*Inches*	*Inches*	*Inches*	*Inches*
50	36	30	22				
100	48	21	16				
150	60	18	14				
200	60	16	12				
600	72			36	27	36	27
3000	No limit			24	18	24	18
No limit	No limit			12	9	12	9

[1] Height of drops used shall be those which satisfy both gross weight and dimensions. For example, a container weighing between 50 and 100 pounds, having a diameter between 48 and 60 inches (or a maximum edge dimension between 48 and 60 inches) shall be free fall dropped 18 inches for level A and 14 inches for level B.

4.4.3.1.4 *Impact tests.* The pack having a gross weight exceeding 200 pounds or any dimension more than 60 inches, closed as for shipment, shall be subjected to one of the

following impact tests. The test shall be applied once to each side and end that has dimensions of less than 9.5 feet.

4.4.3.1.4.1 *Pendulum-impact test.* The pack shall be suspended from a height at least 16 feet above the floor by 4 or more ropes, chains or cables; shall be pulled back so that the center of gravity has been raised 9 inches, and then shall be released and permitted to swing freely into a barrier. The barrier shall be a flat rigid wood, concrete or masonry wall or other equally unyielding flat obstacle that is oriented perpendicular to the line of swing. The height of drop shall be the same for level A and level B packs.

4.4.3.1.4.2 *Incline-impact (conbur) test.* The pack shall be made to strike a rigid flat surface a velocity of 7 feet per second. The procedure shall conform to ASTM Standard Method D880, "The Incline-Impact Test for Shipping Containers" suitably modified to accommodate the pack. The velocity shall be the same for level A and level B packs.

4.5 **Cause for rejection.** At the conclusion of the tests, the contents and the interior packaging such as bracing, blocking, bolting, cushioning, and interior containers shall show no injury that would affect their utility. There shall be no evidence of a substantial amount of shifting within the shipping container which would create conditions likely to cause such damage during shipment. Waterproof papers, moisture-vaporproof barriers, wrappings, and shipping containers shall be intact and capable of providing the intended protection. The integrity of sealed barrier or containers which provide the preservation shall be determined in accordance with the quick-leak test or vacuum retention test of Specification MIL-P-116 as specified therein.

5. PREPARATION FOR DELIVERY

5.1 **Not applicable.**

6. NOTES

6.1 **Intended use.** It is intended that this specification be used for reference in Section 5 of commodity specifications or direct reference in contracts or orders, or to develop packaging data forms in accordance with such instructions as ANA Bulletin 302. When referenced in section 5 of commodity specifications or contracts or orders, this specification will replace the preparation of many lengthy and repetitious packaging descriptions or requirements heretofore considered necessary. In the development of packaging data forms, this specification is considered to be of immeasurable value to the contractors as a guide in arriving at satisfactory military requirements.

6.1.1 Example of use. An example of how this specification may be referenced in Section 5 of aeronautical equipment specifications is as follows:

> Preparation for Delivery
> (Item Name) shall be prepared for delivery in accordance with Specification MIL-P-7936, unit and intermediate packaging to be Level A and exterior shipping containers Level B. Preservation shall be Method IId of MIL-P-116.

6.2 **Ordering data.** Procurement documents referencing this specification should specify any special preservation, packaging, packing or marking instruction not covered herein, together with the following, as applicable:

(a) Whether spare major components are to be packed in reusable containers (3.1.1).

(b) Whether drawings and/or photographs shall be submitted (3.1.1).

(c) Whether seals are required in reusable metal containers.

(d) Whether single strip of tape on fiberboard containers should be terminated under label.

(e) Level of preservation and packaging (3.3).

(f) Applicable preservative of MIL-P-116 (3.3.1.2).

(g) Unit quantities (3.3.1.3)

(h) When Level B packaging is required, describe details (3.3.2).

(i) Level of Packing (3.4).

(j) Precautionary markings, etc. (3.5).

(k) Whether rough handling tests be performed on unit, intermediate or exterior container (3.8 and 3.8.1). Sampling procedures are to be supplied if tests on exterior containers are required.

(l) Whether contractor should prepare a preservation and packaging list (3.10).

(m) Number of pilot packs required for preproduction tests (4.3).

(n) Whether preproduction tests are required (4.3.1).

6.3 Types of load. In the utilization of containers required by this specification, care should be exercised to use a box designed for the type of load to be carried. Type 2 load should not be packed in a box designed to carry Type 1 load, and Type 3 load should not be packed in a box designed to carry either a Type 1 or 2 load. For Types 1 and 2 loads, the inside dimensions of containers should be sufficiently exact so that the contents fit snugly into the box when packed and give support to the faces of the box. If contents do not fit the box snugly and permit shifting in the box, a Type 3 load results and a box meeting the requirements for Type 3 load should be used. For Type 3 loads, other than bulk loads, the contents should be firmly bolted, blocked, braced, or otherwise anchored to the frame of the box in such manner that shifting of contents will not occur during handling of shipment.

Custodians:
Army—Transportation Corps
Navy—Bureau of Aeronautics
Air Force

Other interests:
Army, Sig.
Navy—MC

Preparing activity:
Navy—Bureau of Aeronautics