MIL-E-17555H
15 November 1984
SUPERSEDING
MIL-E-17555G
3 July 1968
(See 6.7)

MILITARY SPECIFICATION

ELECTRONIC AND ELECTRICAL EQUIPMENT, ACCESSORIES, AND PROVISIONED ITEMS (REPAIR PARTS): PACKAGING OF

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

1. SCOPE

1.1 Scope. This specification covers the packaging (preservation, packing and marking) requirements for electronic equipment, accessories, auxiliary equipment, miscellaneous electrical equipment and provisioned items (repair parts) (see 6.1).

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards and handbooks. Unless otherwise specified, the following specifications, standards and handbooks of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation form a part of this specifications to the extent specified herein.

SPECIFICATIONS

FEDERAL

L-P-378 - Plastic Sheet and Strip, Thin Gauge, Polyolefin.
O-S-801 - Sulfuric Acid, Electrolyte; for Storage Batteries.
TT-P-664 - Primer Coating, Synthetic, Rust-Inhibiting Lacquer Resisting.
UU-P-268 - Paper, Kraft, Wrapping.
PPP-B-566 - Boxes, Folding, Paperboard.
PPP-B-576 - Boxes, Wood, Cleated, Veneer, Paper Overlaid.
PPP-B-585 - Boxes, Wood, Wirebound.
PPP-B-587 - Boxes, Wood, Wirebound Pallet Type.

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

NO DELIVERABLE DATA REQUIRED BY THIS DOCUMENT

AREA PACK

PPP-B-591 - Boxes, Shipping, Fiberboard, Wood-Cleated.
PPP-B-601 - Boxes, Wood, Cleated-Plywood.
PPP-B-621 - Boxes, Wood, Nailed and Lock-Corner.
PPP-B-636 - Boxes, Shipping, Fiberboard.
PPP-B-640 - Boxes, Fiberboard, Corrugated, Triple-Wall.
PPP-B-665 - Boxes: Paperboard, Metal Edged and Components.
PPP-B-676 - Boxes, Setup.
PPP-B-1055 - Barrier Material, Waterproofed, Flexible.
PPP-B-1672 - Boxes, Shipping, Reusable with Cushioning.
PPP-C-96 - Can, Metal, 28 Gauge and Lighter.
PPP-C-795 - Cushioning Material, Flexible, Cellular, Plastic Film for Packaging Applications.
PPP-C-843 - Cushioning Material, Cellulosic.
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, Unicellular Polyethylene Foam, Flexible.
PPP-C-1797 - Cushioning Material, Resilient, Low Density, Unicellular, Polypropylene Foam.
PPP-C-1842 - Cushioning Material, Plastic, Open Cell (For Packaging Applications).
PPP-F-320 - Fiberboard; Corrugated and Solid, Sheet Stock (Container Grade), and Cut Shapes.
PPP-H-1581 - Hardware (Fasteners and Related Items), Packaging of.
PPP-P-40 - Packaging and Packing of Hand Tools.
PPP-P-291 - Paperboard, Wrapping and Cushioning.
PPP-T-97 - Tape Packaging/Industrial Filament Reinforced.

MILITARY

MIL-E-75 - Electron Tubes, Packaging of.
MIL-C-104 - Crates, Wood; Lumber and Plywood Sheathed, Nailed and Bolted.
MIL-P-116 - Preservation, Methods of.
MIL-B-117 - Bags, Sleeves and Tubing - Interior Packaging.
MIL-B-131 - Barrier Materials, Watervaporproof, Flexible, Heat-Sealable.
MIL-R-196 - Repair Parts, Accessories, and Kits, Mechanical; Packaging of.
MIL-B-197 - Bearings, Anti-Friction; Associated Parts and Sub-Assemblies; Preparation for Delivery of.
MIL-B-208 - Battery, Storage, Lead Acid, Automotive and Navy Portable (Except Aircraft), Packaging and Packing of.
MIL-B-233 - Boxes, Repair Parts, Storage.
MIL-P-775 - Packaging of Hose, Hose Assemblies; Rubber, Plastic, Fabric, or Metal (Including Tubing); and Fittings, Nozzles, and Strainers.
MIL-B-3106 - Board, Composition, Water-Resistant, Solid (For Filler or Cushioning Pads).

MIL-C-3184 - Packaging of Machinery: Deck and Vehicle Mounted with Associated Equipment and Repair Parts.
MIL-F-3222 - Floodlights and Lanterns, Packaging of.
MIL-D-3464 - Desiccants, Activated, Bagged, Packaging Use and Static Dehumidification.
MIL-S-3644 - Shaft Assembly, Flexible.
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-S-4473 - Shielding of Magnetron Tubes and Magnets for Air Shipment.
MIL-P-4861 - Packing, Preformed, Rubber, Packing; Packaging of.
MIL-R-5001 - Rubber Cellular Sheet, Molded and Hand Built Shapes; Latex Foam.
MIL-C-5501 - Caps and Plugs, Protective, Dust and Moisture Seal.
MIL-C-5584 - Containers, Shipping and Storage, Metal Reusable.
MIL-D-6054 - Drum, Metal-Shipping and Storage.
MIL-D-6055 - Drums, Metal, Reusable, Shipping and Storage (Cap. from 88 to 510 Cubic Inches).
MIL-R-6130 - Rubber, Cellular, Chemically Blown.
MIL-I-8574 - Inhibitors, Corrosion, Volatile, Utilization of.
MIL-C-9897 - Crates, Slotted Angle, Steel or Aluminum, For Lightweight Airframe Components and Bulky Item (For Maximum Loads of 3000 Pounds).
MIL-C-9959 - Container, Shipping and Storage (Flexible, Reusable, Water-Vaporproof).
MIL-C-11133 - Crates, Shipping, Wood, Open, Wire Bound.
MIL-S-12134 - Synchros, Resolvers, and Servo Motors; Packaging of.
MIL-B-15237 - Bathythermograph, Surface Vessel.
MIL-E-16298 - Electric Machines Having Rotating Parts and Associated Repair Parts, Packaging of.
MIL-O-16898 - Optical Elements; Packaging of.
MIL-R-17207 - Repair Parts for Time Measuring Instruments: Packaging of.
MIL-C-17435 - Cushioning Material, Fibrous Glass.
MIL-S-19491 - Semiconductor Devices, Packaging of.
MIL-P-19644 - Plastic Molding Material (Polystyrene Foam, Expanded Bead).
MIL-T-19646 - Thermometers, Remote Reading, Self-Indicating Dial, Gas Actuated.
MIL-R-20092 - Rubber Sheets and Assembled and Molded Shapes, Cellular, Synthetic, Open Cell (Foamed Latex).
MIL-B-22019 - Barrier Materials, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated.
MIL-B-22020 - Bags, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated.
MIL-T-22085 - Tapes, Adhesive, Preservation and Sealing.
MIL-B-22191 - Barrier Materials, Transparent, Flexible, Heat Sealable.
MIL-A-25175 - Air Transport, Nontactical, Packing for.

MIL-B-26195 - Boxes, Wood-Cleated, Skidded, Load-Bearing Base.
MIL-P-26514 - Polyurethane Foam, Rigid or Flexible, for Packaging.
MIL-I-26860 - Indicator, Humidity, Plug, Color Change.
MIL-C-26861 - Cushioning Material, Resilient Type, General.
MIL-S-28786 - Switches, Preparation for Delivery of.
MIL-C-39028 - Capacitors, Packaging of.
MIL-R-39032 - Resistors, Packaging of.
MIL-C-52950 - Crates, Wood, Open and Covered.
MIL-C-55110 - Printed-Wiring Boards.
MIL-C-55330 - Connectors, Electrical and Fiber Optics, Packaging of.
MIL-C-55442 - Cable Assemblies and Cord Assemblies, Packaging of.
MIL-S-55507 - Shelter, Electrical Equipment (With or Without Equipment), Packaging of.
MIL-B-55521 - Batteries, Nonrechargeable, Packaging of.
MIL-M-55565 - Microcircuits, Preparation for Delivery of.
MIL-F-81334 - Foam, Plastic, Flexible, Open Cell Polyester Type, Polyurethane.
MIL-G-81559 - Gyroscope Assemblies; Altitude and Directional Reference Instruments for Aircraft; Preservation, Packaging and Packing.
MIL-B-81705 - Barrier Materials, Flexible, Electrostatic-Free, Heat Sealable.
MIL-P-81997 - Pouches, Cushioned, Flexible, Electrostatic-Free, Reclosable, Transparent.
MIL-F-87090 - Foam, Combustion Retardant, For Cushioning Supply Items Aboard Navy Ships.

STANDARDS

FEDERAL

FED-STD-313 - Material Safety Data Sheets, Preparation and Submission of.

MILITARY

MIL-STD-129 - Marking for Shipment and Storage.
MIL-STD-147 - Palletized Unit Loads.
MIL-STD-163 - Steel Mill Products, Preparation for Shipment and Storage.
MIL-STD-281 - Automobiles, Trucks, Truck Tractors, Trailers and Trailer Dollies; Preservation and Packaging of.
MIL-STD-648 - Design Criteria for Specialized Shipping Containers.
MIL-STD-758 - Packaging Procedures for Submarine Repair Parts.
MIL-STD-794 - Parts and Equipment, Procedures for Packaging of.
MIL-STD-1186 - Cushioning, Anchoring, Bracing, Blocking, and Waterproofing; with Appropriate Test Methods.
MIL-STD-1367 - Packaging, Handling, Storage, and Transportability Program Requirements (For Systems and Equipments).
DOD-STD-1686 - Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices).

MS20003 - Indicator, Humidity, Card, Three Spot, Impregnated Areas (Cobaltous Chloride).

MS90363 - Box, Fiberboard, With Cushioning for Special, Minimum Cube Storage and Limited Reuse Applications.

HANDBOOKS

MILITARY

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

2.1.2 Other Government documents and publications. The following other Government documents, and publications form a part of this specification to the extent specified herein.

U.S. POSTAL SERVICE, TARIFF ORDER SECTION
Postal Service Manual

(Application for copies should be addressed to the U.S. Postal Service, Office of Information Requirements, Washington, DC 20260.)

DEPARTMENT OF TRANSPORTATION
Code of Federal Regulations, Title 49

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

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

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DoD adopted shall be the issue listed in the current DoDISS and the supplement thereto, if applicable.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

C83.66 - Preparation for Delivery of Electrical and Electronic Components.

MH15.1 - Glossary of Packaging Terms.

(Application for copies should be addressed to the American National Standards Institute, 1430 Broadway, New York, NY 10018.)

ASTM

D 996 - Packaging and Distribution Environments, Definitions of Terms Relating to.

D3951 - Standard Practice for Commercial Packaging. (DoD adopted)

(Application for copies should be addressed to ASTM, 1916 Race Street, Philadelphia, PA 19103.)

(Industry association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

3. REQUIREMENTS

3.1 Definitions or explanation of packaging terms. Definitions or explanation of packaging terms applicable to this specification shall be as stated in the applicable referenced specification, 6.3, and the appendix. For definitions or explanation of packaging terms not specified therein, ANSI MH15.1 and ASTM D 996 shall apply.

3.2 Order of precedence. When an equipment or item is acquired in conformance with a commodity specification, having detailed packaging or preparation for delivery requirements which differ from this specification, the packaging or preparation for delivery specified in the commodity specification shall apply.

3.3 Materials. Packaging materials shall be as specified herein.

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

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

3.3.2.1 Certification of new materials. If the contractor desires to use materials or procedures other than those specified herein, he shall furnish to the contracting activity documented evidence in the form of a certificate of compliance (see 6.2.2), certified by a testing laboratory satisfactory to the contracting activity, that the material or procedure is equal to or exceeds the requirements specified herein. If, after a review of the material or procedure and the related certified documented evidence or the witnessing of the stipulated tests, it is the opinion of the contracting activity that the material or procedure meets or exceeds the requirements specified herein, authorization for use will be granted.

3.3.3 Asbestos. (See 6.5).

3.3.3.1 Packaging materials. Asbestos or material and items containing asbestos shall not be used in the packaging of electronic, electrical equipment, accessories and provisioned items.

3.3.3.2 Packaged items. All asbestos and separately packaged components containing asbestos, that is predominately distributed throughout the item, shall be packaged in sealed, dust and siftproof packages. Flexible packages shall be heat-sealed. All packages shall be marked as specified in 3.12.

3.3.3.3 Talc/talcum. When used in the packaging process, in dusting for example, talc/talcum shall be asbestos free (see 6.5). A certificate of compliance (see 6.2.2) shall be required stating the dusting materials are asbestos free.

3.3.4 Cushioning and wrapping materials (see 3.9.1.1.1 and 3.10.2.4). The use of excelsior, newspaper, shredded paper (all types, including wax paper) and similar hydroscopic or nonneutral materials and all types of loose-fill materials, for applications such as cushioning, fill, stuffing, and dunnage is prohibited. Materials selected for cushioning and wrapping shall have properties (characteristics) resistant to fire.

3.4 First article. When specified (see 6.2.1), a sample shall be subjected to first article inspection (see 4.3 and 6.4).

3.4.1 Dummy or simulated load. When specified (see 6.2.1), a dummy or simulated load may be used for the rough handling tests (see 4.3.2). When a dummy or simulated load is substituted for the actual equipment or item in performing the rough handling tests, instrumentation of the pack is required for assurance that the acceleration of the packaged item during the tests is less than the fragility rating of the part or item. The details of the instrumentation including location shall be included in the test report (see 3.5.1).

3.5 Technical data. Complete descriptive packaging details on drawings, test(s) results, and packaging and transportation data requirements are not required when such were previously submitted and accepted by the contracting activity.

3.5.1 Data and drawings. When specified (see 6.2.1), the contractor shall prepare complete descriptive packaging details on drawings of the sample pack in accordance with the data ordering document (see 6.2.2).

3.5.1.1 Drawings. Information on the drawing(s) shall include but not be limited to the following:

(a) Method of preservation and applicable specification.
(b) Level of preservation and packing.
(c) Weight; net, tare and gross.
(d) Dimensions; interior and overall exterior of the container.
(e) Dimensional location of shock mounts, anchoring, blocking and bracing.
(f) Bill of material listing specification(s), material, type, class, grade or other data necessary for identification.
(g) Assembly or disassembly instructions including special tools if required.
(h) Marking, including handling, structural markings, such as "Use no hooks", "Method II", "Center of Gravity", and so forth.

3.5.2 Packaging and transportation data. When specified (see 6.2.1), coded and in the clear preservation, packaging and transportation support data and a transportation packaging order (TPO) shall be in accordance with the data ordering document(s) included in the contract or order (see 6.2.2).

3.5.3 Packaging, handling, storage and transportability plan (PHST). When required (see 6.2.1), the system or equipment acquisition or program manager shall establish the PHST requirement. The plan, when required, shall be tailored for the applicable system or equipment acquisition in accordance with the requirements of MIL-STD-1367.

3.5.4 Material safety data sheet. For items containing a hazardous material, the contracting activity shall be provided a material safety data sheet (MSDS) at the time of contract award. The MSDS is form OSHA-20, found in and part of FED-STD-313. The MSDS shall be included with each shipment of the material covered by this specification.

3.6 Sensitive electronic items. Packaging and marking of sensitive electronic items adversely affected by electromagnetic, electrostatic, magnetic or radioactive field forces shall be in accordance with 3.11.10. Additional guidance for electrostatic discharge (ESD) sensitive items is contained in DOD-HDBK-263 and DOD-STD-1686.

3.7 Disassembly and matchmarking. System, equipment, or item disassembly shall be the minimum necessary to make accessible for cleaning, drying and preservation of machined and critical surfaces. Removal of secondary assemblies, accessories, or projecting parts which will facilitate protection of the equipment or item from damage, pilferage, and loss, or reduction of cube is permitted where such removal will not affect permanent settings or alinements, and where the removed item(s) can be readily reassembled at the installation site without the need for special tools or gages. Removed hardware (bolts, nuts, pins, screws, washers and others) shall be reinstalled in the mating parts and secured to prevent their loss. Removed items or parts other than hardware shall be packaged to the same level of protection as the basic or prime equipment.

3.7.1 Matchmarking. Removed parts or items except hardware, shall be matchmarked to facilitate reassembly. Removed parts or items shall be tagged, marked, and tags attached to each mating part or item. The tags and printing thereon shall be resistant to water, oil and fading.

3.8 New item(s). When an equipment or item is not specified in table I, a method of preservation may be selected on the basis of appendix A to this specification.

3.9 Degree of protection. (See 6.3.1.)

3.9.1 Preservation. Preservation (unit protection) shall be level A, B, C or commercial as specified (see 6.2.1).

3.9.1.1 Level A. Unless otherwise specified herein, cleaning, drying, preservative application, and methods of preservation shall be in accordance with MIL-P-116 and table I herein. Requirements in table I are assigned by category; methods and sub-methods are assigned on the basis of the type of unit protection most commonly required for a specific category. Unless otherwise specified herein, the selection of the submethod under a particular method of unit protection is at the option of the contractor.

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts).

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Absorber, r.f.....	IC	None	----------
Actuator, electro servo:			
mechanical.....	IC	P-2, P-18, or P-19	See 3.9.1.1.3.1
hydraulic.....	IC	P-15	----------
Actuator, switch.....	IC	None	----------
Adapter:			
battery terminal.....	III	None	----------
cable to connector.....	IC	None	----------
coaxial to waveguide.....	IC	None	----------
crystal socket.....	IC	None	----------
lampbase (porcelain body)....	III	None	----------
microphone.....	IC	None	----------
socket.....	IC	None	----------
switch actuator.....	III	None	----------
test.....	IC	None	----------
waveguide.....	IC	None	----------
Adjuster, space gap.....	IC	None	----------
Alarms, gyro.....	II	None	----------
Alarm system.....	II	None	See individual item requirements

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Altimeter.....	II	None	----------
Ammeter, a.c. and d.c.....	II	None	See note 1
Amplidyne.....	II	None	----------
Amplifier.....	II	None	----------
Amplitron.....	---	---	Use MIL-E-75 and see 3.11.2
Analyzer.....	II	None	----------
Anode, corrosion preventive.....	III	None	----------
Antenna:			
dipole.....	III	None	----------
element.....	IC	None	----------
horn.....	IC	None	----------
mast.....	III	None	----------
pedestal.....	II	None	See pedestal
reflector.....	III	None	----------
section			
noncritical.....	III	None	----------
critical.....	II	None	----------
Arm:			
assembly, contact (brush)....	IC	None	----------
breaker.....	IC	None	----------
mechanical.....	III	None	----------
reproducer, sound.....	IC	None	----------
Armature, general.....	---	---	Use MIL-E-16298
hermetically sealed.....	III	None	----------
relay or circuit breaker.....	IC	None	----------
Arrestor, lightning.....	IC	None	----------
Assemblies; electrical:			
potted, or encapsulated.....	IC	None	----------
open.....	II	None	----------
Attenuator:			
fixed.....	IC	None	----------
variable.....	IC	None	----------
Audible signals.....	---	---	See individual items
Ballast:			
lamp.....	IC	None	----------
electron tube.....	III	None	----------
Bar, shorting.....	IC	None	----------
Barometer.....	II	None	----------

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Base:			
antenna (noncritical).....	III	None	----------
shield (tube).....	III	None	----------
Bathythermograph	---		Use MIL-B-15237
Battery:			
dry.....	---	---	Use MIL-B-55521 and see 3.11.3
storage.....	---	---	Use MIL-B-208 and see 3.11.3
storage parts, elements and retainers.....	III	None	----------
water-activated.....	IA-5	None	See 3.11.3
Bearing:			
antifriction ball or roller.....	---	---	Use MIL-B-197
friction (sleeve type):			
ferrous:			
with contact preservative.....	I or IC	P-2, P-7, P-9 P-10, or P-18	See 3.9.1.1.3.1
contact preservative prohibited.....	II	None	----------
nonferrous.....	IC	P-2	----------
impregnated ferrous.....	IC	None	----------
impregnated nonferrous.....	III	None	----------
jewel.....	IC	---	----------
Bell:			
electrical.....	II	None	----------
housing.....	III	None	----------
Bellows assembly, metal.....	IC	None	----------
Belt:			
leather fabric-inserted.....	IC	None	----------
rubber.....	III	None	See note 2
Bezel.....	III	None	----------
Binnacle.....	III	None	----------
Blades, electrical switch.....	III	None	----------
Block:			
bearing.....	I	P-2, P-18	See 3.9.1.1.3.1
fuse.....	IC	None	----------
Blower, motor driven.....	---	---	Use MIL-E-16298

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Board:	---	---	See 3.6
plotting and status.....	IC	None	----------
terminal (empty).....	III	None	----------
board, terminal complete assembly:	---	---	----------
corrosion proofed.....	IC	None	----------
noncorrosion proofed.....	II	None	----------
Boot, signal light (rubber).....	III	None	See note 2
Box:			
battery and similar items (empty).....	III	None	----------
jack, complete.....	IC	None	----------
repeater with rheostat.....	II	None	----------
Bracket, steel (painted).....	III	None	----------
Brush assembly, carbon.....	III, IC	None	See note 3
Buffer.....	IC	None	----------
Bumper, rubber.....	III	None	See note 2
Buoy-radio transmitting test set.....	II	None	----------
Burner, carbon dioxide.....	---	---	See note 14
Bus bar.....	III	None	----------
Bushing:			
brass.....	III	None	----------
insulator (mineral filled thermosetting plastic or porcelain).....	III	None	See note 4
steel:			
critical.....	IC	P-2, P-18	See 3.9.1.1.3.1
noncritical.....	I	P-1, P-2, P-18, or P-19	See 3.9.1.1.3.1
Button push.....	III	None	----------
Buzzer.....	IC	None	----------
Cabinet:			
complete.....	II	None	----------
metal, painted.....	III	None	----------
Cable, cord or wire assemblies.....	---	---	Use MIL-C-55442
Cam:			
metallic.....	I or IC	P-9, P-10, or P-18	See 3.9.1.1.3.1
nonmetallic.....	III	None	----------

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Cap:			
electrical (brush-holder fuseholder, tubeshield) switch distributor.....	IC	None	----------
protective, dust and moisture seal.....	IC	None	----------
Capacitors.....	---	---	Use MIL-C-39028
Case, tool, leather or canvas (less tools).....	IC	None	----------
Catch, door (panel).....	III	None	----------
Cathodic protection, impressed current systems....	---	---	See individual parts
Cavity, tuned.....	II	None	----------
Chain roller.....	I	P-1, P-2, P-18 or P-19	See 3.9.1.1.3.1
Chair, operator's.....	III	None	----------
Charger, battery.....	II	None	----------
Chart:			
calibration.....	IC	None	----------
paper.....	IC	None	----------
Chassis (stripped or enclosed).....	III	None	----------
Choke, r.f., filter, and similar items.....	IC	None	----------
Circuit breaker, and similar items.....	IC	None	----------
Clamp:			
electrical (ferrous) plated.....	IC	None	----------
electrical (nonferrous).....	III	None	----------
Cleaner, recorder head.....	III	None	----------
Clip assembly, electrical.....	IC	None	----------
Clip:			
grid, fuse and similar items.....	III	None	----------
(steel, unplated).....	I	P-6, P-18	See 3.9.1.1.3.1
Clock, time.....	II	None	----------
Clutch:			
subassembly (mechanical)	III	None	----------
friction.....	IC	None	----------

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Coil:			
a.f., r.f. and i.f.....	IC	None	See note 1
air core.....	IC	None	----------
deflection tube.....	IC	None	----------
fixed.....	IC	None	----------
focusing, tube.....	IC	None	----------
form.....	III	None	----------
ignition.....	III	None	----------
iron core.....	IC	None	----------
relay and solenoid.....	IC	None	----------
resistance.....	IC	None	----------
Collar:			
ferrous:			
noncritical.....	I	P-1, P-2, P-18 or P-19	See 3.9.1.1.3.1
critical.....	I or IC	P-2, P-18, or P-19	See 3.9.1.1.3.1
nonferrous.....	III	None	----------
Compass.....	II	None	----------
Compass stand, bearing repeater.....	II	None	----------
Computer.....	II	None	----------
Computer ballast.....	II	None	----------
Condensor.....	IC	---	See note 1
Conductor splices, electrical:			
plain.....	IC	None	----------
tinned.....	III	None	----------
silver plated.....	IC	None	----------
Conduit fittings.....	III	None	See note 5
Conduit, rigid or flexible....	---	---	Use MIL-STD-163
Cone, loudspeaker (with voice coil).....	IC	None	----------
Connector:			See MIL-C-55330
assembly.....	III	None	----------
miniature (humidity and corrosion-resistant).....	III	None	----------
plug.....	IC	None	----------
receptacle.....	IC	None	----------
Counter, mechanical.....	IC	None	----------
Console, steering and ship....	II	None	----------
Contact, electrical.....	IC	None	See MIL-C-55330
Contact set, distributor, relay and circuit breaker.....	IC	None	----------

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Contactor, open.....	II	None	----------
Controllers.....	II	None	----------
Control, navigation light.....	II	None	----------
Control unit.....	II	None	See note 1
Converter:			
signal data.....	II	None	----------
rotary.....	---	---	Use MIL-E-16298
Cord, handset, headset, microphone, and similar items with processed terminations.....	III	None	----------
Core, adj. tuning.....	IC	None	----------
Counterpoise, antenna.....	III	None	----------
Coupler:			
directional.....	II	None	----------
electron tube.....	IC	None	----------
rotary transmission line.....	II	None	----------
Coupling:			
electrical.....	IC	None	----------
flexible drive.....			
ferrous.....	I or IC	P-10 or P-18	See 3.9.1.1.3.1
nonferrous.....	IC	None	----------
shaft, flexible or rigid.....	IC	None	----------
waveguide.....	IC	None	----------
cover (painted), metal.....	III	None	----------
Crystal:			
diodes.....	---	---	Use MIL-S-19491
rectifiers.....	---	---	Use MIL-S-19491
units (other than hermetically sealed).....	IC	None	----------
units, quartz (hermetically sealed).....	III	None	---------
Cup:			
oil.....	I	P-2, P-7 or P-18	See 3.9.1.1.3.1
leather.....	IC	None	----------
Delay, cell.....	III	None	----------
Delay line.....	II	None	See note 1
Demagnetizer.....	IC	None	----------
Demodulator.....	IC	None	----------
Detecting equipment.....	II	None	----------
Detent switch.....	IC	None	----------
Dial:			
control or scale.....	IC	None	----------
glass.....	III	None	----------
telephone.....	IC	None	----------

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Diaphragm:			
ferrous.....	I or IC	P-2, P-18 or P-19	See 3.9.1.1.3.1 and note 6
nonferrous.....	IC	None	----------
nonmetallic.....	IC	None	----------
Diffusor, light.....	III	None	----------
Dimmer (resistor, variable):			
watertight enclosure.....	III	None	----------
other than watertight.....	IC	None	----------
Diode.....	---	---	Use MIL-S-19491
Directional coupler.....	II	None	----------
Directional finder.....	II	None	----------
Disk:			
flexible coupling (leather)..	IC	None	----------
ferrous.....	I or IC	P-7, P-9, P-10 or P-18	See 3.9.1.1.3.1
nonferrous.....	IC	None	----------
recording.....	III	None	----------
stroboscope.....	IC	None	----------
Display, console.....	II	----	----------
Dome, sonar.....	III	None	See note 14
Dosimeter, radiac			
hermetically sealed.....	III	None	----------
Drive assembly.....	IC	None	----------
Driver.....	II	None	----------
Drum, magnetic.....	II	None	----------
Dummy, load.....	IC	None	----------
Dummy resistor.....	IC	None	----------
Duplexer.....	IC	None	----------
Dynamotors.....	---	----	Use MIL-E-16298
Earphone.....	III	None	----------
Elbow waveguide.....	III	None	----------
Electric machines having rotating parts (motor, generator, motor-generators, dynamotors, rotary converters, rotary inverters, rotary frequency chargers, electrical engine starters and similar rotating equipment and associated repair parts).....	---	---	Use MIL-E-16298
Electrolyte.....	---	---	Use O-S-801

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Electrode, magneto.....	IC	None	----------
Electrode, spark gap.....	IC	None	----------
Electromagnet.....	IC	None	----------
Element:			
heating.....	IC	None	See note 1
thermal.....	III	None	----------
transducer.....	III	None	----------
Enclosure, plastic, non-ferrous or painted steel.....	---	----	See junction box
Enclosure assembly, with miscellaneous switches, plugs, wiring, circuits.....	---	----	See junction box assembly
Equalizer, line.....	IC	None	----------
Exciter.....	IC	None	----------
Extension light hanger:			
finished.....	III	None	----------
unfinished.....	IC	None	----------
Extractor, card.....	III	None	----------
Extractor, electron tube.....	III	None	----------
Fan, electric.....	---	----	Use MIL-E-16298
Filter:			
air conditioning.....	III	None	----------
a.c. power.....	IC	None	See note 1
bank suppression.....	II	None	See note 1
keying.....	II	None	----------
light.....	III	None	----------
mechanical.....	III	None	----------
Fitting:			
conduit (alum).....	III	None	----------
transmission line.....	IC	None	----------
Fixture, lighting.....	IC	None	----------
Flanges, waveguide.....	IC	None	----------
Flashlights.....	IC	None	See 3.11.3
Floodlights.....	---	----	Use MIL-F-3222
Flowmeter, fluid electro-magnetic type:			
sensor.....	III or II	----	See note 7
totalizer.....	IC or II	None	----------
transmission indicator.....	IC or II	None	----------
Frame, antenna.....	III	None	----------
Frequency chargers, rotary....	---	----	Use MIL-E-16298
Fuse, cartridge, plug.....	III	None	----------
Fuseholder.....	IC	None	----------

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Fuse link.....	III	None	----------
Fuse puller.....	III	None	----------
Fuse wire.....	IC	None	----------
Gage, resistance, capacitor, inductor.....	II	None	----------
Galvanometer.....	II	None	----------
Gasket:			
combination metal, and asbestos:			
ferrous.....	I or IC	P-18	See 3.3.3, 3.9.1.1.3.1 and note 6
nonferrous.....	III	None	See 3.3.3 and note 6
cork, fiber, felt, leather and paper.....	IC	None	See note 6
metallic:			
ferrous.....	I or IC	P-2, P-7 or P-18	See 3.9.1.1.3.1 and note 6
nonferrous.....	III	None	See note 6
teflon, rubber, or neoprene..	III	None	See notes 2 and 6 and 3.3.3
Gear box, complete assembly:	---	----	See note 8
ferrous.....	I or IC	P-1, P-2, P-18, P-19	See 3.9.1.1.3.1
nonferrous.....	I	P-1, P-2 or P-19	----------
Gear case:			
ferrous.....	I or IC	P-1, P-2, P-18, P-19	See 3.9.1.1.3.1 and note 8
nonferrous.....	III	None	----------
Gear:			
Metal, precision and semi-precision up to and including 25 pounds (lb):			
ferrous.....	I or IC	P-2 or P-18	See note 9 and 3.9.1.1.3.1
nonferrous.....	I	P-2	See note 9
Metal, precision and semi-precision (over 25 lb):			
ferrous.....	I	P-1, P-2, P-18 or P-19	See note 9 and 3.9.1.1.3.1
nonferrous.....	I	P-1, P-2 or P-19	See note 9

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Metal, nonprecision:			
ferrous.....	I	P-2, P-18 or P-19	See note 9 and 3.9.1.1.3.1
nonferrous.....	III	None	See note 9
nonmetallic.....	III	None	See note 9
Generator:			
oxygen.....	II	None	See note 10
signal.....	II	None	----------
Globe, light.....	III	None	----------
Governor, electric, load sensing.....	II	None	----------
Graphite.....	III	None	----------
Grease (in tube or can).....	III	None	----------
Grommet, rubber.....	III	None	See note 2
Guard, lamp.....	III	None	----------
Guide, lever.....	III	None	----------
Guy.....	IC	None	----------
Gyrocompass.....	II	None	See note 11
Gyroscope assembly, (aircraft).....	---	----	Use MIL-G-81559
Halyard, antenna.....	IC	None	----------
Handle:			
brass.....	III	None	----------
leather or fabric.....	IC	None	----------
Handset, telephone.....	IC	None	----------
Handwheel, control.....	III	None	----------
Hanger, lighting fixture.....	III	None	----------
Hardware:			
special (nuts, bolts, washers and similar items).....	IC	None	----------
general (nuts, bolts, washers and similar items).....	---	----	Use PPP-H-1581
Head-chest set.....	IC	None	----------
Head set.....	IC	None	----------
Head, reproducer, recorder....	IC	None	----------
Heater:			
immersion with controls.....	IC	None	----------
ventilation duct type.....	IC	None	----------
Heater element, electrical (hermetically sealed and corrosion-resistant).....	III	None	----------
Hoisting systems.....	---	----	See individual item requirements

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Holder:			
brush.....	IC	None	----------
crystal.....	III	None	----------
handset.....	IC	None	----------
photo elec cell.....	IC	None	----------
reflector (enameled).....	III	None	----------
stylus.....	IC	None	----------
Horn:			
antenna.....	II	None	----------
alarm, motor driven.....	---	----	Use MIL-E-16298
alarm, vibrator.....	IC	None	----------
Hose.....	---	----	Use MIL-P-775
Humidistat.....	II	None	See note 12
Hydrophone.....	III	None	See note 7
Indicator:			
electronic and electrical....	IC	None	----------
temp, gas actuated.....	III	----	Use MIL-I-19646
ships course.....	II	None	----------
mechanical.....	IC	None	----------
Insert.....	III	None	----------
Insulating mica.....	IC	None	----------
Insulation tape, cloth sleeving.....	IC	None	----------
Insulation sheet, silicone bonded.....	III	None	----------
Insulator.....	IC	None	----------
Insulator ceramic.....	III	None	----------
Integrated circuits.....	---	----	Use MIL-M-55565
Interphone set (including loudspeaker).....	IC	None	----------
Isolator.....	IC	None	----------
Jack assembly, telephone.....	IC	None	----------
Jack box.....	IC	None	----------
Jewel assembly.....	---	----	Use MIL-R-17207
Junction box.....	III	None	----------
Junction box assembly with parts	IC	None	----------
Keeper, magnet.....	III	None	----------
Key:			
telegraph.....	IC	None	----------
telephone.....	IC	None	----------
Keyer.....	IC	None	----------
Kits.....	---	----	See 3.9.1.1.8 and use MIL-STD-794

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Knob			
ferrous.....	IC	P-2, P-18	See 3.9.1.1.3.1
nonferrous.....	IC	P-2	----------
nonmetallic.....	III	None	----------
Lamp, incandesent, fluorescent			
pilot, indicator.....	III	None	----------
Lampholder.....	IC	None	----------
Lantern.....	---	----	Use MIL-F-3222
Lead:			
electrical.....	IC	None	----------
test set.....	IC	None	----------
Lens:			
lighting fixture.....	III	None	----------
prisms, reticles and mirrors associated with shipboard navigational and projection equipment.....	---	----	Use MIL-O-16898
Level, spirit.....	III	None	----------
Level, electrolytic.....	IC	None	----------
Light assembly:			
electrical (watertight).....	III	None	----------
electrical (watertight, drip-proof corrosion protected)..	III	None	----------
electrical (other than watertight).....	IC	None	----------
Line section RF transmission.....	II	None	----------
Loudspeaker, dynamic and magnetic.....	II	None	See note 12
Louver, light.....	III	None	----------
Lugs, electrical			
plain.....	IC	None	----------
tinned.....	III	None	----------
silver plated.....	IC	None	----------
Luminous markers.....	III	None	----------
Magnet, permanent.....	IC	None	----------
Magnetic drum.....	II	None	----------
Magneto, ignition.....	II	None	----------
Magnetometer.....	II	None	----------
Manuals, technical.....	---	----	See 3.11.9
Mast section, antenna.....	III	None	----------
Mechanical repair parts.....	---	----	Use MIL-R-196
Megaphone.....	IC	None	----------

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Megohmeter.....	II	None	----------
Memory units.....	III	None	----------
Meters:			
except hermetically sealed...	II	None	----------
hermetically sealed, ruggedized.....	III	None	----------
Microcircuit.....	---	----	Use MIL-M-55565
Microphone:			
crystal type.....	IC	None	----------
other.....	III	None	----------
Mirror, glass.....	III	None	----------
Mixer.....	IC	None	----------
Modulator, subassembly.....	II	None	----------
Monitor equipment, temperature.....	II	None	----------
Motors:.....	---	----	Use MIL-E-16298
generator.....	---	----	Use MIL-E-16298
servo.....	---	----	Use MIL-S-12134
Mounting, brushholder, bracket, capacitor, switch, power supply and similar items.....	III	None	----------
Movement, meter.....	II	None	----------
Needle, recording and reproduction.....	IC	None	----------
Network.....	II	None	----------
Odometer.....	II	None	----------
Ohmmeter.....	II	None	----------
Optical parts.....	---	----	Use MIL-O-16898
Oscillator, sub-assembly.....	II	None	----------
Oscilloscope.....	II	None	----------
Oven:			
crystal.....	II	None	----------
cooking.....	I or II	None	See 3.9.1.1.3.1 and note 22
Oxygen measuring equipment: electronic.....	II	None	See note 10
Packing-preformed (such as "O" rings).....	---	----	Use MIL-P-4861
Pads, welding (steel).....	I	P-1, P-2, P-18 or P-19	See 3.9.1.1.3.1
Panel power, control follow-up repeater.....	II	None	----------

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Paper recording (rolls or packs).....	IC	None	----------
Parts, repair/mechanical.....	---	----	Use MIL-R-196
Patch board.....	IC	None	See 3.11.10
Pedestals:			
antenna.....	II	----	----------
ferrous.....	I	P-2, P-18, or P-19	See 3.9.1.1.3.1
nonferrous.....	III	None	----------
Pen, recording.....	IC	None	----------
Pin, cotter and similar items.....	---	----	Use PPP-H-1581
Pinion.....	---	----	See Gear
Plate:			
mounting (finished, antenna mast, armature, guy magneto, electrical connector, and similar items.....	III	None	----------
identification.....	III	None	----------
Plotting equipment, dead reckoning and automatic.....	---	----	See individual item requirement
Plug:			
assembly.....	IC	None	----------
pipe:			
ferrous.....	I or IC	P-1, P-2, P-18, P-19	See 3.9.1.1.3.1
nonferrous.....	I	P-1, P-2 or P-19	See 3.9.1.1.3.1
telephone.....	IC	None	----------
Pointer, dial.....	IC	None	----------
Posts:			
binding, terminal.....	IC	None	----------
spacing (non-metallic).....	III	None	----------
Power supply.....	II	None	----------
Preamplifier.....	II	None	----------
Pressure elements.....	II	None	----------
Printed circuit boards.....	IC	None	See 3.6
Printed wiring boards.....	---	----	See 3.6 and note 21
Probe:			
assembly.....	IC	None	----------
radiac.....	IC	None	----------
r.f.....	IC	None	----------
Prod, test.....	IC	None	----------

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Projector.....	---	----	See note 12
motion picture.....	II	None	----------
opaque.....	II	None	----------
slide.....	II	None	----------
sonar.....	II	None	----------
Projector:			
guy.....	III	None	----------
telephone.....	IC	None	----------
Puller, tape, fuse, bearing...	IC	None	----------
Pulley:			
(metallic) antifriction bearing inserted.....	IC	None	See note 13
(metallic) bare:			
ferrous.....	I	TT-P-664	----------
nonferrous.....	III	None	----------
(nonmetallic) with anti-friction bearing inserted...	II	None	----------
Pyrometers, indicating.....	III	None	----------
Rack, electrical equipment....	III	None	----------
Rack transmitter, receiver (stripped).....	III	None	----------
Radiac set.....	II	None	See note 14
Radiosonde set.....	II	None	----------
Range, cooking.....	---	----	See Oven
Reactor.....	---	----	See Transformers
Receiver (radio sonar, radar).....	II	None	----------
Receiver, synchro.....	II	None	----------
Recorder-reproducer.....	II	None	See note 12
Rectifier:			
assembly (with meter).....	II	None	----------
hermetically sealed.....	III	None	----------
other than hermetically sealed.....	II	None	----------
Reel:			
antenna, cable, wire and similar items (empty).....	III	None	----------
cable with electric limit and brake switches.....	II	None	----------
recording tape or recording wire.....	III	None	----------

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Reflector:			
antenna.....	III	None	----------
light.....	III	None	----------
section, antenna.....	III	None	----------
Register (Veeder counter).....	IC	None	----------
Regulator, voltage.....	II	None	----------
Relay, armature assembly (submersible, any degree and watertight).....	---	----	See note 15
Relay, armature (nonenclosed).	II	None	----------
Relay, hermetically sealed....	III	None	----------
Repair parts, mechanical.....	---	----	Use MIL-R-196
Repeater, dial pulse, telegraph, telephone.....	II	None	----------
Resistors, all types.....	---	----	Use MIL-R-39032
Resolvers.....	---	----	Use MIL-S-12134
Retainer:			
battery.....	III	None	----------
crystal holder fuse, electron tube.....	IC	None	----------
packing.....	III	None	----------
Revolution equipment, indicating.....	III	None	----------
Rheostat.....	IC	None	----------
Ring:			
insulating.....	III	None	----------
Ringer, telephone.....	IC	None	----------
Rod, ground.....	III	None	----------
Rodmeter, underwater log.....	IC	None	See note 16
Roller, electrical switch.....	IC	None	----------
Rope assembly.....	III	None	----------
Rosettes (nonmetallic).....	III	None	----------
Rotary converter.....	---	----	Use MIL-E-16298
Rotary coupler.....	III	None	----------
Rotary switch assembly.....	---	----	Use MIL-S-28786
Rotor:			
ignition distributor.....	IC	None	----------
electrical switch.....	IC	None	----------
Rotor synchro gyro.....	II	None	----------
Salinity indicating equipment.....	II	None	----------
Scale (nonferrous).....	III	None	----------
Scanner, generator.....	II	None	----------
Scanner, transducer.....	II	None	----------
Screen, microphone.....	III	None	----------

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservation, MIL-P-116	Special remarks
Seal:			
oil (packing) (preformed)....	---	----	Use MIL-P-4861
r.f. transmission line and waveguide (includes windows).....	III	None	----------
Searchlight:			
signal.....	II	None	See note 1
motor driven.....	II	None	----------
Semiconductor devices.....	---	----	Use MIL-S-19491
Sensor.....	II	None	----------
Servos.....	---	----	Use MIL-S-12134
Sets, repair parts.....	---	----	See 3.9.1.8 and use MIL-STD-794
Shade, lamp.....	III	None	----------
Shaft:			
flexible.....	---	----	Use MIL-S-3644
rigid (ferrous).....	I	P-1, P-2, P-18 or P-19	See 3.9.1.1.3.1
Shell, electrical connector...	III	None	----------
Shelter, electrical equipment.	---	----	See 3.11.5
Shield:			
bearing:.....	---	----	----------
ferrous.....	I or IC	P-2 or P-18	See 3.9.1.1.3.1
nonferrous.....	III	None	----------
capacitor, coil connector, electron tube, light, microphone.....	III	None	----------
corona.....	IC	None	----------
Shim:.....	---	----	See note 6
ferrous.....	I or IC	P-1, P-2, P-18 or P-19	See 3.9.1.1.3.1
nonferrous.....	III	None	----------
nonmetallic.....	III	None	----------
Shockmount:			
brass.....	III	None	----------
(combination of metallic and nonmetallic).....	I	P-2, P-18 or P-19	See note 17 and 3.9.1.1.3.1
steel.....	I	P-1, P-2 or P-18, P-19	See 3.9.1.1.3.1
Shunt, instrument.....	IC	None	----------
Shutter:			
dial, loudspeaker, switchboard.....	III	None	----------
waveguide.....	IC	None	----------

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Signal generator sub-assembly.	II	None	----------
Signal, switchboard.....	II	None	----------
Simulator, electro-magnetic...	II	None	----------
Siren.....	II	None	----------
Sleeve, insulating (antenna support, panel light telephone cord, etc.).....	III	None	----------
Slide, drawer.....	III	None	----------
Socket (crystal, electron tube, coil, vibrator, lamp starter relay).....	IC	None	----------
Solenoid, electrical.....	II	None	----------
Solid state device.....	---	----	See 3.6 and individual items
Sparkgap.....	IC	None	----------
Spark plug.....	IC	None	----------
Splice, electrical conductor:			
plain.....	IC	None	----------
tinned.....	III	None	----------
silver plated.....	IC	None	----------
Splicing sleeves.....	III	None	----------
Spotlights.....	IC	None	----------
Spring:			
ferrous.....	I or IC	P-2, P-7 or P-18	See 3.9.1.1.3.1
nonferrous.....	III	None	----------
Sprocket wheel:			
ferrous.....	I	P-2, P-18 or P-19	See 3.9.1.1.3.1
nonferrous.....	III	None	----------
Stabilizer, gyro.....	II	None	----------
Stake, guy.....	I	P-1, P-2, P-18, P-19	See 3.9.1.1.3.1
Stand, microphone, loudspeaker, spotlight.....	III	None	----------
Staple, cable, wiring.....	I	P-2, P-18 or P-19	See 3.9.1.1.3.1
Starter, fluorescent, lamp....	IC	None	----------
Stator, synchro.....	II	None	----------
Stave assembly.....	III	None	----------
Stay, hinge (brass).....	III	None	----------

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Stop, armature, antenna, dial electrical switch, voltage regulator.....	III	None	----------
Straightener, tube pin.....	III	None	----------
Strap:			
carrying, mounting.....	III	None	----------
Stud.....	---	----	Use PPP-H-1581
Stuffing tube:			
ferrous.....	I	P-1, P-2, P-18, P-19	See note 18 and 3.9.1.1.3.1
nonferrous.....	III	None	See note 18
Stylus, recording, and sound producing.....	IC	None	----------
Support housing (antenna, armature, waveguide).....	I	P-1, P-2, P-18, P-19	See note 10 and 3.9.1.1.3.1
Suppressor:			
spark, electrical noise.....	II	None	----------
parasitic.....	IC	None	----------
Switchboard, complete.....	II	None	----------
Switchbox, complete.....	II	None	----------
Switchbox (painted) empty.....	III	None	----------
Switchbox (unpainted) empty...	I	P-2, P-18 or P-19	See 3.9.1.1.3.1
Switch.....	---	----	Use MIL-S-28786
Switching equipment, fire control.....	---	----	See individual item requirements
Swivel:			
(bronze).....	III	None	----------
Synchro.....	---	----	Use MIL-S-12134
Synchronizer, electrical.....	II	None	----------
Tachometers:			
electrical.....	II	None	----------
mechanical.....	IC	None	----------
Tank, pressure:.....	---	----	See note 20
ferrous.....	I or IC	P-1, P-2 or P-19	See 3.9.1.1.3.1
nonferrous.....	I	P-1, P-2 or P-19	----------
nonmetallic.....	III	None	----------
Tape, blank recording.....	IC	None	----------
Telephone.....	IC	None	----------

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Telephone systems, sound and dial.....	---	----	See individual item requirements
Terminal board:			
bare.....	III	None	----------
with equipment.....	IC	None	See 3.6
Terminal box (painted) empty..	III	None	----------
Terminals, electrical lug:			
plain.....	IC	None	----------
tinned.....	III	None	----------
silver plated.....	IC	None	----------
Test set (instrument).....	II	None	----------
Thermal indicating sub-assembly (for bathythermograph).....	IC	None	----------
Thermocouple.....	IC	None	See note 1
Thermometer.....	III	None	----------
Thermoresistor.....	IC	None	----------
Thermostat, temperature control.....	II	None	----------
Timer.....	II	None	----------
Tip, luminescent.....	IC	None	----------
Tip, phone.....	IC	None	----------
Tool kit:			
empty.....	III	None	----------
filled.....	---	----	See 3.9.1.1.8
Tools, special, and hand.....	---	----	Use PPP-P-40
Tracer, automatic plotter.....	II	None	----------
Track ball assembly.....	II	None	----------
Transducer:.....	---	----	See note 7
sonar.....	III	None	----------
subassembly.....	II	None	----------
Transformer:			
distribution.....	III	None	----------
hermetically sealed.....	III	None	----------
molded and encapsulated.....	IC	None	----------
open construction.....	II	None	----------
non-hermatic gasketed.....	II	None	----------
Transisters.....	---	----	Use MIL-S-19491
Transmitter:			
element, telephone.....	IC	None	----------
radio, radisonde, radar, sonar, and dummy.....	II	None	----------
synchro.....	IC	None	----------
Transmitting set (infrared, radiac data, radio, telemetric data and television).....	II	None	----------

TABLE I. Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts). - Continued

Item	Unit protection method of MIL-P-116	Applicable type of preservative, MIL-P-116	Special remarks
Tray, battery.....	III	None	----------
Tripod.....	III	None	----------
Tube, electron.....	---	----	Use MIL-E-75 and see 3.11.2
Tubing, nonmetallic.....	III	None	----------
Tuner, assembly (r.f.).....	II	None	----------
Tuner, r.f.....	II	None	----------
Tuner, waveguide.....	II	None	----------
Turntable, reproducer.....	III	None	----------
Typewriter, electric.....	II	None	----------
Valve, solenoid.....	II	None	----------
Vane, antenna.....	III	None	----------
Variometer.....	II	None	----------
Varistor.....	---	----	Use MIL-R-39032
Velocity gage.....	IC	None	----------
Vibrator (synchronous or nonsynchronous).....	II	None	----------
Voltmeter:			
hermetically sealed.....	III	None	----------
other than hermetically sealed.....	II	None	----------
Washers.....	---	----	Use PPP-H-1581
Wattmeter:			
hermetically sealed.....	III	None	----------
other than hermetically sealed.....	II	None	----------
Waveguide assembly:			
flexible.....	II	None	----------
rigid.....	III	None	----------
Waveguide, rigid.....	III	None	----------
Waveguide, silver or silver plated.....	II	None	----------
Wavemeter.....	II	None	----------
Winch, cable.....	---	----	Use MIL-C-3184
Window, cathode ray tube, light, sonar.....	III	None	----------
Wiring harness.....	IC	None	----------
Wiresonde set.....	II	None	----------
Worm gear.....	---	----	See Gear

Notes to table I:

1. Method III, when hermetically sealed.
2. Rubber products, when packed in multiples, shall be dusted with talc or talcum power (see 3.3.3.3).
3. For Navy, IC shall apply and shall be accomplished by use of a bag conforming to MIL-B-117, type I, class C, style 2.
4. Method IC shall be used for plastic.
5. Protect external threads from mechanical damage.
6. Protect against bending, crushing and deformation.
7. Wood or wood cleated shipping containers shall be of the reusable bolted or screwed type construction.
8. Preservation P-1, and P-19 applied to unpainted exterior metal surfaces only. Interior to be completely drained.
9. Cushion gear teeth from damage.
10. Purge with nitrogen when specified (see 6.2.1.)
11. Shipping containers with liquid filled units shall be provided with an externally mounted, readily visible and understandable device(s) to warn of concealed damage resulting from improper shipment.
12. Unit protection of units subject to damage from dehydration shall be method IC.
13. Coat with an excess of normal operating lubricant.
14. Requirements in Section 5 of equipment specifications.
15. Seal ends of assembly to at least 4 inches with pressure sensitive waterproof tape.
16. To prevent damage when unpacking, handling instructions shall be furnished and printed on a cardboard sleeve around the rodmeter.
17. Preservative applied to unpainted metal surfaces.
18. Ends shall be protected from damage.
19. Painted or finished, method III shall apply.
20. Preservative applied to external unpainted metal surfaces only. All openings shall be sealed to prevent entrance of dirt and moisture using plastic plugs (MIL-C-5501) or metal flanges with gaskets or pressure sensitive waterproof tape.
21. Use MIL-P-55110 for non-sensitive, printed-wiring boards.
22. Preservative for food handling equipment shall conform to type P-14.

3.9.1.1.1 Cushioning and wrapping materials (see 3.3.4). Equipment or parts shall be cushioned, as required, to prevent damage to the item as determined by the criteria of MIL-P-116, and to prevent puncture or tearing of the barrier materials used in packaging. Excessive use of cushioning within the unit package shall be avoided since an unnecessary increase in tare weight and cube will otherwise result. The performance requirements of MIL-P-116 shall be given consideration when determining the actual required quantity of cushioning material (see 6.6). Cushioning materials which have not been chemically refined for noncorrosiveness shall only be used when contained in a sealed waterproof barrier conforming to PPP-B-1055. Cushioning materials used within the unit pack shall conform to any of, or combination of, the following specifications, at the contractor's option, which will provide the required protection.

Specification	Material	Special requirements
UU-P-268	Paper, Kraft Wrapping	For Navy, use type II, grade C or D
PPP-P-291	Paperboard, Wrapping and Cushioning	
PPP-F-320	Fiberboard	
PPP-C-795	Plastic Film - Flexible Cellular	
PPP-C-843	Cellulosic	
PPP-C-850	Polystyrene Expanded, Resilient	For Navy, use grade SE
PPP-C-1120	Bound Fiber	For Navy, use type III or IV, class C
PPP-C-1752	Polyethylene Foam Unicellular	
PPP-C-1797	Resilient, Low Density, Unicellular, Polypropylene Foam	
PPP-C-1842	Cushioning Material, Plastic, Open Cell	
MIL-B-3106	Board, Composition, Water-Resistant, Solid	
MIL-R-5001	Rubber, Latex Foam, Sponge	
MIL-R-6130	Rubber, Cellular	For Navy, use grade A
MIL-C-17435	Fibrous Glass	
MIL-P-19644	Plastic Molding Material (Polystrene Foam, expanded bead)	For Navy, use type II
MIL-R-20092	Rubber Sheets and Molded Shapes, Cellular, Synthetic, Exploded Cell	For Navy, use class 5
MIL-P-26514	Polyurethane Foam	
MIL-C-26861	Resilient Type, General	
MIL-F-81334	Foam, Plastic, Flexible, Open Cell, Polyester Type, Polyurethane	
MIL-F-87090	Foam, Combustion Retardant, For Cushioning Supply Items Aboard Navy Ships	

3.9.1.1.1.1 Other items. A barrier is not required between the cushioning of such items as textiles, rubber, plastic, and other such items. 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 herein.

3.9.1.1.2 Transparent unit protection. Except as otherwise specified hereinafter, when transparent unit protection is selected or required by the acquisition document, selection of materials (films and bags) shall be in accordance with the material requirements of MIL-P-116 for the applicable method or submethod of preservation. Intimate wraps or cushioning applied to the item shall also be transparent. Transparent wrapping or cushioning materials shall conform to MIL-B-22191 type II or III, PPP-C-795 or L-P-378 (see 3.9.1.1.7).

3.9.1.1.3 Method of preservation (unit protection). In addition to the requirements of MIL-P-116, and supplemental information in 6.6, the following requirements shall apply.

3.9.1.1.3.1 Method I. Preserved items shall be wrapped with a greaseproof material as specified in MIL-P-116, or as an alternative, enclosed in a container lined, coated, or impregnated with a greaseproof barrier material. The greaseproof barrier material wrap shall be secured with tape. Items coated with preservative conforming to P-1 or P-19 and subsequently dried will not require a greaseproof wrap, unless it is used to facilitate item identification or to prevent physical abrasion of the preservative film. When a volatile corrosion inhibitor (VCI) is selected (see table I, column 3, P-18), its use shall be in accordance with MIL-I-8574. Transparent, flexible, sealable, VCI-treated films or bags may be used and shall conform to MIL-B-22019 or MIL-B-22020, respectively. When items are unit-protected with VCI-treated materials, the unit packs shall have a caution label or marking as follows:

"WASH HANDS AFTER HANDLING VCI MATERIALS
TO AVOID IRRITATION OF EYES AND SKIN."

3.9.1.1.3.2 Method IC. Material conforming to MIL-B-131 may be used as an alternative for flexible wraps or barriers.

3.9.1.1.3.2.1 Submethod IC-4. Alternatively, items may be individually cushioned and packed in a spirally wound fiber can conforming to the construction requirements for type I, grade B of MIL-C-3955, except that the closure end may be sealed by the application of 1-1/2-inch pressure-sensitive waterproof tape conforming to MIL-T-22085 over the joint between the cover tube and half its width above and half below the juncture line of the slip-on-cover. A minimum length of tape 1-1/3 times the can circumference shall be used. The leakage test (see 4.3.2) shall apply.

3.9.1.1.3.3 Method II. Method II shall be used where time at the using point is critical and the removal of the contact preservative would prevent timely use of the equipment. Any preservative used for additional protection of the equipment shall be such as to permit the operation of the equipment without removal of the preservative. A reusable flexible container conforming to MIL-C-9959 type I or II may be used in lieu of the MIL-B-131 barrier

material. Desiccant shall conform to type II or III of MIL-D-3464. Unless otherwise specified (see 6.2.1), a humidity indicator shall be required in the method II package. Method II shall not be utilized as a method of unit protection for parts such as paper loudspeaker cones which would be damaged by dehydration resulting from desiccation. Cushioning, blocking and bracing of products and protrusions shall be as specified in 3.9.1.1.1 and 3.10.2.4. When flexible bags are used, except for the MIL-C-9959 container, the bag shall be of sufficient size to permit at least two subsequent sealings.

3.9.1.1.3.3.1 Submethod IIa. The degree of packing (see 3.10) provides the shipping container selection. For a single product weighing 200 pounds or more, containers shall be modified to include a skid-type base to facilitate handling. Skids shall provide a minimum clearance of 2-1/2 inches. The skid ends shall be beveled. When the weight of an individual item exceeds the weight limitations of the applicable container specifications, a sheathed crate shall be used. To facilitate equipment mounting, where an item has mounting holes, bolt holes shall be drilled to accommodate bolting the unit to the base and skids. Where the bolt location cannot accommodate bolting to the skids, the unit shall be bolted to the base and a sleeper provided on the underside of the base in accordance with MIL-C-104. Following insertion of the bolts, a cushioning pad of fiberboard or other suitable material, of a size sufficient to extend beneath all points of contact between the barrier and the container base, shall be placed over the bolts protruding through the close-fitting prebored in the pad. Close-fitting gaskets, minimum 1/8-inch thickness, shall then be placed over the bolts followed by the barrier material and a second set of gaskets. Gaskets are to be asbestos free. Cement shall be liberally applied between the gaskets and barrier material. Apply any additional cushioning to fragile areas, sharp projections, corners, edges, and other features that might damage the barrier material. After placing item in its position, tension the nuts sufficiently to make an airtight seal around the bolts. To insure nuts will not loosen in transit, they must be positively secured by upsetting or nicking the threads of the bolt beyond the nut; applying asphaltum, paint or lacquer on the threads; by use of lock nuts; or by the use of cotter pins with nuts. When the equipment cannot be bolted to the container base, it shall be secured to it by suitable tensioned and cushioned steel straps, tie-down rods, or lumber hold-downs in accordance with MIL-C-104. For fiberboard packs up to and including 200 pounds, a humidity indicator conforming to MS20003 shall be used and no inspection port is required. For crates, wood, plywood, and triplewall fiberboard boxes (over 200 pounds and modified with a base and skids), an externally mounted humidity indicator shall be provided with an inspection port for viewing of the humidity indicator mounted on the barrier material.

3.9.1.1.3.3.2 Submethod IIb. The cushioned item shall be placed within a close fitting fiberboard box conforming to PPP-B-636, class Domestic. Box closure shall be in accordance with the appendix to the box specification. Box corners shall be blunted prior to box insertion within the flexible barrier bag. A humidity indicator conforming to MS20003 shall be affixed to the outside of the container. The container shall then be placed within a sealed, close fitting, water-vaporproof barrier bag made of material as specified in MIL-B-131 or type I of MIL-B-22191 which shall be enclosed in a container as required for level A, B or C packing as applicable (see 3.10.3, 3.10.4 and 3.10.5).

When wood or plywood boxes are used as the outer or exterior shipping container, they shall be lined with minimum grade 200 fiberboard to prevent damage to the barrier bag. Fiberboard liners may be omitted when other types of cushioning media is employed that will provide protection to the barrier bag. When the item has a rigid enclosure, such as in the case of an instrument box or transit case, and which provides protection equal to that of the initial fiberboard box, the rigid enclosure may be used as the interior container and the enclosure shall be cushioned to prevent damage to the barrier bag.

3.9.1.1.3.3.2.1 Department of Army only. Prior to placing within the shipping container, the method IIb package specified herein shall be further placed in a close fitting fiberboard box conforming to type CF, class weather resistant of PPP-B-636. The requirement for fiberboard liners within the shipping containers shall not apply.

3.9.1.1.3.3.3 Submethod IId. Metal enclosures provided with gasketed doors or cover openings or other enclosures meeting the water vapor transmission of MIL-B-131 may be used for packaging as specified for method IId. This method of packaging shall be accomplished by placing the required amount of desiccant and the humidity indicator within the item enclosure and tightly securing all gasketed doors or covers. When practicable, externally mounted humidity indicators shall be provided and shall conform to MIL-I-26860 (see 3.9.1.1.6). Prior to the placing of the desiccant and closure, all parts within the enclosures shall be so cushioned with cells or pads and blocked and braced as required to meet the rough handling tests as specified in 4.3.2. The package shall be marked as specified for method II package with the following additions "CAUTION - REMOVE DESICCANT BEFORE USE".

3.9.1.1.4 Interior containers.

3.9.1.1.4.1 Unit containers. Unless otherwise specified (see 6.2.1), unit containers, except those as specified in MIL-P-116 for the applicable method of preservation, shall conform to any one of the following specifications, at the contractor's option, which will provide the required protection. Paperboard and fiberboard boxes shall be of the weather-resistant type, class or grade.

Specification	Container
PPP-B-566	Box, Paperboard, Folding
PPP-B-636	Box, Fiberboard
PPP-B-665	Box, Paperboard, Metal-Stayed
PPP-B-676	Box, Paperboard, Setup
PPP-B-1672	Box, Shipping, Reusable With Cushioning
PPP-C-96	Can, Metal, 28 Gage and Lighter
MIL-C-3955	Can, Fiber, Spirally Wound
MIL-D-6055	Drum, Metal With Removable Head

Sealing and closure, as applicable, of unit containers shall conform to the applicable container specification or appendix thereto, and as specified herein. Closure of fiberboard boxes shall be in accordance with method V. Bags may be used for packaging small parts by method III, when practicable.

Bag closure shall be effected by heat-sealed, adhesives, solvents or taping. Use of staples or other type bag closure such as pressure-fit, zipper, and others, is acceptable for method III, provided that loss of contents will not result. When the item(s) exceed the weight limitations of the preceding unit containers, parts shall be packed directly into shipping containers for the degree of packing specified (see 3.10.1).

3.9.1.1.4.2 Intermediate containers. Unit quantities in an intermediate container shall be as specified (see 6.2.1). Intermediate containers shall be uniform in size and shape, and shall contain equal quantities in multiples of five, not exceeding 100 unit packages within the weight limitations specified herein. Unless otherwise specified (see 6.2.1), intermediate containers shall conform to any one of the following specifications, at the contractor's option, which will provide the required protection. Paperboard and fiberboard boxes shall be of the weather-resistant type class or grade.

Specification	Container
PPP-B-566	Box, Paperboard, Folding
PPP-B-636	Box, Fiberboard
PPP-B-665	Box, Paperboard, Metal-Stayed
PPP-B-676	Box, Paperboard, Setup
PPP-B-1672	Box, Reusable With Cushioning

Box closure shall conform to the applicable container specification or appendix thereto and as specified herein. Closure of fiberboard boxes shall be in accordance with method V. The gross weight of paperboard boxes shall not exceed 10 pounds. Unless otherwise specified (see 6.2.1), the gross weight of fiberboard boxes shall not exceed 20 pounds.

3.9.1.1.4.3 Department of Army only. Unless otherwise specified (see 6.2.1), unit and intermediate containers not conforming to weather-resistant class requirements of PPP-B-636, PPP-B-665 and PPP-B-676 shall be overwrapped with barrier material to provide equal weather-resistant protection. Intermediate containers shall not exceed a maximum of 40 pounds net weight and a maximum of 1.5 cubic feet, with at least each of two dimensions not exceeding 16 inches.

3.9.1.1.5 Provisioned items (repair parts, equipment and maintenance). Equipment and maintenance repair shall be preserved in accordance with table I. When the acquisitioning document specifies repair parts or sets to be furnished with the system or equipment, the repair parts or sets shall be packed in separate shipping containers for the degree of packing specified (see 3.10.1).

3.9.1.1.5.1 Quantity of repair parts per unit pack. Unless otherwise specified in the applicable commodity specification or in the contract or order (see 6.2.1), repair parts shall be packaged one part to a unit pack, except when used in quantities greater than one. Parts comprising a single set or assembly shall be packaged together as a single unit.

3.9.1.1.5.2 Arrangement of repair parts in containers. Repair parts shall be arranged within the container in a compact manner. When applicable, repair parts accompanying equipment shall be grouped together in intermediate

containers. Each intermediate container shall be marked with the stock number of the item(s) contained in the package. This will provide accessibility of like parts without undue disturbance of the other parts.

3.9.1.1.5.3 Repair parts storage boxes. When the item exceeds the size of the bin or drawer-type stowage, or when bin or drawer-type stowage is not provided, and when specified (see 6.2.1), repair parts accompanying the equipment shall be furnished in repair parts boxes conforming to type M or W of MIL-B-233 as specified (see 3.11.1 and 6.2.1). When the size of repair parts storage boxes is less than the minimum size specified in MIL-B-233, repair parts accompanying the equipment shall be furnished in boxes conforming to PPP-B-636, class weather-resistant, special requirements. Closure of the fiberboard boxes shall be in accordance with method V of the appendix to the box specification.

3.9.1.1.5.4 Index list of repair parts. An index list of repair parts shall be inserted in each shipping container containing repair parts accompanying the equipment or acquired as a set or kit. The list shall be inserted in the index list support located on the interior side of the cover of the repair parts box or suitably placed on the inside of the box for quick accessibility of the list. The list shall be placed in a transparent, waterproof plastic bag, minimum 4 mil thick. Closure shall be by heat sealing.

3.9.1.1.6 Repairables. Repair parts which are subject to shipment to a repair or overhaul activity for restoration and for further reissue to and from the supply system shall be packaged in materials and containers capable of reuse. Unless otherwise specified (see 6.2.1), the following packaging guidance shall apply:

(a) Packaging in accordance with MS90363 or PPP-B-1672 where a limited reuse of the packaging materials is anticipated.
(b) Packaging in long life reusable containers or containers expected to equal the service life of the item. Such containers shall be capable of withstanding repeated openings and closures, repeated handlings, and the hazards of shipment, storage, and stowage. Unless otherwise specified (see 6.2.1), long life reusable containers shall conform to MIL-STD-648. Containers conforming to MIL-C-4150, MIL-D-6054, MIL-D-6055 and MIL-C-5584 are considered acceptable. External mounted humidity indicators shall not be required for containers conforming to MIL-D-6054 and MIL-D-6055.

3.9.1.1.7 Submarine repair parts. Repair parts for submarine usage shall be transparent packaged in accordance with MIL-STD-758.

3.9.1.1.8 Sets or kits. When sets or kits of tools are furnished, preservation of individual tools shall be in accordance with table I, except as follows:

(a) Sets or kits of tools furnished in a plastic or leather case shall be unit packaged IC-2 of MIL-P-116.

(b) Sets or kits of tools furnished in finished wooden cases such as varnished wood micrometer cases intended for use as a tool box or chest shall have each tool preserved, as specified in table I. The unit pack shall be preserved IC-2 of MIL-P-116, with the wooden case as the inner container. Projections such as hinges and catches on the inner container shall be cushioned with material specified in 3.9.1.1.1. The outer container of the unit pack shall be in accordance with PPP-B-636, class weather-resistant. Outer container closure shall be in accordance with method V of the appendix to PPP-B-636.

(c) Tools in a kit, which may be damaged by preservatives from other tools, shall be wrapped or bagged.

3.9.1.2 Level B. Unless otherwise specified herein, cleaning, drying, preservative application, and the methods of preservation shall be in accordance with MIL-P-116 and Table I herein. Conditions for use of level B preservation are specified in 6.3.1.2. The level B methods of preservation shall be based on the substitution list as follows:

Level A	Level B
II	IA or IC
IA	IC
IC 1/	III or I
I	I
III	III

1/ Paper products shall receive a method of preservation no lower than IC.

3.9.1.3 Level C. Preservation of equipment and repair parts shall afford protection against corrosion, deterioration and physical damage during shipment from the supply source to the first receiving activity for immediate use except that sensitive electronic items (see 3.6) shall be preserved in accordance with 3.11.10. Unit and interior containers may be of the non-water-resistant type, graded or class specified in 3.9.1.1.4 1 and 3.9.1.1.4.2.

3.9.1.4 Commercial. Commercial preservation of equipment and repair parts shall be in accordance with ANSI C83.66 or ASTM D 3951 at the contractors option, except that sensitive electronic items (see 3.6) shall be preserved in accordance with 3.11.10.

3.10 Degree of packing (see 6.3).

3.10.1 Packing. Packing shall be level A, B, C or commercial, as specified (see 6.2.1).

3.10.2 General requirements for levels A and B. Shipping containers shall be of a minimum weight and cube consistent with the requirements of this specification. Containers listed herein shall not preclude the use of other containers not listed, provided they meet the requirements of the individual container and have been approved by the contracting activity. Shipping containers, when packed with the same items, shall be of similar construction and of uniform size and of minimum cube and tare, consistent with protection required and shall contain identical quantities of identical items when practicable. Special tools, when furnished, shall be packed with the equipment for which they are intended. Items packed in a container designed as a shipping container shall be cushioned, blocked, braced and anchored (see 3.10.2.4) to prevent movement and damage and shall meet the rough handling test (see 4.3.2). Metal, wood, plywood or cleated containers shall be used for an individual item weighing 200 pounds or more and for items secured to the base and skids, or equivalent reinforcements, with hexhead or carriage bolts whenever practicable (see note hereinafter). Crates shall be used for the shipment of items which are not readily susceptible to damage from outside forces and which require only limited protection. In general, items which are designated for outdoor installation and use, or which are of rugged construction, may be advantageously shipped in open crates and, unless otherwise specified (see 6.2.1), shall be shrouded with flexible waterproof barrier material (see 3.10.2.4). The multiple packing of items of different stock numbers will not be permitted in shipping containers, unless the items of each stock number are intermediate packed in fiberboard boxes as specified in 3.9.1.1.4.2.

NOTE: Fiberboard, corrugated, triple wall boxes may be used for individual items weighing more than 200 pounds provided the box is modified with reinforcing strength members and skidded. Data (see 3.5.1 and 3.5.2) shall be furnished the contracting officer depicting the proposed pack. When the box exceeds the size and weight limitations of the carriers classification, a copy of the special package permit as required by PPP-B-640, shall be provided to the contracting activity.

3.10.2.1 Clearance. Normally, a minimum of 1 inch clearance is required between the container contents and the nearest framing member of the container sides, ends, and tops. Items that are fragile in nature, or items packed in a floating barrier bag (submethod IIa) require from 2 to 4 inches of clearance. Additional clearance may be required for shock mounted items. This clearance allows for distortion and vibration to which the container may be subjected during rough handling and transit.

3.10.2.2 Classified matter. In addition to the packaging and marking (see 3.12.2.3) requirements specified herein or in the applicable product specification, classified material shall be packed in shipping containers which completely conceal the container contents. All boxes, crates, or cartons containing classified material shall be sealed in such a manner that the container contents cannot be inspected without displaying visual evidence of forcible opening. All containers used for classified material, except certified mail packages of classified material shall be reinforced with steel strapping or pressure-sensitive, reinforced, filament tape. Steel strapping

only shall be used on wood, plywood or cleated containers, and steel strapping or pressure-sensitive, reinforced, filament tape on fiberboard containers. The steel strapping or pressure-sensitive tape shall be applied perpendicular and parallel to the container length. The intersection of the steel strapping shall be joined and sealed with a strapping seal or clamp, preferably of the pressure-clamp type. The clamp shall be of a type that will not be damaged through transit or stacking of containers. The seal or clamp shall be so constructed that tampering will cause mutilation readily detected by inspection. Pressure-sensitive, reinforced, filament tape, type IV of PPP-T-97, shall be applied a minimum of 6 inches in at least two separate wraps with all wraps overlapping at the ends. Certified mail packages containing classified matter shall be limited to size and weight and securely bound in accordance with the Postal Manual regulations. In addition, classified materials shall be shipped in accordance with the appropriate Departmental Security Regulations which are available in the Contract Administration Office.

3.10.2.3 Air shipment. Packing for air shipment shall be in accordance with MIL-A-25175. Supplemental information is provided in 6.6.

3.10.2.4 Cushioning, anchoring, blocking, bracing and waterproofing. Cushioning, anchoring, blocking, bracing and waterproofing of container contents shall be in accordance with MIL-STD-1186, 3.9.1.1.1 herein, and the applicable container specification or appendix thereto. Supplemental information is provided in 6.6.

3.10.3 Level A. Unless otherwise specified (see 6.2.1), items shall be packed in containers conforming to any one of the following specifications at the option of the contractor.

Specification	Container	Type, grade or class
PPP-B-585	Boxes, Wood, Wirebound	Class 3
PPP-B-587	Boxes, Wood, Wirebound	Grade A
PPP-B-601	Boxes, Wood, Cleated-Plywood	Overseas type
PPP-B-621	Boxes, Wood, Nailed and Lock-Corner	Overseas, class 2
MIL-C-52950	Crates, Wood, Open and Covered	
MIL-C-104	Crates, Wood, Lumber, and Plywood Sheathed	
MIL-C-3744	Crates, Wood, Open (capacity 12,000 to 16,000 Pounds)	
MIL-C-9897	Crates, Slotted Angle	
MIL-C-11133	Crates, Wood, Open Wirebound	Grade A
MIL-B-26195	Box, Wood Skidded, Load Bearing Base	

3.10.3.1 Closure, caseliners and gross weight. Shipping containers shall be closed, reinforced, or banded in accordance with the applicable container specifications or appendix thereto. Unless otherwise specified (see 6.2.1), water-proofing of products shall be in accordance with 3.10.2 and 3.10.2.4 herein. The gross weight of wood and wood-cleated boxes shall not exceed 200 pounds, except as specified in 3.10.2. When the gross weight of a shipping container exceeds 200 pounds, the container shall be modified to include a skid-type base providing a minimum clearance of 2-1/2 inches. When containers are packed with products or packages meeting the following requirements, no case liner will be required:

(a) Items which are completely painted and have no unprotected critical surfaces.
(b) Large items which are completely coated with paint, or preservative type P-1 or P-19, with critical surfaces on the interior of the item, if any, and where the critical interior surfaces are adequately preserved with all openings sealed with authorized sealing material.
(c) Method 1C packages.
(d) Method II packages when all materials exterior to the water-vapor-barrier have water resistance equal to or exceeding the water resistance of fiberboard boxes in accordance with PPP-B-636.

3.10.4 Level B. Unless otherwise specified (see 6.2.1), items preserved as specified shall be packed in containers conforming to any of the following specifications at the option of the contractor:

Specification	Container	Type, grade or class
PPP-B-576	Boxes, Wood-Cleated, Veneer Paper Overlaid	Class 2 - Overseas
PPP-B-585	Boxes, Wood, Wirebound	Class 2
PPP-B-587	Boxes, Wood, Wirebound	Grade B
PPP-B-591	Boxes, Fiberboard, Wood-Cleated	Class II
PPP-B-601	Wood, Cleated-Plywood	Domestic type
PPP-B-621	Wood, Nailed and Lock-Corner	Class 2
PPP-B-636	Fiberboard	Weather resistant
PPP-B-640	Boxes, Fiberboard-Corrugated, Triple Wall	Class 2
MIL-C-52950	Crates, Wood, Open and Covered	
MIL-C-104	Crates, Wood, Lumber and Plywood Sheathed	
MIL-C-3774	Crates, Wood, Open (Capacity 12,000 and 16,000 Pounds)	
MIL-C-9897	Crates, Slotted Angle	
MIL-C-11133	Crates, Wood Open Wirebound	Grade A
MIL-B-26195	Box, Wood Skidded, Load Bearing Base	

3.10.4.1 Closure, caseliners, and gross weight. Shipping containers shall be closed, reinforced, or banded in accordance with the applicable container specification or appendix thereto, except that method V closure is applicable to boxes conforming to PPP-B-636. Intermediate fiberboard containers conforming to PPP-B-636, weather resistant, closed as specified herein and used as shipping containers, need not be overpacked. When specified (see 6.2.1), case liners (see 3.10.2.4) may be required for wood, plywood, and wood-cleated fiberboard containers. The gross weight of wood, wood-cleated, or triple-wall fiberboard boxes shall not exceed 200 pounds except as specified in 3.10.2. Fiberboard boxes, in accordance with PPP-B-636, shall not exceed the weight limitation of the box specification. If the gross weight of a shipping container exceeds 200 pounds, it shall be modified to include a skid type base providing a minimum clearance of 2-1/2 inches.

3.10.5 Level C. Unless otherwise specified (see 6.2.1), items preserved as specified shall be packed in containers as specified in 3.10.4 except that the containers may be of the non-weather resistant domestic type or class. Case liners (see 3.10.2.4) are not required and closure shall be in accordance with the applicable container specification or appendix thereto, except that method I closure is applicable for fiberboard boxes conforming to PPP-B-636.

3.10.6 Commercial. Commercial packing of equipment and repair parts shall be in accordance with ANSI C83.66 or ASTM D 3951 at the contractors option.

3.10.7 Skids. When the weight of the shipping container exceeds 200 pounds gross weight or when the length and width is 48 inches by 24 inches or more and the weight exceeds 100 pounds, a minimum of two, 3 by 4 inch nominal skids, laid flat shall be applied in a manner and secured and which will support the item(s) and facilitate the use of material handling equipment during transportation, storage and stowage.

3.10.8 Palletized unit loads. When specified or applicable (see 6.2.1), products packed as specified shall be palletized in accordance with MIL-STD-147. Palletized loads shall not be subject to rough handling tests. Stretch or shrink wrap is authorized for domestic shipments and for containerized export shipment.

3.11 Special instructions.

3.11.1 Repair parts boxes. Repair parts boxes conforming to MIL-B-233 (see 3.9.1.1.5.3) will require overpacking for shipment in accordance with the applicable degree of packing. The gross weight of parts shall not exceed 200 pounds in any one box. Where the combined weight of a set exceeds 200 pounds, such parts shall be grouped and packed in two or more boxes numbered consecutively, to show the number of boxes in a complete set, except when an individual part exceeds 200 pounds, the part shall be individually packed in one repair parts box.

3.11.2 Electron tubes. Electron tubes not securely clamped in place shall be removed from the equipment and individually packed and secured in the equipment shipping container or shall be packed in a separate container in accordance with the requirements of MIL-E-75. The packing list shall indicate which container contains the tubes removed from the equipment.

3.11.3 Batteries. Unless otherwise specified (see 6.2.1), all batteries shall be removed from the basic equipment and packaged as specified in table I. The packing list shall indicate which container contains the batteries removed from the equipment.

3.11.4 Trailer and truck installed equipment. The following requirements shall apply to trailer and truck installed equipment:

3.11.4.1 Preservation. Preservation of trailer and truck installed equipment shall be level A, B, C or commercial, as specified (see 6.2.1).

3.11.4.1.1 Levels A and B. Trailer and truck installed equipment, except repair parts, shall be preserved in accordance with method II of MIL-P-116. When acceptable to the contracting agency (see 6.2.1), the trailer or truck may be used to form the water-vaporproof barrier required for method II preservation by sealing all openings that would permit the entrance of water-vapor with pressure-sensitive waterproof tape conforming to MIL-T-22085. For level B method of preservation see 3.9.1.2.

3.11.4.1.2 Level C. Level C preservation shall be in accordance with 3.9.1.3.

3.11.4.1.3 Commercial. Commercial preservation shall be in accordance with 3.9.1.4.

3.11.4.1.4 Repair parts. Equipment repair parts shall be packaged as specified in 3.9.1.1.5. When storage facilities are not provided in the truck or trailer, repair parts shall be packed as specified in 3.10. Alternately, when specified (see 6.2.1), repair parts boxes conforming to type M of MIL-B-233 may be used.

3.11.4.2 Packing. Trailer and truck installed equipment shall be packed level A, B, C, or commercial as specified (see 6.2.1).

3.11.4.2.1 Levels A, B and C. The complete installation, preserved as specified (see 6.2.1), shall be packed for the level of protection and condition (mobile, boxed, or skidded) specified (see 6.2.1) in accordance with MIL-STD-281 or in accordance with the detail requirements of the individual equipment specification.

3.11.4.2.2 Commercial. Commercial packing shall be in accordance with 3.10.6.

3.11.5 Shelters. Unless otherwise specified (see 6.2.1), shelters shall be prepared for shipment in accordance with MIL-S-55507.

3.11.6 Radioactive materials. In addition to the preservation and packing specified herein, the packaging and shielding requirements shall conform to the Department of Transportation, Code of Federal Regulation, Title 49, Section 173.389 through 173.395, as applicable (see 3.5.4). Marking shall be in accordance with 3.12.

3.11.6.1 Containers - shielding requirements. When the quantity of radioactive materials to be shipped exceeds the amount normally authorized by section 173.391 and 173.393 and as specified in 3.11.6 or the containers differ from those which are prescribed, details of the container shall be submitted and permit obtained from the Department of Transportation, Office of Hazardous Materials prior to shipment. Details of the container shall be complied with as follows:

(a) Lead shield or other shielding material of equal efficiency shall be encased in steel or other suitable material so that shielding will not flow away or lose its efficiency if involved in a fire. Steel or other suitable material shall be at least 1/8-inch thick for 6 inches of lead or other shielding and no less than 1/4-inch thick for more than 6 inches of shielding. Casing thickness shall be determined by the thickness of shielding measured from the cavity wall to nearest point of outside container.

(b) Shield shall be supported in outer container so that it cannot change position or open under any ordinary conditions.

(c) Parts of shield shall be so designed that radiation cannot be "beamed" at the point where the container section joins (that is, offset design is required).

(d) Radiation at any surface of package shall not exceed 200 milliroentgens per hour (mr/hr) and radiation at 1 meter from radioactive source of package shall not exceed 10 mr/hr.

(e) Container shall be designed so that it can be properly braced in car.

(f) Containers weighing more than 500 pounds shall be fitted with skids or otherwise designed so as not to create excessive pressure on small areas of the car or truck floor and shall be marked with gross weight if for water transportation.

(g) Heavy containers shall be provided with hooks, handles, and skids, or any other device necessary to facilitate normal handling.

(h) Outer container, when practicable, shall be of metal with joints 100 percent welded or brazed and closure shall be secured by positive fastening device capable of withstanding severe impacts without failure. Shielding material, if any, in closure part shall be completely encased in metal with joints 100 percent welded or brazed.

(i) Means shall be provided for applying a seal so that the outer container cannot be opened without destroying the seal.

(j) Containers for more than 4,000 millicuries or the radioactive equivalent shall have the name "Radioactive Material" and permit number stamped, embossed, or otherwise permanently applied so that it will not be obliterated by fire.

(k) Approval of shipping containers for materials where criticality must be considered will be on basis of design and product data furnished.

(l) Each time a shipment is made in excess of the quantity permitted in container by section 173.391, 173.393 of the Department of Transportation Regulations, it shall be necessary to notify the Office of Hazardous Materials, unless otherwise stated in the permit, by letter, telegram or telephone on or before the date of shipment, furnishing the following information:

(1) Assigned Department of Transportation permit number or specification number marked on outer shipping container.
(2) Assigned Department of Transportation block transportation number used, if any has been assigned.
(3) Point of origin, destination, and date shipment is to be made.
(4) Type of transportation used.
(5) Quantity of radioactive material in terms of curies, millicures, or disintegrations per second and the principal type of radiation (Alpha, Beta, Gamma, or Neutron).

3.11.7 Magnetic materials. In addition to the packaging requirements specified herein, the shielding requirements when applicable for magnetic materials shall conform to MIL-S-4473.

3.11.8 Field change kits and bulletins. Field change kits and bulletins shall be prepared for delivery in accordance with the requirements for A, B, C or commercial as specified (see 6.2.1), or in accordance with the applicable specification.

3.11.9 Technical manuals. Technical manuals, which accompany shipments that are packed level A or B, shall be placed in transparent waterproof plastic bags, minimum 4 mil thick. Closure shall be by heat sealing. Army only: Technical manuals shall be preserved in accordance with MIL-P-116, method IC-1, placing the technical literature on the top of the contents directly under the lid of the cover. When the equipment consists of more than one container, the technical literature shall be placed in box number 1. Technical manuals shall not be placed within any sealed flexible barrier materials used to enclose the item(s). For equipment in multiple shipping containers, the manuals shall be placed in the shipping container housing the main unit (see 3.12.2.2). Packing lists shall indicate which container encloses the technical manuals and shall also state the approximate location therein. For ease of removability, the location of the manuals shall be such that they are readily accessible when the container is opened. Technical manuals, when shipped in bulk quantities, shall not be individually wrapped, but shall be packed in accordance with the requirements of the applicable technical manual specification or packed in containers conforming to the requirements for level A, B, C or commercial as specified (see 6.2.1).

3.11.10 Sensitive electronic items (see 3.6).

3.11.10.1 Lead and terminal protection. Lead or terminal configurations shall be maintained as manufactured without causing loads or stresses capable of causing damage to the item. Protection shall be by means of a carrier, container design, or inserts of noncorrosive, electrostatic-free supporting materials. Materials used to maintain item position and lead or terminal configuration shall permit item removal and replacement without damage to the item.

3.11.10.1.1 Carrier. Carriers, when used for additional protection of miniature electronic items, shall be of such strength to prevent damaging resonances, shocks, and electrostatic charges to the sensitive item(s). Anchoring or securing of the item, leads, or terminals within the carrier by means

of tape or adhesive is prohibited. The carrier shall maintain physical separation and manufactured configuration of the item leads or terminals during packaging, handling, transportation, storage, stowage and for testing operations. The carrier shall permit safe and easy removal, inspection, and item replacement, and shall be designed without sharp edges to preclude subsequent damage to the item and packaging materials method.

3.11.10.2 Wraps and cushioning materials. Wraps and cushioning, when required for additional protection, shall be noncorrosive and in compliance with the requirements of MIL-P-116, and shall not crumble, flake, powder or shed. Wraps or cushioning in direct contact with the electrostatic sensitive item(s) shall conform to the electrostatic protection requirements specified herein (see 3.11.10.4).

3.11.10.3 Unit protection. Unless otherwise specified (see 6.2.1), sensitive electronic items subject to degradation from electrostatic, electromagnetic forces, or both shall be unit protected in accordance with method IA of MIL-P-116, except as specified under detail requirements (see 3.11.10.4).

3.11.10.4 Electrostatic protection. Items which may be or are adversely affected by electrostatic field forces shall be provided an initial wrap of material conforming to MIL-B-81705, type II, or cushioned in material conforming to PPP-C-1842, type III, style A or B, and unit packed in heat-sealed bags conforming to MIL-B-117, type I, class F, style 1. Alternatively, reclosable cushioned pouches conforming to MIL-P-81997, type I or II may be used in lieu of the initial wrap or cushioning. Noncorrosive conductive material(s) shall be applied to all exposed leads and connector pins to maintain a common potential. This is to protect the item(s) from electrostatic charge(s) that may be encountered during handling.

3.11.10.4.1 Packaging materials. Packaging materials currently covered by title, scope, or intended use under Government specification(s), but modified as electrostatic-free material(s), or newly developed electrostatic-free packaging material(s) not covered by a Government packaging material specification(s) are encouraged for use. Use of such modified or newly developed electrostatic-free packaging material(s) will be permitted subject to the contracting officer's determination that (a) the physical properties of such material(s) are equal to or better than similarly constructed material(s) covered under a required Government packaging material specification and, (b) that such materials satisfy the electrostatic decay rate requirement of MIL-B-81705. The material manufacturer, supplier or contractor shall furnish to the Government inspector for review, documented proof of conformance to the requirements specified herein, certified by an acceptable test laboratory. Upon submission for acceptance, copies of the contractor's document proof shall be forwarded to the contracting officer packaging activity. The decision of the contracting officer shall be final as to the acceptability or non-acceptability of the packaging material and the decision shall not be subject to review under the disputes clause of the contract. When such materials are acceptable, unit packaging shall be in accordance with the procedures for electrostatic protection.

3.11.10.5 Electromagnetic protection. Unless otherwise specified (see 6.2.1), item(s) subject to damage by electromagnetic forces shall be unit packed in heat-sealed, barrier bags conforming to MIL-B-117, type I, class F, style 1. When are selected and used, the barrier material shall also contain a laminate of aluminum foil as well as meeting the requirements of MIL-B-117.

3.11.10.6 Electromagnetic and electrostatic protection. When the item(s) requires both electromagnetic and electrostatic protection, unit packaging shall be as specified under electromagnetic protection (see 3.11.10.5).

3.11.10.7 Magnetic protection. When specified (see 6.2.1), sensitive electronic devices subject to damage from simple magnetic fields (as opposed to radio frequency (RF) or electromagnetic radiation) shall be protected by completely enclosing the sensitive device(s) in ferrous metals or ferritic compositions of sufficient thickness to provide the degree of protection required.

3.11.10.8 Radioactive protection. When specified (see 6.2.1), sensitive electronic devices subject to damage from radioactivity shall be protected by completely enclosing the sensitive device(s) in lead or lead filled compositions of sufficient thickness to provide the degree of protection required.

3.11.10.9 Supplemental cushioning and containers.

3.11.10.9.1 Nonrepairable items.

3.11.10.9.1.1 Cushioning. To prevent damage to the flexible barrier bag during handling, shipment and storage/stowage, supplemental cushioning shall be applied between the barrier bag and container.

3.11.10.9.1.2 Containers. When the selected preservation method does not provide for a unit container (box), the method shall be supplemented by use of a folding, setup paperboard, or fiberboard container (unit or intermediate) as specified in 3.9.1.1.4. Container selection, unless otherwise specified (see 6.2.1), shall be at the option of the contractor.

3.11.10.9.2 Repairables. Cushioning and container requirements shall be in accordance with 3.9.1.1.6.

3.12 Marking.

3.12.1 Standard markings. In addition to any special marking required (see 6.2.1), and herein, interior (unit and intermediate) and exterior packs shall be marked in accordance with MIL-STD-129. When marking packs with item description essential modifiers, manufacturers shall include sufficient modifiers to adequately define the important features, potential or item properly, (for example, Capacitor, Fixed Ceramic, .005 uf - 500 V.). Marking for commercial preservation and packing shall be in accordance with ANSI C83.66 or ASTM D 3951.

3.12.2 Special marking.

3.12.2.1 Method II. Method II packs shall be marked in accordance with MIL-STD-129. Method IIa packs shall have the following markings affixed adjacent to the specified method II markings:

"STORE RIGHT SIDE UP
- WARNING -
SEE UNPACKING INSTRUCTIONS"

When unpacking instructions are provided (see 3.13), shipping containers shall be stenciled as follows:

"CAUTION
THIS EQUIPMENT MAY BE SERIOUSLY DAMAGED
UNLESS UNPACKING INSTRUCTIONS ARE CAREFULLY FOLLOWED.
UNPACKING INSTRUCTIONS ARE LOCATED (state where located)".

When practical, this marking shall be applied adjacent to the identification marking on the side of the container.

3.12.2.2 Technical manuals. Shipment of equipment that includes technical data (see 3.11.9) shall have the location of the information annotated on packing list. In addition, the shipping container housing the manuals shall be marked:

"MANUALS ENCLOSED".

3.12.2.3 Classified shipment. Shipments of classified materials shall not have packing lists affixed to the outside of the container. Appropriate instructions shall be issued by the contracting activity by departmental regulations. Unpacking instructions (see 3.13), when required, shall be placed inside the shipping or exterior container.

3.12.2.4 Structural markings. When applicable (see 6.2.1), structural markings (arrows, center-of-gravity, lift, sling points, and so forth, shall be applied in accordance with MIL-STD-129, or as specified in the commodity or procedural specification.

3.12.2.5 Sensitive electronic items. In addition to the contract or order, MIL-STD-129 markings for sensitive electronic items shall apply except (see note) as follows: The sensitive electronic device caution label, 2 inches by 2 inches or less, specified for intermediate packs shall be used for unit packs in lieu of the device symbol. In addition, special caution markings shall be placed on all unit and intermediate (interior) and exterior packs. Electrostatic sensitive item caution markings may be placed adjacent to the MIL-STD-129 sensitive electronic device caution label. Caution marking shall be as follows:

"CAUTION - ELECTROSTATIC SENSITIVE DEVICE: DO NOT OPEN EXCEPT AT APPROVED STATIC-FREE WORK STATION".

NOTE: 1. Exception not applicable to Air Force.
2. For guidance see MS90363.

3.13 Unpacking instructions. Unpacking instructions shall be provided for complex equipment or systems and method IIa or IA-16 packs. The instructions shall contain the information, such as, but not limited to the following:

"To unpack, remove the top and sides, leaving the unit resting on the bottom of the packing case. Remove the packing bolts that hold the unit on the base of the packing case and slip the unit off the base. In unpacking the item, the following precautions shall be observed to prevent possible damage:

(a) Observe the arrows marked on the shipping container. These point to the cover that can be removed most readily.
(b) Remove nails with a nail-puller only.
(c) Remove screws with screwdriver only.
(d) Never pound or hammer the shipping container.
(e) Keep all levers and crowbars away from the interior of the container."

3.13.1 Placement of unpacking instructions. When practical, a set of these instructions shall be placed in a sealed, waterproof envelope prominently marked "UNPACKING INSTRUCTIONS" and firmly affixed to the outside of the shipping container in a protected location (preferably between the cleats on the end of the container adjacent to the identification marking). If the instructions cover a set of equipment packed in multiple containers, the instructions shall be affixed to the number one container of the set or system.

3.14 Workmanship. Workmanship shall be such that, when the proper procedure is followed, materials and equipment being processed shall be protected against corrosion, deterioration, and damage during shipment, storage and stowage.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Classification of inspection. There shall be two types of inspection in accordance with MIL-P-116, as follows:

(a) First article inspection (see 4.3).
(b) Quality conformance inspection (see 4.4).

4.3 First article.

4.3.1 First article inspection. First article inspection shall consist of the examination and tests as specified in 4.3 through 4.3.2.1.1. The contractor shall conduct inspection on one complete package, packed for shipment, to ascertain that the cleaning, drying, preservation, packing and marking of the equipment or item conforms to this specification. The first article sample will not be required when such a pack has previously been inspected, tested and accepted for the same method for an identical or similar item by the same contractor and satisfactory evidence can be furnished to the Government that the equipment or items have been prepared identically with the previously accepted pack. First article inspection shall be repeated when changes are made in preservation and packing materials, processes, or designs.

4.3.2 First article testing.

4.3.2.1 Degrees of protection, A and B. Unless otherwise specified (see 4.3.2.1.1 and 6.2.1), a complete single item or equipment pack shall be subjected to the examinations and tests of MIL-P-116. When the rough handling tests of MIL-P-116 are required (see 6.2.1), they shall be specified. Method IC (see 3.9.1.1.3.2) shall be tested for leakage in accordance with the hot water technique. Unless otherwise specified (see 6.2.1), cyclic exposure tests will not be required. Upon completion of the rough handling tests, except when a dummy or simulated load is specified (see 3.4.1), the item or equipment shall be inspected as applicable, in accordance with the initial acceptance limits of the equipment or item specification to determine freedom from operational malfunctions.

4.3.2.1.1 First article test exceptions. First article testing (see 4.3.2.1) will not be required when:

(a) Level C or commercial packaging is specified.
(b) Detailed packaging instructions are furnished by the contracting activity.
(c) Previous submittal (see 4.3.1).

4.4 Quality conformance inspection. Sample items, and packs shall be selected and inspected in accordance with MIL-P-116 to verify conformance with the requirements of section 3 herein.

5. PACKAGING

5.1 Not applicable to this specification.

6. NOTES

6.1 Intended use. The cleaning, drying, preservation, packing and marking requirements specified herein are intended to insure proper and safe storage, stowage and transportation of equipment and associated repair parts for direct shipment to Government activities; for shipments processed at a military activity or agency; for a reference source in the preparation of Section 5 of the commodity specifications, and for the preparation of packaging requirements in acquisition documents.

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

(a) Title and number of this specification.
(b) When first article samples are required (see 3.4).
(c) When a dummy or simulated load may be used (see 3.4.1).
(d) When descriptive details and plans, and packaging and transportation data are required (see 3.5.1 and 3.5.2).
(e) When a PHST plan is required (see 3.5.3).
(f) Selection of the applicable levels of preservation and packing required (see 3.9.1, 3.10.1, 3.11.4.1, 3.11.4.2, 3.11.8 and 3.11.9).
(g) When purge with nitrogen is required (see table I, note 10).
(h) When a humidity indicator is not required (see 3.9.1.1.3.3).
(i) Interior (unit and intermediate) container selection if other than contractor's option (see 3.9.1.1.4.1, 3.9.1.1.4.2, and 3.11.10.9.1.2).
(j) Unit quantities required in an intermediate container (see 3.9.1.1.4.2).
(k) Fiberboard gross weight if other than specified (see 3.9.1.1.4.2).
(l) When an interior container barrier material overwrap is not required (see 3.9.1.1.4.3).
(m) Quantity of repair parts per unit pack, if other than specified (see 3.9.1.1.5.1).
(n) Whether repair parts boxes are required; if required, the type required (see 3.9.1.1.5.3, and 3.11.4.1.4).
(o) Packaging guidance if other than specified (see 3.9.1.1.6).
(p) Long life reusable containers if other than specified (see 3.9.1.1.6(b)).
(q) When shrouding of items in open crates is not required (see 3.10.2).
(r) Exterior (shipping) container(s) selection if other than the contractor's option (see 3.10.3, 3.10.4 and 3.10.5).
(s) When water-proofing of products is not required; if required, requirements if other than specified (see 3.10.3.1, and 3.10.4.1).
(t) When palletized unit loads are applicable (see 3.10.6).
(u) When batteries will not be removed (see 3.11.3).
(v) Preparation for shipment of shelters if other than specified (see 3.11.5).
(w) Unit protection for sensitive electronic item if other than specified (see 3.11.10.3 and 3.11.10.5).
(x) When magnetic protection is required (see 3.11.10.7).
(y) When radioactive protection is required (see 3.11.10.8).
(z) Special markings required (see 3.12.1).
(aa) Structural markings when applicable (see 3.12.2.4).
(bb) When first article testing is not required (see 4.3.2.1).
(cc) When the rough handling tests of MIL-P-116 are required (see 4.3.2.1).
(dd) When cyclic exposure tests are required (see 4.3.2.1).

6.2.2 Data requirements. When this specification is used in an acquisition which incorporates a DD Form 1423, Contract Data Requirements List (CDRL), the data requirements identified below will be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved CDRL incorporated into the contract. When the provisions of FAR 52.227-7031 are invoked and the DD Form 1423 is not used, the data specified below shall be delivered by the contractor in accordance with the contract or purchase order requirements. Deliverable data required by this specification is cited in the following paragraphs:

Paragraph no.	Data requirements title	Applicable DID no.	Option
3.3.2.1 and 3.3.3.3	Certificate of compliance	DI-E-2121	----
3.5.1	Drawings, engineering and associated lists	DI-E-7031	Drawing number - contractor Design activity designation contractor - Parts Lists required - Certification data sheets
3.5.1	Preservation-packaging and packing test report	UDI-T-23766	----
3.5.1 and 3.5.2	Preservation and packaging plan	DI-L-6147 (see note 1)	Level 2 for preliminary design - Level 3 for final drawings drawings
3.5.2	Packaging and transportation support data	UDI-P-23508	----

Note 1. U.S. Air Force use.

(Data item descriptions related to this specification, and identified in section 6 will be approved and listed as such in DoD 5000.19L., Vol. II, AMSDL. Copies of data item descriptions required by the contractors in connection with specific acquisition functions should be obtained from the Naval Publications and Forms Center or as directed by the contracting officer.)

6.2.2.1 The data requirements of 6.2.2 and any task in section 3, 4 or 5 of this specification required to be performed to meet a data requirement may be waived by the contracting/acquisition activity upon certification by the offeror that identical data were submitted by the offeror and accepted by the Government under a previous contract for identical item acquired to this specification. This does not apply to specific data which may be required for each contract regardless of whether an identical item has been supplied previously (for example, test reports).

6.3 Definitions or explanation of terms.

6.3.1 Degree of protection. The following degrees of protection apply equally to preservation and packing.

6.3.1.1 Maximum protection. Maximum protection, designated as level A, is the degree of preservation or packing required for protection of material against the most severe conditions known or anticipated to be encountered during shipment, handling and storage. Preservation and packing so designated will be designed to protect material against direct exposure to extremes of climate, terrain, operational and transportation environments without protection other than that provided by the pack. The conditions to be considered include, but are not limited to, the following:

(a) Multiple handling during transportation and intransit storage from point of origin to ultimate user.
(b) Shock, vibration and static loading during shipment.
(c) Loading on ship deck, transfer at sea, helicopter delivery, and offshore or over-the-beach discharge to ultimate user.
(d) Environmental exposure during shipment or during intransit operation where port and warehouse facilities are limited or nonexistent.
(e) Extended open storage in all climatic zones.
(f) Static loads imposed by stacking.

6.3.1.2 Intermediate protection. Intermediate protection, designated as level B, is the degree of preservation or packing required for protection of material under known favorable conditions during shipment, handling and storage. Preservation and packing so designated will be designed to protect material against physical damage and deterioration during favorable conditions of shipment, handling and storage. The conditions to be considered include, but are not limited to:

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

6.3.1.3 Minimum protection. Minimum protection, designated as level C will be used whenever the prevailing logistic system permits use of this degree based upon the consideration stated herein. In general, the following criteria determine the requirements for this degree of protection:

(a) Use or consumption of the item at the first destination.
(b) Shock, vibration and static loading during the limited transportation cycle.
(c) Favorable warehouse environment for temporary periods (less than 6 months).

(d) Effects of environmental exposure during shipment and intransit delays.
(e) Stacking and supporting superimposed loads during shipment and temporary storage.

Minimum protection will be designated in packaging documentation either as commercial packaging or as level C. The terms commercial packaging and level C are not to be construed as being synonymous, and will not be cited together in documentation paragraph or section titles. Commercial packaging is the preferred type of protection and will be specified whenever practicable. Level C will be specified only when minimum military requirements are not technically provided for by commercial packaging or when levels A and B are not economically effective or are in excess of the need for protection. When level C is specified, it must reference applicable Public Laws (Code of Federal Regulations) or a specific Federal or military specification, standard or instruction.

6.3.1.4 Commercial packaging. Commercial packaging will be utilized whenever logistic conditions justify and may also be used to satisfy any degree of protection whenever the technical design details of the package meet all conditions of the level of protection specified. Commercial packaging must protect items against physical and environmental damage during shipment, handling and storage. Specific requirements for commercial packaging are contained in ASTM D 3951. In general:

(a) Items will be given the degree of protection normally employed by the contractor to afford protection against corrosion, deterioration and damage during shipment.
(b) Protection will be that used for distribution directly to a using customer or subsequent redistribution as required.
(c) Wholesale assembly bulk type practices such as are used in inter and intra-plant shipments or shipments to jobbers are not acceptable unless they are the usual trade practices for selected commodities, for example, petroleum, coal and textiles.

6.4 First article inspection. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection as to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

6.5 Asbestos. It is the intent of the Government to eliminate the use of asbestos except in those cases that a suitable alternative material cannot be used to obtain the desired results. In those cases in which components or materials being packaged do contain asbestos predominately in their make-up, such items should be separately packaged as specified in 3.3.3.2.

6.6 Detailed information. Supplemental information on preservation, packaging and packing may be found in the following manuals:

DSAM4145.2, Vol. I, TM38-230-1, NAVSUP PUB 502, AFP 71-15, MCO P4030.31B, Packaging of Material Preservation (Volume 1) (National Stock Number 0715-010-0290).

DSAM4145.2, Vol. II, TM38-230-2, NAVSUP PUB 503, Vol. II, AFR 71-16, MCO P4030.21C, Packing of Material - Packing (Volume II) (National Stock Number 0715-010-0280).

DSAM 4145.7, TM38-236, NAVSUP PUB 504, AFP 15-01-3, AFP 71-8, MCO P4030.30B, Preparation of Freight for Air Shipment (National Stock Number 0715-010-0270).

DLAM 4145.3, TM38-250, NAVSUP PUB 505, AFR 71-4, MCO P4030.19D, Preparation of Hazardous Materials for Military Air Shipment (National Stock Number 0715-010-0021).

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

(Copies of the listed documents may be obtained from the Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120 or from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

6.7 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

Custodians:
Army - CR
Navy - SH
Air Force - 69

Review activities:
Army - SM, ME, MI
Navy - SA, EC, AS, OS
Air Force - 99
DLA - ES, CS
DGSC - GS

User activity:
Navy - MC

Preparing activity:
Navy - SH
(Project PACK-0657)

APPENDIX A

METHODS OF PRESERVATION

10. SCOPE

10.1 Table I of the basic specification lists electronic and electrical equipment and associated repair parts, and the appropriate method and preservative for level A or B (see 3.9.1.2) preservation. Table I is alphabetically arranged, to enable locating an item and its preservation method. However, electrical and electronic equipment is constantly undergoing change and there is a concurrent need to bring table I up to date. As this is not practical, it is necessary to provide a procedure which will enable a reasonable determination of a suitable method of preservation for items not yet included in table I. This may be accomplished by the use of this appendix which covers preservation selection of the proper preservation methods which may be used to conform with the requirements of this specification. Information contained in this appendix relates to the principal item categories, namely: electrical, electronic, and non-electrical items, both metallic and nonmetallic.

20. APPLICABLE DOCUMENTS

This section not applicable to this appendix.

30. DESCRIPTION OF TERMS USED IN TABLES

30.1 Explanation of terms. Terms as used in tables are explained below.

30.1.1 Critical items. Items meeting one or more of the following criteria:

(a) Chemically critical. Items of such a nature that any degree of deterioration (in the form of rust, stain, scale, mold, fungi or bacteria) when acted upon by oxygen, moisture, sunlight, living organisms, temperature, time and other contaminants, will result in premature failure or malfunction of the item or equipment in which installed or to which the item is related.
(b) Physically critical. Items having a surface finish of 63 microinches or less and items requiring a high degree of cleanliness, free of contamination, special protection against shock, vibration, abrasion or distortion.

30.1.2 Noncritical items. All items not meeting the criteria set forth for critical items.

30.1.3 Contact preservatives prohibited. This phrase should be interpreted to mean that:

(a) An item is actually harmed by contact preservation (for example, items made wholly or in part of natural rubber).
(b) Application or removal of a preservative compound may be difficult or may result in damage to the item.
(c) Items or assemblies which have been prelubricated, plated or have protective finishes applied.

30.1.4 Hermetically sealed. An item is considered hermetically sealed if its critical surfaces are enclosed in a manner which provides water vapor protection equivalent to that of method II of MIL-P-116. Electrical items are considered to be hermetically sealed if metal is fused to metal, glass is fused to glass, or glass is fused to metal.

30.1.5 Electrical items. Electrical items are those items which will perform a purely electrical function in use. (Exempt from the classification are components of electrical equipment which will perform a purely mechanical function in use like mounting brackets, clamps, fasteners, and similar hardware).

30.1.6 Non-electrical items. Other than those items obviously not having characteristics of an electrical item, this category will include items eventually becoming a part of an electrical component, but not in all instances requiring the preservation or protection required of the end assembly (for example, ground clamps, motor brush assemblies, fuses and so forth).

30.1.7 Functional lubricants. A functional lubricant is an oil, grease or fluid which may or may not contain corrosion inhibitors and which does not require removal from the item prior to use.

30.1.8 Bare metal. Part or all of the surface of the item(s) is bare, that is, not protected by paint, metallic plating, oxide coating or other protective finish.

40. PRESERVATION

40.1 Preservation method. Accomplishment of the application of contact preservative, when applicable, and the method of preservation indicated in the preservation selection tables shall be in accordance with MIL-P-116.

40.1.1 Submethods. Since the requirements of this specification are limited to basic methods of preservation as defined in MIL-P-116, selection of the appropriate submethod is at the discretion of the packager.

40.2 Guidance for establishing a method of preservation (see 6.3). Level A method of preservation is established by using the preservation selection tables herein.

40.3 Review of physical item or background data. The first step is to review the physical item or background data. It will also reveal characteristics (electrical, instrument and so forth) and the material and finish (steel, plated and so forth) of the item. By correlating this data with the preservation selection tables, the category which most nearly fits the item can be selected.

40.4 Determination of method of preservation.

40.4.1 Selection of table. When the proper category has been ascertained by review of the physical item and background data, the applicable table shall be selected for further investigation and determination of the correct preservation method. The tables are sufficiently diverse and mutually exclusive to the extent that a subject item can come under one and only one table. The table shall be selected according to the following:

(a) For complete hermetically sealed electrical or electronic and radar sets and other communication equipment, use table II.
(b) For component parts of electrical and electronic instruments or electrical and electronic equipment not hermetically sealed, use table II.
(c) For items other than electrical or electronic, composed of bare metal, use table III.
(d) For items other than electrical or electronic, with plated or coated surfaces, use table IV.
(e) For items other than electrical or electronic, of a nonmetallic composition, use table V.

40.4.2 Determination of method. When the proper table has been selected, composition or condition of the subject item shall be determined by comparison of the item to all compositions and conditions listed in the table. It will be noted that for a particular composition or condition one or more methods of preservation may be listed in the column headed "Method of MIL-P-116". Selection of a particular method where one or more methods are listed is dependent upon analysis of the remaining columnar entries and their applicability or nonapplicability to the subject item as denoted by the presence or absence of a disk in the column under consideration. For example, in table III an item of bare steel on which preservatives are permitted (as determined by reference to the item specification), which has noncritical surfaces, and which is not combined with a nonmetallic material, would be preserved using method I of MIL-P-116. The note points out that where contact preservatives are permitted, those most generally used are type P-2 and type P-6. The same item, on which the use of contact preservatives is prohibited, yet still has noncritical surfaces and is not combined with a nonmetallic material would be preserved using method IC of MIL-P-116. The item shall be similarly judged against each applicable note and the proper method of preservation finally determined.

TABLE II. Electronic and electrical instruments, equipment and parts.

Complete electrical instrument, radio and radar sets, other communication equipment (hermetically sealed).

Composition or condition	Contact preservative prohibited	Has critical surface	Has non-critical surface	Has movable parts	Method of MIL-P-116	Notes
End product may contain any material	o				III	

Component parts of electrical instruments or of electrical equipment (not hermetically sealed).

Composition or condition	Contact preservative prohibited	Has critical surface	Has non-critical surface	Has movable parts	Method of MIL-P-116	Notes
Steel, iron and magnesium	o		o		IA	For steel and iron parts only, MIL-B-22020, VCI transparent film bags and method IC may be used in lieu of method II and IA.
	o	o			II	
		o			II	
			o		II	
Optical glass, quartz and mica	o	o			IC	Includes plug type electronic connectors, resistors, and capacitors. If moisutre will affect operation method II shall apply.
Copper, bronze, brass and beryllium	o	o			IC	
Gold, silver, platinum, iridium, and other precious metals	o				IC	

TABLE II. Electronic and electrical instruments, equipment and parts. - Continued

Composition or condition	Contact preservative prohibited	Has critical surface	Has non-critical surface	Has movable parts	Method of MIL-P-116	Notes
Parts move on bearings (any material)	o	o		o	II	
Parts electrically balanced or calibrated — Bare steel, iron, or magnesium	o		o		II	
Parts electrically balanced or calibrated — Other	o			o	IC	Avoid excessive voids.
Metals that are varnished, lacquered, or given other equivalent protective coatings	o		o		III	Method III shall also apply for metals painted or enameled.
Metals which have parkerized, bonderized, blued dichromate or black oxide finish over entire surface. Includes nonmetallic combinations	o		o	o	IC	Includes items to which a contact preservative could not be applied without injury or difficulty of removal.
			o	o	IC	
Not made of bare steel, iron or magnesium. Not made of bare silver, copper, bronze, beryllium, optical glass, quartz, or mica	o		o		III	Does not have inaccessible contact areas from which it would be difficult to remove corrosion products.
Electronic tubes	See MIL-E-75 for item tube or tube similar characteristics					

TABLE III. Bare metals, items other than electronic or electrical.

Composition or condition	Contact preservative prohibited	Has critical surfaces or application	Has non-critical surface	Combined with a nonmetallic material*	Method of MIL-P-116	Notes
Iron Steel* Magnesium			o		I	P2 and P6 are the preservatives most generally used where complete application or removal of a light grease present no problem. P10 is generally used for items with inaccessible areas where removal of a preservatives compound would be difficult.
			o	o	I	
		o			IC	
		o		o	IC	
*Includes all stainless varieties except those having minimum compositions of 17CR-7Ni.	o		o		IC	Preservative P18 treated VCI carrier of MIL-P-3420 and treated VCI transparent film of MIL-B-22019 or MIL-B-22020 may be used except for magnesium.
	o		o	o	IC	
	o	o			II	
	o	o		o	II	
Beryllium Nickel cobalt Brass Silver Bronze Stainless steel Cadmium Titanium Copper Tin Lead Zinc Monel Rough copper alloy castings sintered copper alloys	o		o		III	
	o		o	o	IC	
	o	o		o	IC	
	o	o		o	IC	

TABLE III. Bare metals, items other than electronic or electrical. - Continued

Composition or condition	Contact preservative prohibited	Has critical surfaces or application	Has non-critical surface	Combined with a nonmetallic material*	Method of MIL-P-116	Notes
Aluminum			o		I	The most generally used preservatives are P2 and P6.
			o	o	I	
Babbitt		o			I	
Porous steel		o		o	I	

*When a higher degree of protection is specified for the non-metal (see table V) change method of packaging per requirement of the non-metal present. Do not apply preservative or lubricant to non-metallic materials.

TABLE IV. Plated coated surface, items other than electronic or electrical.

Composition or condition	Contact preservative prohibited	Has critical surfaces or application	Has non-critical surface	Combined with a nonmetallic material*	Method of MIL-P-116	Notes
Iron or steel fully plated with: chromium, copper, nickel, silver, tin, gold, iridium, cadmium, palladium, rhodium, or ruthenium	o	o			IC	
	o	o		o	IC	
	o		o		III	
	o		o	o	III	
Ferrous metals (iron or steel) fully plated with zinc, cadmium, lead, or terne:	o		o		III	Plating generally provides adequate corrosion protection.
	o		o	o	III	
Nonferrous metals (other than iron or steel) that have been plated	o	o			IC	
	o	o		o	IC	
Iron, steel, magnesium, copper, or brass which have been parkerized, bonderized, blued, dichromate, or black oxide finish over entire surface	o		o		III	The most generally used contact preservatives are P2 and P6.
	o		o	o	III	
	o	o		o	IC	
	o	o		o	IC	
		o			I	
		o		o	I	
Anodized aluminum magnesium or zinc; zinc-plated iron or steel, zinc alloy castings, or magnesium to which chromate coatings have been applied: alclad aluminum	o		o		III	These surface treatments afford good corrosion protection without need for contact preservatives.

TABLE IV. Plated coated surface, items other than electronic or electrical. - Continued

Composition or condition	Contact preservative prohibited	Has critical surfaces or application	Has non-critical surface	Combined with a nonmetallic material*	Method of MIL-P-116	Notes
Metals that are painted, varnished, lacquered, or enameled	o		o		III	Surface finishes act as mechanical barriers between metal and corrosive environment.

*When a higher degree of protection is specified for the non-metal (see table V) change method of packaging per requirement of the non-metal present. Do not apply preservative or lubricant to non-metallic materials.

TABLE V. Non-metal*, items other than electronic or electrical.

Composition	Has critical surfaces or application	Has non-critical surfaces	Combined with a nonmetallic material*	Method of MIL-P-116	Notes
Plastics or fiber				III	Items generally resistant to factors causing deterioration.
				IC	Items requiring protection against water or oil damage or fungus growth.
Natural or synthetic rubber				IC	Protection required against air light, heat, distortion, and oil damage.
			Optical glass	IC	Fungus growth can result in etching of glass.
Leather		o		III	Small amount of mold will render items unserviceable.
	o			IC	Items on which mold or decay cannot be tolerated.
Optical glass, quartz, mica and assemblies using these as component parts				IC	Protection required against fungus growth.
Carbon, graphite, ceramics, and glass (other than optical)				III	Items resistant to chemical action and most environments. When water-proof protection is required for carbon or graphite items, use method IC.
Asbestos				III	Asbestos items see 3.3.3.

TABLE V. Non-metal*, items other than electronic or electrical. - Continued

Composition	Has critical surfaces or application	Has non-critical surfaces	Combined with a nonmetallic material*	Method of MIL-P-116	Notes
Paper				III	Protection required against physical damage (other than water).
				IC	Protection required against water damage.
Wood or cork				III	Protection required against damage (other than oil, water and moisture).
				IC	Protection required against oil or water.
Cordage and items made of cloth				III	Items chemically treated provide protection against insects, decay, organisms, and bacteria damage.
				IC	Items not chemically treated.
Textiles	o			IC	Protection required against shrinkage, decay, organisms, insects, sunlight, or boiling.

*Contact preservatives shall not be used.

INDEX

		Page
Paragraph 6.2.1	Acquisition requirements	51
3.10.2.3	Air shipment	40
2.	APPLICABLE DOCUMENTS	1
3.9.1.1.5.2	Arrangement of repair parts in containers	36
3.3.3, 6.5	Asbestos	7, 54
3.11.3	Batteries	43
3.11.10.1.1	Carrier	45
3.3.2.1	Certification of new materials	6
6.7	Changes from previous issue	55
4.2	Classification of inspection	49
3.10.2.2	Classified matter	39
3.12.2.3	Classified shipment	48
3.10.2.1	Clearance	39
3.10.3.1, 3.10.4.1	Closure, caseliners and gross weight	41, 42
3.9.1.4, 3.10.6 3.11.4.2.2	Commercial	38, 42, 43
6.3.1.4	Commercial packaging	54
3.11.10.9.1.2	Containers	47
3.11.6.1	Containers - shielding requirements	44
3.11.10.9.1.1	Cushioning	47
3.10.2.4	Cushioning, anchoring, blocking, bracing and waterproofing	40
3.3.4, 3.9.1.1.1	Cushioning and wrapping materials	7, 32
3.5.1	Data and drawings	7
6.2.2	Data requirements	52
3.1	Definitions or explanation of packaging terms	6
6.3	Definitions or explanation of terms	52
3.10	Degree of packing	38
3.9, 6.3.1	Degree of protection	9, 52
4.3.2.1	Degrees of protection, A and B	50
3.9.1.1.3.3.2.1, 3.9.1.1.4.3	Department of Army only	35, 36
6.6	Detailed information	54
3.7	Disassembly and matchmarking	8
3.5.1.1	Drawings	7
3.4.1	Dummy or simulated load	7
3.11.10.6	Electromagnetic and electrostatic protection	47
3.11.10.5	Electromagnetic protection	47
3.11.2	Electron tubes	42
3.11.10.4	Electrostatic protection	46
3.11.8	Field change kits and bulletins	45
3.4, 4.3	First article	7, 50
4.3.1, 6.4	First article inspection	50, 54

INDEX - Continued

		Page
Paragraph 4.3.2.1.1	First article test exceptions	50
4.3.2	First article testing	50
3.10.2	General requirements for levels A and B	39
2.1	Government documents	1
3.9.1.1.5.4	Index list of repair parts	37
6.1	Intended use	50
3.9.1.1.4	Interior containers	35
3.9.1.1.4.2	Intermediate containers	36
6.3.1.2	Intermediate protection	53
3.11.10.1	Lead and terminal protection	45
3.9.1.1, 3.10.3	Level A	9, 40
3.9.1.2, 3.10.4	Level B	38, 41
3.11.4.1.1,	Levels A and B	43
3.11.4.2.1	Levels A, B and C	43
3.9.1.3, 3.10.5, 3.11.4.1.2	Level C	38, 42, 43
3.11.7	Magnetic materials	45
3.11.10.7	Magnetic protection	47
3.12	Marking	47
3.7.1	Matchmarking	9
3.3	Materials	6
3.5.4	Material safety data sheet	8
6.3.1.1	Maximum protection	53
3.9.1.1.3.1	Method I	33
3.9.1.1.3.2	Method IC	33
3.9.1.1.3.3, 3.12.2.1	Method II	33, 48
3.9.1.1.3	Method of preservation (unit protection)	33
6.3.1.3	Minimum protection	53
3.8	New item(s)	9
3.3.2	New materials	6
3.11.10.9.1	Nonrepairable items	47
6.	NOTES	50
6.2	Ordering data	51
3.2	Order of precedence	6
3.9.1.1.1.1	Other items	33
2.1.2	Other Government documents and publications	5
2.2	Other publications	5
5.	PACKAGING	50
3.3.3.2	Packaged items	7
3.5.2	Packaging and transportation data	8
3.5.3	Packaging, handling, storage and transportability plan (PHST)	8
3.3.3.1, 3.11.10.4.1	Packaging materials	7, 46

INDEX - Continued

		Page
Paragraph 3.10.1, 3.11.4.2	Packing	38, 43
3.10.8	Palletized unit loads	42
3.13.1	Placement of unpacking instructions	49
3.9.1, 3.11.4.1	Preservation	9, 43
3.9.1.1.5	Provisioned items (repair parts, equipment and maintenance)	36
4.	QUALITY ASSURANCE PROVISIONS	49
4.4	Quality conformance inspection	50
3.9.1.1.5.1	Quantity of repair parts per unit pack	36
3.11.6	Radioactive materials	43
3.11.10.8	Radioactive protection	47
3.3.1	Recovered materials	6
3.9.1.1.6, 3.11.10.9.2	Repairables	37, 47
3.11.4.1.4	Repair parts	43
3.11.1	Repair parts boxes	42
3.9.1.1.5.3	Repair parts storage boxes	37
3.	REQUIREMENTS	6
4.1	Responsibility for inspection	49
1., 1.1	SCOPE	1
3.6, 3.11.10, 3.12.2.5	Sensitive electronic items	8, 45, 48
3.9.1.1.8	Sets or kits	37
3.11.5	Shelters	43
3.10.7	Skids	42
3.11	Special instructions	42
3.12.2	Special marking	48
2.1.1	Specifications, standards and handbooks	1
3.12.1	Standard markings	47
3.12.2.4	Structural markings	48
3.9.1.1.7	Submarine repair parts	37
3.9.1.1.3.2.1	Submethod IC-4	33
3.9.1.1.3.3.1	Submethod IIa	34
3.9.1.1.3.3.2	Submethod IIb	34
3.9.1.1.3.3.3	Submethod IId	35
3.11.10.9	Supplemental cushioning and containers	47
3.3.3.3	Talc/talcum	7
3.5	Technical data	7
3.11.9, 3.12.2.2	Technical manuals	45, 48
3.11.4	Trailer and truck installed equipment	43
3.9.1.1.2	Transparent unit protection	33
3.9.1.1.4.1	Unit containers	35
3.11.10.3	Unit protection	46
3.13	Unpacking instructions	49

INDEX - Continued

			Page
Paragraph	3.14	Workmanship	49
	3.11.10.2	Wraps and cushioning materials	46
	Appendix A	Methods of preservation	57

TABLES

Table	I	Preservation of electronic and electrical equipment, accessories, and provisioned items (repair parts)	9-31
	II	Electronic and electrical instruments, equipment and parts	60-61
	III	Bare metals, items other than electronic or electrical	62-63
	IV	Plated coated surface, items other than electronic or electrical	64-65
	V	Non-metal, items other than electronic or electrical	66-67

INSTRUCTIONS: In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge *(DO NOT STAPLE)*, and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

NOTE: This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document*(s)* or to amend contractual requirements.

(Fold along this line)

(Fold along this line)

DEPARTMENT OF THE NAVY

COMMANDER
NAVAL SEA SYSTEMS COMMAND (SEA 55Z3)
DEPARTMENT OF THE NAVY
WASHINGTON, DC 20362

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 12503 WASHINGTON D. C.

POSTAGE WILL BE PAID BY THE DEPARTMENT OF THE NAVY

COMMANDER
NAVAL SEA SYSTEMS COMMAND (SEA 55Z3)
DEPARTMENT OF THE NAVY
WASHINGTON, DC 20362

(TO DETACH THIS FORM, CUT ALONG THIS LINE.)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER MIL-E-17555H	2. DOCUMENT TITLE ELECTRONIC AND ELECTRICAL EQUIPMENT, ACCESSORIES, AND PROVISIONED ITEMS (REPAIR PARTS): PACKAGING OF
3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)* ☐ VENDOR ☐ USER ☐ MANUFACTURER ☐ OTHER *(Specify)*: _____
b. ADDRESS *(Street, City, State, ZIP Code)*	

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	8. DATE OF SUBMISSION *(YYMMDD)*

DD FORM 82 MAR 1426

PREVIOUS EDITION IS OBSOLETE.