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(See 6.11)

MILITARY SPECIFICATION

TURBINES AND GEARS, SHIPBOARD PROPULSION AND AUXILIARY STEAM; PACKAGING OF

This specification is approved for use within the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the preservation, packing and marking requirements for shipboard propulsion and auxiliary steam turbines, gears, supply support items (spares, repair parts, and tools), accessories, and instrumentation. This specification does not apply to driven units such as generators, forced draft fans, and components and parts that come in direct contact with the primary coolant on nuclear propulsion equipment.

1.2 Levels of protection.

1.2.1 Preservation.

Level A (See 3.8.1.1)
Level C (See 3.8.1.2)
Commercial (See 3.8.1.3)

1.2.2 Packing.

Level A (See 3.8.2.1, 3.8.2.4.1 and 3.8.2.5.1)
Level B (See 3.8.2.1, 3.8.2.4.2 and 3.8.2.5.2)
Level C (See 3.8.2.1 and 3.8.2.7)
Commercial (See 3.8.1.3 and 3.8.2.8)

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

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2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation.

SPECIFICATIONS

FEDERAL

P-D-680 - Dry Cleaning Solvent.
NN-P-530 - Plywood, Flat-Panel.
QQ-A-1876 - Aluminum Foil.
TT-P-28 - Paint, Aluminum, Heat Resisting (1200°F).
TT-P-645 - Primer, Paint, Zinc-Chromate, Alkyd Type.
TT-T-291 - Thinner, Paint, Mineral Spirits, Regular and Odorless.
TT-W-572 - Wood Preservative: Water-Repellent.
UU-P-268 - Paper, Kraft, Wrapping.
LLL-B-810 - Building Board, (Hardboard) Hard Pressed, Vegetable Fiber.
PPP-B-566 - Boxes, Folding, Paperboard.
PPP-B-576 - Boxes, Wood, Cleated, Veneer, Paper Overlaid.
PPP-B-585 - Boxes, Wood, Wirebound.
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-795 - Cushioning Material, Packaging (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-P-40 - Preservation and Packing of Hand Tools; Tools and Tool Accessories for Power Driven, Metal and Woodworking Machinery.

FEDERAL (Continued)

PPP-P-291 - Paperboard, Wrapping and Cushioning.
PPP-T-60 - Tape: Packaging, Waterproof.

MILITARY

MIL-V-3 - Valves, Fittings, and Flanges (Except for Systems Indicated Herein); Packaging of.
MIL-C-104 - Crates, Wood: Lumber and Plywood, Sheathed, Nailed and Bolted.
MIL-P-116 - Preservation, Methods of.
MIL-B-121 - Barrier Material, Greaseproofed, Waterproofed, Flexible.
MIL-P-149 - Plastic Coating Compound, Strippable (Hot Dipping).
MIL-R-196 - Repair Parts, Accessories, and Kits, Mechanical; Packaging of.
MIL-B-197 - Bearings, Antifriction; Associated Parts and Subassemblies; Preparation for Delivery of.
MIL-B-233 - Boxes, Supply Support Items, Stowage and Storage.
MIL-B-3106 - Board, Composition, Water-Resistant, Solid (For Filler or Cushioning Pads).
MIL-C-3774 - Crates, Wood; Open 12,000 and 16,000-Pound Capacity.
MIL-R-5001 - Rubber Cellular Sheet, Molded and Hand Built Shapes: Latex Foam.
MIL-R-6130 - Rubber, Cellular, Chemically Blown.
MIL-I-8574 - Inhibitors, Corrosion, Volatile, Utilization of.
MIL-C-15074 - Corrosion Preventive, Fingerprint Remover.
DOD-P-15328 - Primer (Wash), Pretreatment (Formula No. 117 for Metals). (Metric)
MIL-C-15430 - Condensers, Steam, Naval Shipboard.
MIL-C-15730 - Coolers, Fluid, Naval Shipboard: Lubricating Oil, Hydraulic Oil, and Fresh Water.
MIL-E-16298 - Electric Machines Having Rotating Parts and Associated Repair Parts: Packaging of.
MIL-P-16789 - Pumps, (Including Prime Movers and Support Items); Packaging of.
MIL-I-17244 - Indicators, Temperature, Direct-Reading, Bimetallic, (3-inch and 5-inch Dial).
MIL-E-17555 - Electronic and Electrical Equipment, Accessories, and Provisioned Items (Repair Parts): Packaging of.
MIL-S-17849 - Strainers, Sediment, Pipeline, Duplex (With and Without Magnet).
MIL-G-18997 - Gauge, Pressure, Dial Indicating.
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 or Plastic Sheets and Assembled and Molded Shapes, Synthetic Foam or Sponge, Open Cell.
MIL-B-22019 - Barrier Materials, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated.
MIL-B-22020 - Bags, Transparent, Flexible, Sealable, Volatile Corrosion Inhibitor Treated.

MILITARY (Continued)

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-C-26861 - Cushioning Material, Resilient Type, General.
MIL-C-52950 - Crates, Wood, Open and Covered.
MIL-P-58102 - Plastic Sheet and Laminates, Flexible, for Environmental Protective Storage and Shipping Systems.
MIL-C-58104 - Cover, Protective, for Parts and Equipment.
MIL-F-81334 - Foam, Plastic, Flexible, Open Cell, Polyester Type, Polyurethane.
MIL-F-87090 - Foam, Combustion Retardant, for Cushioning Supply Items Aboard Navy Ships.

STANDARDS

FEDERAL

FED-STD-313 - Material Safety Data and Disposal Data for Hazardous Materials Furnished to Government Activities.

MILITARY

MIL-STD-129 - Marking for Shipment and Storage.
MIL-STD-740-1 - Airborne Sound Measurements and Acceptance Criteria of Shipboard Equipment.
MIL-STD-740-2 - Structureborne Vibratory Acceleration Measurements and Acceptance Criteria of Shipboard Equipment.
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).

2.1.2 Other Government publication. The following other Government publication forms a part of this specification to the extent specified herein. Unless otherwise specified, the issues shall be those in effect on the date of the solicitation.

DEPARTMENT OF TRANSPORTATION (DOT)

Code of Federal Regulations (CFR) 29, Parts 1900 through 1910 - Occupational Safety and Health Standards.

(The Code of Federal Regulations (CFR) and the Federal Register (FR) are for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

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

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted shall be those listed in the issue of the DoDISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS shall be the issue of the nongovernment documents which is current on the date of the solicitation.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D 996 - Standard Terminology of Packaging and Distribution Environments. (DoD adopted)

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

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

(Nongovernment standards and other publications are normally available from the organizations which prepare or which distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 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. 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 and 6.5. For definitions or explanation of packaging terms not specified therein, ASTM D 996 shall apply.

3.2 First article. When specified in the contract or purchase order (see 6.2.1), a sample shall be subjected to first article inspection (see 4.4 and 6.3).

3.3 Materials. The materials shall be as specified herein.

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

3.3.2 New materials and procedures. 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 at no additional cost to the Government (see 6.2.2).

3.3.3 Asbestos. (See 6.6)

3.3.3.1 Packaging materials. Asbestos or material and items containing asbestos shall not be used in the packaging of material or items covered by this specification (see 6.5).

3.3.3.2 Packaged items. Asbestos and separately packaged components containing asbestos, that are predominately distributed throughout the item, shall be packaged in sealed, dustproof and siftproof packages. Flexible packages shall be heat sealed. Packages shall be marked as specified (see 3.8.3).

3.3.3.3 Dusting material. The dusting materials used in the packaging process (for example, talc and talcum) shall be asbestos free (see 6.2.2).

3.3.4 Cushioning and wrapping materials. The use of excelsior, newspaper, shredded paper (all types including wax paper) and similar hygroscopic or non-neutral materials, and all types of loose-fill materials (for applications such as cushioning, fill, stuffing, and dunnage) shall be prohibited (see 3.8.1.1.4). Materials selected for cushioning and wrapping shall have properties (characteristics) resistant to fire.

3.4 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 MIL-STD-1367.

3.4.1 Material safety data sheet. The contracting activity shall be provided a material safety data sheet (MSDS) at the time of the contract award. The MSDS shall be provided in accordance with the requirements of FED-STD-313 and 29 CFR 1910.1200, Hazard Communication Standard. When FED-STD-313 is at variance with the CFR, 29 CFR 1910.1200 shall take precedence. FED-STD-313 shall be modified and supplemented accordingly. The MSDS shall be included with each shipment of the material covered by this specification.

3.5 Disassembly and matchmarking.

3.5.1 Disassembly (see 3.8.1.1.1). System, equipment, or item disassembly shall be the minimum necessary to make accessible for cleaning, drying, and preservation of equipment and its critical surfaces. Removal of secondary assemblies, accessories, or projecting parts which will facilitate protection of the equipment or item from damage, pilferage, loss, or reduction of cube is permitted where such removal will not affect permanent settings or alignments, and where the removed items can be readily reassembled at the installation site without the

need for special tools or gauges. Removed hardware (bolts, nuts, pins, screws, washers, and others) shall be reinstalled in the mating parts and secured to prevent loss. Removed items or parts, other than hardware, shall be packaged to the same level of protection as the basic or prime equipment.

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

3.6 Lubrication. Rotating joints, bearings, and similar moving parts shall be thoroughly lubricated. The lubricant shall be as specified in the equipment specification or as approved by the contracting activity. Excess lubricants shall be removed before packing operations.

3.7 Painting.

3.7.1 Turbines.

3.7.1.1 Surfaces to be painted. External surfaces of ferrous parts which are not faying or working surfaces shall be thoroughly cleaned and coated with two coats of heat resisting paint in accordance with TT-P-28. Except that for turbine parts that never exceed 250 degrees Fahrenheit (°F) (such as support members, bases or bedplates), one coat of aluminum paint is acceptable. These external surfaces shall include all pockets and voids which are not normally in contact with steam or oil during operation of the turbine (such as may exist in a bearing bracket). Paint shall be applied under attachments (such as lagging and identification plates or information plates).

3.7.1.2 Surfaces and parts not to be painted. The following surfaces and parts shall not be painted:

(a) Valve stems.
(b) Bearings and bearing surfaces.
(c) Identification, operation, safety, operating, and general label plates.
(d) Oil holes and grease fittings.
(e) Faying surfaces such as flange faces and spot-faces for bolting.
(f) Electric wiring.
(g) Rotating parts (gear assemblies).
(h) Surfaces protected from corrosion by plating.

3.7.1.3 Condition at point of delivery. The turbine and its appurtenances shall be delivered with all paint in good condition. This may require touching up paint that is damaged by handling in the manufacturer's plant.

3.7.2 Gears (large and small).

3.7.2.1 Surfaces to be painted. External surfaces which are not faying or working surfaces shall be cleaned, free of rust, scale, oil, grease, and other surface contaminants and painted with one coat of coating pretreatment in accordance with DOD-P-15328 and one or two coats of zinc chromate primer in accordance with TT-P-645 as necessary, to provide a complete coverage. Where surface preparation is accomplished by abrasive blasting, the pretreatment in accordance with DOD-P-15328 may be omitted.

3.7.2.2 Surfaces and parts not to be painted. The following surfaces and parts shall not be painted:

(a) Identification plates, data plates, warning plates, and so forth.
(b) Electric wiring.
(c) Oil holes and grease fittings.
(d) Sight flow fittings.

3.8 Level of protection (see 6.5.1 and 6.2.2).

3.8.1 Preservation. Preservation shall be level A, C or commercial as specified (see 6.2.1).

3.8.1.1 Level A. Unless otherwise specified herein, cleaning, processes (C-numbers), preservatives (P-numbers), preservative application, and methods (unit protection) of preservation shall be in accordance with the requirements specified in MIL-P-116. Processing of turbines and gear assemblies shall be in accordance with table I. Processing of support items (repair parts), accessories, instrumentation and tools shall be as specified in table II. Table II requirements are assigned by category; methods and submethods are assigned on the basis of the type of preservation (unit protection) most commonly required for a specific category. Unless otherwise specified herein, the selection of a submethod under a particular method of preservation is at the option of the contractor.

TABLE I. Processing of complete steam turbines, propulsion and auxiliary, and reduction gears (see 6.7).

Description	Preservation			Special requirements
	Cleaning drying	Preservative	Unit protection	
Gears: Auxiliary and propulsion: Large Small	See 3.8.1.1.2	See 3.8.1.1.3	See 3.8.1.1.7.2	Blank flange external opening and system connections. Secure rotating elements axially. Reamed holes shall be blanked off after coating with P-2 preservative.
Turbines: Auxiliary and propulsion	See 3.8.1.1.2	See 3.8.1.1.3	See 3.8.1.1.7.1	Remove carbon rings. Secure rotor axially. Blank flange external openings and system connections. Reamed holes shall be blanked off after coating with type P-2 preservative.

3.8.1.1.1 Disassembly of turbines and reduction gears. The turbine shall not be disconnected from the gear train, bedplate, or driven auxiliary for shipment, except as follows:

(a) Where the size of the equipment involved dictates, and where partial disassembly is necessary to package and pack for shipment.

(b) Accessories and instrumentations shall be removed and individually processed in accordance with table II and packed with the equipment.

TABLE II. Processing of supply support items, accessories, instrumentation and tools.

Description	Preservation		
	Cleaning process MIL-P-116	Preservatives MIL-P-116	Methods of preservation MIL-P-116
Accessories and instrumentation		See MIL-STD-794 or MIL-E-17555 for items not covered herein.	
Bearings:			
Anti-friction		See MIL-B-197	
Friction:			
Pivoted shoe, sleeve, thrust	C-5	P-2, P-19 or MIL-P-149, type II	I or IA[1/] [2/] IB[2/] [3/]
Blading:			
Rotating	C-3	P-19 or MIL-P-149, type II	I or IB[3/]
Stationary			
Brakes:			
With linings	C-1	P-18	IA, see 3.8.1.1.3.4
Without linings	C-5	P-2	
Casing, bladed or unbladed		See 3.8.1.1.7.1.1 and 3.8.1.1.7.1.4	I
Chain, roller	C-1	P-2 or P-18	IA, see 3.8.1.1.3.4
Chest, steam	C-5	See 3.8.1.1.7.1.8	I
Collars:			
Thrust or sleeve	C-5	P-2, P-18, P-19 or MIL-P-149, type II	I, IA[1/] or IB[3/] see 3.8.1.1.3.4
Clutches:			
Non-ferrous	C-1	None	III
Ferrous:			
Without linings	C-5	P-2 or type II of MIL-P-149	IA IB[3/]
With linings	C-1	P-18	See 3.8.1.1.3.4
Complete assembly	C-1	None	II[3/]
Condenser, steam		See MIL-C-15430	
Controllers and associated parts		See MIL-E-17555	

See footnotes at end of table.

TABLE II. Processing of supply support items, accessories, instrumentation and tools. - Continued

Description	Preservation		
	Cleaning process MIL-P-116	Preservatives MIL-P-116	Methods of preservation MIL-P-116
Cooler, oil		See MIL-C-15730	
Couplings:			
Dental, hydraulic	C-5	P-2 or P-19	I or IA[1/], see 3.8.1.1.7.2.3
Deflectors, oil and steam:			
Ferrous and aluminum	C-1	P-2, P-18, P-19	I or IA[1/], see 3.8.1.1.3.4
Non-ferrous	C-1	None	III
Gauges, pressure	C-1	P-19[4/ 5/]	IA[5/]
Gear wheels (built up) and planet carrier	C-5	P-2 or P-19	I or IA[1/], see 3.8.1.1.7.2.3
Governors, trips and wearing parts	C-1	P-2 or P-10[6/]	I, IA, or II[3/ 6/]
Indicators:			
Pressure		See gauges, pressure	
Temperature		See thermometers	
Journals	C-1	P-21	I, see 3.8.1.1.7.1.1
Miscellaneous parts: Wearing and operating (such as hardware, metallic gaskets, shims, wedges, plugs, pins, dowels, rods, and stems)	C-1	P-2, P-18, P-29[7/] or type II of MIL-P-149	I, IA or IB[3/ 6/], see 3.8.1.1.3.4
Motors and associated parts (turning gear)		See MIL-E-16298	
Nozzle blocks, plate or jets and partitions	C-5	P-2, P-18 or P-19	I or IA[1/], see 3.8.1.1.3.4

See footnotes at end of table.

TABLE II. Processing of supply support items, accessories, instrumentation and tools. - Continued

Description	Preservation		
	Cleaning process MIL-P-116	Preservatives MIL-P-116	Methods of preservation MIL-P-116
Nozzle diaphragms (less packing)	C-5	P-2, P-18 or P-19	I or IA[1/], see 3.8.1.1.3.4
Oil sight flows	C-1	None	III
Packing, metallic (gland and diaphragm):			
Ferrous	C-5	P-2 or P-19	I or IA[1/]
Non-ferrous	C-1	None	III
Carbon ring assembly	C-1	None	III, see 3.8.1.1.7.1.3
Carbon ring	C-1	None	IA
Packing, soft, nonmetallic	C-1	None	IA
Pinion and gears (planet, level, internal one-piece)	C-5	P-2, P-19 or MIL-P-149, type II	I, IA[1/], IB[3/], see 3.8.1.1.7.2
Pump, lube oil		See MIL-P-16789 and 3.8.1.1.7.1.8	
Quill shaft	C-5	P-2, P-19 or MIL-P-149, type II	I, IA[1/], IB[3/], see 3.8.1.1.7.2.3
Reverse chambers and intermediate segment (with bolts)	C-1	P-2 or P-19	I, IA[1/]
Rotor, bladed or unbladed	C-5	P-19	I
Sealing rings:			
Ferrous	C-5	P-2, P-18, or P-19	I or IA[1/], see 3.8.1.1.3.4
Non-ferrous	C-1	None	III
Seals, oil (leather, rubber)	C-1	None	IA, see 3.4
Seal strips	C-1	P-2 or P-18	I, see 3.8.1.1.3.4

See footnotes at end of table.

TABLE II. Processing of supply support items, accessories, instrumentation and tools. - Continued

Description	Preservation		
	Cleaning process MIL-P-116	Preservatives MIL-P-116	Methods of preservation MIL-P-116
Springs:			
Flat (packing)	C-1	None	IA
Garter (packing)	C-1	None	IA
Coil	C-1	P-2 or P-19	I or IA[1/]
Spring holders (packing)	C-1	None	IA
Strainers:			
Oil		See MIL-S-17849	
Steam or water	C-1	See 3.8.1.1.7.1.8	I
Stub shaft	C-5	P-2, P-19 or MIL-P-149, type II	I, IA[1/], IB[3/], see 3.8.1.1.7.2.3
Studs, bolts, cap screws and nuts	See miscellaneous operating and wearing parts		
Thermocouple elements		See MIL-E-17555	
Thermometers:			
Direct reading, dial		See MIL-I-17244	
Remote reading, dial, gas actuated		See MIL-T-19646	
Threaded fasteners	See miscellaneous operating and wearing parts		
Tools:			
Standard		See 3.8.1.1.7.5.7.1	
Special		See 3.8.1.1.7.5.7.2	
Valves:			
Throttle and nozzle control	C-1	See 3.8.1.1.7.1.8	I
Relief, stop, sentinel, check, and so forth		See MIL-V-3	
Worm and worm wheels	C-5	P-2, P-18, P-19 or MIL-P-149, type II	I, IA[1/] or IB[6/], See 3.8.1.1.7.2.3

See footnotes at top of next page.

1/ Method I shall apply to items 40 pounds and over. Preservative shall conform to P-19.
2/ Package in sets, or strap and unit pack halves in pairs (back to back).
3/ Preservative compound shall not be used with method IB-I or II unit packs.
4/ Clean and preserve external metal surfaces only.
5/ Gauges (indicators) in accordance with MIL-G-18997 shall be processed in accordance with the preparation for delivery requirements therein.
6/ As applicable.
7/ Preservative P-19 shall not be applied to threaded parts or parts having other than smooth surfaces.

3.8.1.1.2 Cleaning and drying. Units, assemblies or parts shall be thoroughly cleaned and dried without damage to the equipment or item and shall meet the cleanliness requirements in accordance with MIL-P-116. Critical functioning or close tolerance surfaces shall be cleaned as necessary to remove fingerprints and perspiration residue. Fingerprint remover shall be in accordance with MIL-C-15074. Fingerprint remover residues shall be removed with a clean petroleum solvent in accordance with P-D-680 or grade 1 of TT-T-291. Cleaning solvents shall not be applied to nonmetallic parts, gaskets, leather, rubber, or electrical insulation.

3.8.1.1.3 Preservatives. Immediately after cleaning and drying, all external unpainted surfaces of the equipment or item shall be coated with a preservative compound in accordance with MIL-P-116, and as specified herein. For preservation of internal surfaces, equipment or items may be inclined or rotated, as necessary, to ensure a thorough coating of the surfaces with the preservative compound. During and after application of preservative compounds, equipment or items shall be handled in such a manner as to produce a uniform protective film. The protective film shall remain untouched for a sufficient time to allow the film to set or excess material to drain, as applicable, before application of additional required material preservation. Anti-friction bearings installed in assemblies and subassemblies, not directly connected to the lubricating system, shall be treated with the type of lubricant normally used in operation. Anti-friction bearings furnished as support material shall be processed in accordance with table II. Preservative compounds shall not be applied to nonmetallic parts, or parts which are vulnerable to damage such as leather, rubber, paper, electrical parts and insulation. Preservative compounds shall be applied to those surfaces or areas where removal by scraping or solvent cleaning action will not damage the surface involved or the adjacent surfaces.

3.8.1.1.3.1 External metal surfaces. Unpainted external finish-machined surfaces of assembled components shall be coated with a minimum film thickness of 4 mils with a preservative compound in accordance with type P-1. These surfaces will not require an overwrap of greaseproof barrier material. Alternatively, preservative compound in accordance with P-19, minimum film thickness of 2 mils and with an overwrap of greaseproof barrier material may be used.

3.8.1.1.3.2 Internal metal surfaces. Unless otherwise specified (see 6.2.1), all internal surfaces normally in contact with oil shall be coated with type P-2 preservative compound. Internal surfaces normally in contact with water or steam shall be coated with type P-21 preservative compound. Excessive use of

preservative compounds shall be avoided. The preservative compound film thickness shall not exceed the limitations specified in the applicable preservative compound specification.

3.8.1.1.3.3 Draining. After completion of internal preservation, the applied preservative compound shall be thoroughly drained from all low places and pockets to prevent subsequent coagulation of the preservative compound. Drain closures, when provided, shall be coated with a preservative compound, then replaced and secured.

3.8.1.1.3.4 Volatile corrosion inhibitor (VCI). When VCI is selected (see table II, P-18), its use shall be in accordance with MIL-I-8574. Unless otherwise specified (see 6.2.1), application of a contact preservative compound shall not be required. Preservative, when required, shall be as the type specified (see 6.2.1). Transparent, flexible, VCI-treated films or bags, when used, shall be in accordance with MIL-B-22019 or MIL-B-22020, respectively. For items that are unit protected with VCI-treated materials, each unit pack shall be marked or provided with a caution label stating the following:

"WASH HANDS AFTER HANDLING VCI MATERIAL TO AVOID EYE OR SKIN IRRITATION."

3.8.1.1.4 Cushioning and wrapping materials (see 3.3.4). Cushioning or wrapping materials, as applicable, shall be provided to prevent damage to the items, the barrier, and container from item projections and sharp edges, and to prevent free movement of the items within the barrier and container. Excessive use of cushioning within the unit pack shall be avoided to prevent unnecessary increase in tare weight and cube. The performance in accordance with MIL-P-116 shall be considered when determining the actual required quantity of cushioning material (see 3.3.4). Cushioning materials which have not been chemically refined for noncorrosiveness shall be used only when contained in a sealed, waterproof barrier in accordance with PPP-B-1055. The barrier shall not affect nor be affected by the items within the pack. Cushioning used within the unit pack shall conform to any or a combination of the following specifications at the contractor's option, and shall provide the required protection.

Specification	Material	Special requirements
UU-P-268	Paper, kraft wrapping.	For Navy, use type II, grade C or D[1/]
PPP-P-291	Paperboard, wrapping and cushioning.	
PPP-F-320	Fiberboard.	
PPP-C-795	Plastic film - flexible cellular.	For Navy, use Class III[1/]
PPP-C-843	Cellulosic.	
PPP-C-850	Polystyrene expanded, resilient.	For Navy, use grade SE[1/]
PPP-C-1120	Bound fiber.	For Navy, use type III or IV, class C[1/]
PPP-C-1752	Polyethylene foam.	
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.	

Specification	Material	Special requirements
MIL-R-5001	Rubber, latex foam, sponge.	For Navy, use grade A[1/]
MIL-R-6130	Rubber, cellular.	For Navy, use grade A[1/]
MIL-P-19644	Plastic molding material (polystyrene foam, expanded bead).	For Navy, use type II[1/]
MIL-R-20092	Rubber sheets and molded shapes, cellular, synthetic, exploded cell.	For Navy, use class 5[1/]
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.	

1/ Fire retardant material.

3.8.1.1.5 Barrier materials. When using barrier materials in accordance with MIL-B-121, the following precautions shall apply:

(a) The greaseproof side of grade A material shall be in contact with the part or surface.
(b) Grade C material shall not be in contact with metal surfaces or be used as an intimate wrap.

3.8.1.1.6 Sealing of openings. Inlet and outlet openings shall be covered with barrier material in accordance with grade A of MIL-B-121 (see 3.8.1.1.5), and a blank flange of mild steel, tempered hardboard, or fully waterproof plywood as follows:

(a) Mild steel flanges of not less than 1/16-inch thickness.
(b) Tempered hardboard in accordance with type I of LLL-B-810; 1/8-inch thickness for openings having a diameter up to and including 9 inches; 1/4-inch thickness for openings having a diameter over 9 inches.
(c) Fully waterproof plywood in accordance with NN-P-530; 1/4-inch thickness for openings having a diameter over 9 inches.

Flanges shall be secured with not less than four bolts with nuts and lockwashers. For openings up to 2-1/2 inches in diameter, plastic plugs or caps may be used in lieu of barrier material and blank flanges. Preserved surfaces and shaft extensions coated with a preservative compound, other than type P-19, shall be wrapped with barrier material in accordance with grade A of MIL-B-121 (see 3.8.1.1.5), or transparent flexible greaseproof film in accordance with type II of MIL-B-22191. Barrier wraps shall be secured in place by taping, tying or other suitable means. Tape, when used, shall be in accordance with PPP-T-60.

3.8.1.1.7 Preservation.

3.8.1.1.7.1 Steam turbines. Steam turbines shall be preserved as specified herein and shall meet the cleanliness and the preservative retention requirements for method I. When specified (see 6.2.1), method II shall apply including the preservative application requirements specified herein. When method II is specified in the acquisition document, and when specified (see 6.2.1), a flexible reusable container in accordance with MIL-P-58102 and MIL-C-58104 shall be used in lieu of the required opaque or transparent flexible, heat-sealed barrier bag.

3.8.1.1.7.1.1 Internal turbine parts. Parts that normally operate in contact with water or steam, including gland packing journals, shall be cleaned with a petroleum solvent and dried (see 3.8.1.1.2), and the surfaces shall be coated with type P-21 preservative (see 3.8.1.1.3).

3.8.1.1.7.1.2 Bearings. The bearings shall be removed. Bearing surfaces, including bracket internal surfaces, bearing journals, and bearing liners shall be cleaned with a petroleum solvent and dried (see 3.8.1.1.2) and coated with type P-2 preservative.

3.8.1.1.7.1.3 Carbon packing rings. Carbon packing rings shall be removed and a piece of soft packing (approximately the size of the carbon packing) shall be soaked approximately 24 hours in type P-21 preservative and inserted in the carbon packing gland to prevent moisture or dust from entering the turbine. A formed protective mat shall then be provided for each carbon packing ring unit to provide sufficient indexing and to support all surfaces of the packing rings to prevent shifting or movement within the unit container. Materials suitable for this purpose are foamed plastics, latex impregnated curled hair, or other media (see 3.8.1.1.4). Each supported unit shall then be placed in a fiberboard box conforming to PPP-B-636, weather resistant. Box closure shall be in accordance with method V as specified in the appendix to the box specification. The carbon packing unit, packed as specified herein, shall be packed within the basic equipment container.

3.8.1.1.7.1.4 Oil reservoirs and passages. Clean-out covers shall be removed and the inside surfaces shall be cleaned with a petroleum solvent and dried (see 3.8.1.1.2), and coated with type P-2 preservative.

3.8.1.1.7.1.5 External oil and steam piping. Disassemble, clean, and dry (see 3.8.1.1.2) all surfaces. Surfaces in contact with oil shall be coated with type P-2 preservative. Internal surfaces of steam lines shall be coated with type P-21 preservative. External surfaces shall be coated as specified in 3.8.1.1.3.

3.8.1.1.7.1.6 External finish-machined surfaces. After re-assembly of the complete unit, all external unpainted finish-machined surfaces shall be cleaned to bare metal with a petroleum solvent and dried (see 3.8.1.1.2), and coated with preservative (see 3.8.1.1.3.1).

3.8.1.1.7.1.7 Shaft extensions. Shaft extensions (such as coupling ends of rotors and valve control gear) shall be cleaned, dried, and preserved as specified in 3.8.1.1.7.1.6.

3.8.1.1.7.1.8 Secondary assemblies. Large assemblies not readily handled, steam strainers and valve gear mechanisms (including valve chest, operating cylinder, pilot valve body and bushing, synchronizing device (except motor), and main oil pump) shall be dismantled as necessary to make accessible all internal critical surfaces. Small assemblies readily handled (such as back pressure tripping device, steam seal manifolds and regulators, oil strainers and hand oil pumps) need be disassembled only sufficiently to eliminate air pockets. Unpainted metal surfaces shall be cleaned and dried as specified in 3.8.1.1.2 and coated with preservative in accordance with 3.8.1.1.3. Throughout the entire cleaning, drying and preservative process, test settings (such as speed and emergency governors, tram settings, back pressure mechanisms, and relief valves) shall not be disturbed. Projecting screw threads shall be protected with two layers of grade A barrier material (see 3.8.1.1.5). Tape in accordance with PPP-T-60 may be used to secure the wrap. Flange openings, pipe taps, and all other openings shall be sealed as specified in 3.8.1.1.6.

3.8.1.1.7.1.9 Turbine shipment. Each propulsion turbine shall be shipped with the turbine rotor and other internal parts installed in the casing. Each auxiliary turbine driven unit (including packaged turbine generator units), whether geared or direct-connected, shall be shipped with all major components completely assembled and mounted on their associated bed plate.

3.8.1.1.7.2 Reduction gears. Reduction gears shall be preserved as specified herein (see 3.8.1.1.7.2.3 (a) and (b)), and shall meet the cleanliness and preservative retention requirements for method I. When specified (see 6.2.1), method II shall apply, including the preservative application requirements specified herein. When method IIa is specified in the acquisition document, and when specified (see 6.2.1 and 6.7), a flexible, reusable container in accordance with MIL-C-58104, type I shall be used, utilizing plastic sheet in accordance with MIL-P-58102, class and grade as specified (see 6.2.1).

3.8.1.1.7.2.1 Casings and covers. Internal surfaces of all casings, covers, integral oil piping, bearing bores and oil nozzle passages shall be cleaned with a petroleum solvent and dried (see 3.8.1.1.2), and coated with a type P-2 preservative. External surfaces of casings, covers, flanges, and casing joints shall be preserved as specified in 3.8.1.1.3.

3.8.1.1.7.2.2 Rotating elements. First and second reduction gear teeth, journals, thrust collars, and other critical surfaces shall be cleaned with a petroleum solvent, fingerprint remover, and dried (see 3.8.1.1.2) and coated with type P-2 preservative.

3.8.1.1.7.2.3 Reduction gear shipment. Reduction gear shipment shall be as follows:

(a) Small propulsion gears shall be shipped assembled. For assembled units, to prevent vertical movement of the turbine or gear rotating element during handling and transit, a sufficient thickness of barrier material, in accordance with grade A of MIL-B-121 (see 3.8.1.1.5), may be inserted between the upper half

linings and journals to prevent vertical movement of the rotor after bearing caps are properly seated and bolted in place. The barrier material, when used, shall be projected beyond the assembly so that it can be easily detected. Each journal, so prepared, shall be plainly marked with a waterproof tag stating "BEFORE OPERATING UNIT, REMOVE BARRIER MATERIAL BETWEEN JOURNAL AND UPPER HALF LINING". To prevent endwise and rotational movement of the rotating elements, they shall be suitably blocked by an external clamp. Where possible, the preserved external ferrous surfaces shall be wrapped first with barrier material, grade A, then overwrapped with grade C in accordance with MIL-B-121 (see 3.8.1.1.5), respectively. Tape in accordance with PPP-T-60 may be used to secure the wrappings in place, provided the tape does not contact any machined surfaces. Flange openings shall be sealed as specified in 3.8.1.1.6.

(b) Where shipment of an assembled propulsion gear is not practicable due to size or other requirements, the unit shall be shipped disassembled. Unpainted external surfaces of the gear casings and covers (assembled or disassembled) shall be cleaned, dried, and preserved as specified in 3.8.1.1.2 and 3.8.1.1.3. Flange openings shall be sealed as specified in 3.8.1.1.6. For rotating elements shipped separately, teeth of low speed gear, journals, coupling flange, thrust collar and nut shall be wrapped with one layer of aluminum foil in accordance with QQ-A-1876. The high speed pinions and the intermediate rotating assembly (consisting of the high speed gear, low speed pinion, quill shaft and coupling) shall be completely wrapped with a single layer of aluminum foil as specified herein. Alternatively, barrier material conforming to grade A with an overwrap of grade C in accordance with MIL-B-121 may be used in lieu of the aluminum foil wrap. Tape in accordance with PPP-T-60 may be used to secure the wrap in place, provided the tape does not contact any machined surfaces. The wrappings on the journals should be coated with an adhesive compound and wrapped with cotton or burlap cloth. The webs of large gears shall be coated with preservative in accordance with type P-19.

3.8.1.1.7.3 Turning gear unit.

3.8.1.1.7.3.1 Turning gear. The turning gear unit shall be disassembled from the main casing and dismantled sufficiently to expose all parts including the inside of the turning gear casing, external finish-machined parts, and casing joints. Surfaces (including babbitted bearings) shall be cleaned with a petroleum solvent, fingerprint remover, dried as specified in 3.8.1.1.2, and coated with type P-2 preservative.

3.8.1.1.7.3.2 Electrical components. The turning gear motor and motor controller shall be processed in accordance with MIL-E-17555.

3.8.1.1.7.3.3 Bearings, piping, and fittings. Bearings, external oil piping, flanges, fittings, and all other mechanical components shall be processed in accordance with 3.8.1.1.2 and 3.8.1.1.3 through 3.8.1.1.6, as applicable.

3.8.1.1.7.3.4 Oil coolers. Oil coolers shall be processed in accordance with MIL-C-15730.

3.8.1.1.7.3.5 Turning gear unit shipment. Turning gear units may be shipped attached to the gear unit. When shipped separately, the clutch and shaft extensions shall be wrapped with a single layer of grade A and overwrapped with a layer of grade C barrier material in accordance with MIL-B-121. A suitable split cover shall be bolted over the turning gear shaft to the turning gear casing, using two layers of grade A barrier material between the cover and mating surfaces. Openings (such as around the shaft) shall be sealed with a plug or blank flange with grade A barrier material placed between the mating surfaces.

3.8.1.1.7.4 Accessories and instrumentation. Accessories and instrumentation (such as gauges, thermometers, and low oil pressure alarms) shall be removed from their locations on the unit and processed in accordance with table II. Other parts customarily shipped detached from the unit (such as carbon packing rings, valve stem packing, coupling guard, bolts, nuts, pipe, and fittings) shall be processed in accordance with table II.

3.8.1.1.7.5 Support items.

3.8.1.1.7.5.1 Spares and repair parts. Spares and repair parts (accompanying equipment, for stock, or as on board items) shall be processed as specified in table II and as specified herein. Items not specified in table II shall be processed in accordance with MIL-R-196 or MIL-E-17555, as applicable. Items accompanying equipment shall not be consolidated for shipment within the basic equipment container, but shall be packed in separate shipping containers and shipped concurrently with the applicable basic equipment. When specified (see 6.2.1), spares and repair parts shall be packed in repair parts boxes (see 3.8.1.1.7.5.4).

3.8.1.1.7.5.2 Quantity per unit pack. Unless otherwise specified (see 6.2.1), items shall be unit protected one to a unit pack except that all items comprising a single set, kit, or assembly shall be individually unit protected within a unit pack. When unit protected as a set, kit, or quantity greater than one, each item shall be wrapped or cushioned to prevent damage resulting from direct surface contact with the surfaces of adjacent items.

3.8.1.1.7.5.3 Interior containers.

3.8.1.1.7.5.3.1 Unit containers. Unless otherwise specified (see 6.2.1), unit containers, except those specified in MIL-P-116 for the applicable method or submethod of preservation, shall conform to any one of the following specifications, at the contractor's option, which will provide the required protection.

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

Paperboard and fiberboard boxes shall be of the weather-resistant type, class or grade. Sealing and closure, as applicable, of unit containers shall conform to the applicable specification or appendix thereto with method V closure in accordance with PPP-B-636 for fiberboard boxes and as specified herein. Bags may be used for packaging small parts in accordance with method III (see 3.8.1.1), when practicable. Bag closure shall be effected by heat-sealing, adhesives, and taping. Other type bag closure such as pressure-fit, zipper, and so forth, is acceptable for method III, provided that loss of contents will not result. Staples shall not be used. When the items exceed the weight limitations of the preceding unit containers, parts shall be packed directly into shipping containers for the degree of packing specified (see 3.8.2).

3.8.1.1.7.5.3.2 Intermediate containers. Unit quantities in intermediate containers 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 packs 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.

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

Paperboard and fiberboard boxes shall be of the weather-resistant type, class or grade. 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 (see 3.8.1.1.7.5.3.1). 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.

3.8.1.1.7.5.4 Repair parts boxes. When required, spare and repair parts, (see 3.8.1.1.7.5.1) shall be packed in repair parts boxes conforming to type M or W as specified (see 6.2.1) in accordance with MIL-B-233. When the repair parts box is less than the minimum size specified in MIL-B-233, parts shall be packed in fiberboard boxes in accordance with PPP-B-636, class weather-resistant, special requirements, with variety and grade at the contractor's option. Box closure shall be in accordance with method V and reinforced with nonmetallic strapping as specified in the appendix to PPP-B-636.

3.8.1.1.7.5.5 Arrangement of material in containers. Material shall be arranged within the container in a compact manner. When applicable, material shall be grouped together in intermediate containers. Each intermediate container shall be marked with the stock number of the items contained in the package. This will provide accessibility of like parts without undue disturbance of the other parts.

3.8.1.1.7.5.6 Index list of repair parts and tools. An index list shall be inserted in each shipping container containing repair parts and tools accompanying the equipment or contracted for 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. The list shall be placed in a transparent, waterproof plastic bag, minimum 4 mils thick. Closure shall be by heat sealing. The list shall give a complete itemized list of the contents of the container, including stock numbers, nomenclatures, and quantities.

3.8.1.1.7.5.7 Tools.

3.8.1.1.7.5.7.1 Standard tools. Standard tools shall be prepared for shipment in accordance with PPP-P-40.

3.8.1.1.7.5.7.2 Special tools. Special tools and equipment, such as gauges (alignment, bayonet, clearance, and so forth), micrometer (depth), lifting gear (jacks, eyebolts, slings, and so forth), fittings (knuckle joints, bevel gears, and so forth), pulling tools, flange pumping gun, and so forth, shall be processed as follows:

(a) Tools made of ferrous metal and having noncritical surfaces shall be cleaned and dried, as required, in accordance with 3.8.1.1.2, coated with type P-2 preservative and packaged in accordance with method I of MIL-P-116. In lieu of the greaseproof wrap required, tools may be wrapped in transparent, flexible greaseproof film in accordance with type II of MIL-B-22191.

(b) Tools made of ferrous metal and having critical surfaces shall be cleaned as specified in 3.8.1.1.2, coated with type P-9 preservative and packaged by method IA. Selection of the sub-method of preservation shall be at the contractor's option. Transparent flexible, greaseproof film in accordance with type II of MIL-B-22191 may be used in lieu of barrier material in accordance with MIL-B-121.

(c) Tools fabricated completely of non-ferrous materials or ferrous materials that are plated or otherwise treated to resist corrosion shall be packaged in accordance with method III.

As an alternative to the preservative and greaseproof wrap specified in (a) and (b), preservative P-18 in accordance with 3.8.1.1.3.4 may be used at the contractor's option.

3.8.1.1.7.6 Submarine support items. Packaging procedures for submarine spares and repair parts shall be in accordance with MIL-STD-758.

3.8.1.2 Level C. Cleaning, drying, preservatives, and methods of preservation (unit protection) shall be as specified for level A (see 3.8.1.1), except that interior containers (see 3.8.1.1.7.5.3) may be of the nonwater-resistant, nonweather-resistant, domestic type, class or grade, with selection at the contractor's option.

3.8.1.2.1 Water or steam sides. Internal surfaces of all equipments and parts normally in contact with water or steam shall be coated with type P-21 preservative.

3.8.1.3 Commercial. Commercial preservation shall conform to ASTM D 3951, except that preservation of the water or steam sides shall conform to 3.8.1.2.1.

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

3.8.2.1 General requirements for levels A, B and C.

3.8.2.1.1 Cushioning, anchoring, bracing, blocking, and waterproofing. Cushioning (see 3.3.4 and 3.8.1.1.4), anchoring, bracing, blocking as required, and waterproofing shall be in accordance with MIL-STD-1186, MIL-P-116, the applicable containers specification or appendix thereto, and as specified herein. Waterproofing (caseliner) will not be required when shipping containers are packed with products or interior packs as follows:

(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-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.
(c) Method IC packages.
(d) Method II packages when all materials exterior to the water-vapor-barrier have water resistance equal to or exceeding the water resistance in accordance with PPP-B-636 fiberboard boxes.
(e) Intermediate packs (or unit packs when no intermediate packs are required), for which the container conforms to the weather-resistant class in accordance with PPP-B-636, are closed and sealed as specified herein.

3.8.2.1.2 Skids, and skid or sill type bases. Wood, plywood, and cleated type containers exceeding 200 pounds gross weight shall be modified by the addition of skids in accordance with the applicable specification or, when appropriate, a skid or sill type base in accordance with MIL-C-104.

3.8.2.1.3 Shipping container closure, reinforcing, and weight. Container closure, reinforcement or strapping, and except as specified herein, container weight limitation shall be as specified in the applicable container specification.

3.8.2.1.4 Containers. Containers selected shall be of minimum weight and cube consistent with the protection required, and of uniform size. Crates shall be used for the shipment of individual equipments exceeding the weight limitations of wood and plywood boxes. With the approval of the agency concerned (see 6.2.1), unsheathed or open type crates may be substituted for sheathed crates. Open type crates, when approved, and equipment bolted to the base of a container shall be waterproofed (shrouded) in accordance with 3.8.2.1.1.

3.8.2.1.4.1 Preservative treatment. Unless otherwise specified (see 6.2.1), all crates and all of the wood and plywood members and parts including skids shall be preserved for a minimum of 1 minute in preservative conforming to composition B or C of TT-W-572. When containers are painted, preservation shall be accomplished prior to the painting application. Alternatively, shipping containers or all of the finished wood and plywood members or parts including skids shall be pressure treated as specified (see 6.2.1 and 6.4). Fasteners (nails, bolts, screws, washers, nuts, and so forth) shall be galvanized or corrosion treated.

3.8.2.1.4.2 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 top. Items that are fragile in nature, or items unit protected in a floating barrier bag (submethod IIa) require from 2 to 4 inches of clearance. Additional clearance may be required for shock mounted equipments. This clearance allows for distortion and vibration which the container may be subjected to or encounter during handling and transit.

3.8.2.2 Air shipment. Packing for air shipment, when applicable, to attain minimum tare and cube consistent with the protection required to withstand the hazards encountered in air transport shall be in accordance with MIL-A-25175.

3.8.2.3 Critical close tolerance equipment. In addition to any preservation and packing requirements specified by the product specification or packaging requirements code, equipments which are identified to MIL-STD-740-1 or -2 shall be protected against damage resulting from environmental conditions, multiple handling and the hazards of transportation (rough handling, shock, vibration, etc.) Shipping containers or method of packing utilizing shock and/or vibration mitigation systems shall only use mounts which have "captive features" incorporated in their design. Unit packs and shipping containers shall be marked as specified (see 3.8.3.1.2).

3.8.2.4 Turbines, gears, and assemblies.

3.8.2.4.1 Level A.

3.8.2.4.1.1 Equipment weighing 500 pounds or less. Equipment, preserved as specified (see 3.8.1), shall be individually packed in a container conforming to any one of the following specifications at the option of the contractor:

Specification	Container	Type or class	Contents (pounds, maximum)
PPP-B-585	Box, wood, wirebound	Class 3	300
PPP-B-601	Box, wood, cleated-plywood	Overseas	1,000
PPP-B-621	Box, wood, nailed and lock-corner	Overseas	1,000

3.8.2.4.1.2 Equipment exceeding 500 pounds. Equipment, preserved as specified (see 3.8.1), shall be individually packed in a container conforming to any one of the following specifications at the option of the contractor:

Specification	Container	Type or class	Contents (pounds, maximum)
PPP-B-601	Box, wood, cleated plywood	Overseas	1,000
PPP-B-621	Box, wood, nailed and lock-corner	Overseas	1,000
MIL-C-104	Crate, wood, lumber and plywood sheathed		1/ 2/30,000
MIL-C-3774	Crate, wood, open	I	2/12,000
		II	2/16,000
MIL-B-26195	Box, wood skidded, load bearing base (plywood super structure)	Overseas	3/2,500
MIL-C-52950	Crate, wood, open and covered	-------	4/4,000

1/ (See 6.2.2).
2/ MIL-C-104 size limitation: 30 feet long by 9 feet wide by 10 feet high except as specified in footnote 1.
MIL-C-3774, type I size limitation: 16 feet long by 8 feet wide by 8 feet high.
MIL-C-3774, type II size limitation: 40 feet long by 8 feet wide by 16 feet high.
3/ Only plywood superstructure acceptable for level A.
4/ For additional size and weight restrictions, see MIL-C-52950.

3.8.2.4.2 Level B.

3.8.2.4.2.1 Equipment weighing 500 pounds or less. Packing shall be as specified in 3.8.2.4.1.1, except that the wirebound box with a maximum content weight of 400 pounds shall be class 2 or 3, and the other boxes shall be of the domestic type.

3.8.2.4.2.2 Equipment exceeding 500 pounds. Packing shall be as specified in 3.8.2.4.1.2, except that the containers shall be of the domestic type.

3.8.2.5 Support items, accessories, and instrumentation.

3.8.2.5.1 Level A. Material, preserved as specified (see 3.8.1), shall be packed in containers conforming to any of the specifications listed in 3.8.2.4.1.1 at the option of the contractor. The gross weight of the boxes shall not exceed 200 pounds unless the weight of a single item exceeds 200 pounds. Boxes exceeding 200 pounds shall be modified as specified in 3.8.2.1.2.

3.8.2.5.2 Level B. Material, preserved as specified (see 3.8.1), shall be packed in containers conforming to any of the following specifications at the option of the contractor:

Specification	Containers	Type or class
PPP-B-576	Boxes, wood, cleated, veneer, paper overlaid	Class 2
PPP-B-585	Boxes, wood, wirebound	Class 2 or 3
PPP-B-591	Boxes, fiberboard, wood-cleated	Weather-resistant
PPP-B-601	Boxes, wood, cleated-plywood	Domestic
PPP-B-621	Boxes, wood, nailed and lock-corner	Domestic
PPP-B-636	Boxes, fiberboard	Weather-resistant
PPP-B-640	Boxes, fiberboard, corrugated, triple-wall	Weather-resistant
PPP-B-1672	Boxes, reusable with cushioning	

The gross weight of wood, plywood, and cleated boxes shall not exceed 200 pounds unless the weight of a single item exceeds 200 pounds. Wood, plywood, or cleated boxes exceeding 200 pounds shall be modified as specified in 3.8.2.1.2. Fiberboard boxes in accordance with PPP-B-636 shall be closed in accordance with method V and reinforced with nonmetallic banding in accordance with the appendix to the box specification. Triple-wall, fiberboard boxes may be used for individual items weighing more than 200 pounds provided the box is modified with reinforcing strength members for stacking and modified as specified in 3.8.2.1.2. When the triple-wall, fiberboard box exceeds the size and weight limitations of the carrier's classification, a copy of the required special permit in accordance with PPP-B-640 shall be furnished to the contracting activity.

3.8.2.6 Repair parts boxes. Repair parts boxes (see 3.8.1.1.7.5.4) shall be overpacked in containers as specified in 3.8.2.5 for the level of protection specified (see 6.2.1). Alternatively, repair parts boxes may be overpacked in unsheathed or open crates (see 3.8.2.4.1.2) at the contractor's option.

3.8.2.7 Level C. Packing of turbines, gears, support items, accessories, instrumentation, and repair parts boxes for shipment shall be as specified in 3.8.2.4.2 and 3.8.2.5.2, except that fiberboard boxes may be of the nonwater-resistant or nonweather-resistant type or class and PPP-B-636 boxes shall be closed in accordance with method I of the appendix to the box specification.

3.8.2.8 Commercial. Commercial packing shall be in accordance with ASTM D 3951.

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

3.8.2.9 Technical manuals. Technical manuals, which accompany shipments, shall be unit packed in a transparent, waterproof plastic bag, minimum 4 mils thick. Closure shall be by heat sealing. Technical manuals shall not be placed within any flexible, sealed barrier enclosing components. Copies of the manual shall be placed in the shipping container housing the main unit. Packing lists shall indicate which container contains 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, or C as specified (see 6.2.1).

3.8.2.10 Drawings and microfilm. Drawings and microfilm shall be packaged or prepared for shipment in accordance with the applicable specification.

3.8.3 Marking. In addition to any special marking required (see 6.2.1 and herein), marking of interior and exterior packs for levels A, B, and C shall be in accordance with MIL-STD-129 and unless otherwise specified (see 6.2.1) shall include bar code marking. Marking for commercial interior and exterior packs shall be in accordance with ASTM D 3951 and unless otherwise specified (see 6.2.1) shall include bar code marking in accordance with MIL-STD-129.

3.8.3.1 Special markings.

3.8.3.1.1 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 3.8.4.1), 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.

3.8.3.1.2 Critical close tolerance equipment. Unit packs and shipping containers and unpacked shipments shall be marked with the following:

CRITICAL, CLOSE TOLERANCE
OPERATING EQUIPMENT
HANDLE WITH CARE
DO NOT DROP OR SUBJECT
TO SHOCKS OR JARS

Markings shall be stencilled, red color, and applied on two sides and both ends of the container or shipment, letters shall be of minimum 1-1/2 inches high, except for small containers with insufficient space, in which case letters shall be of such size as to be legible. In addition, arrows and the word, "UP" center of balance, sling or lifting point markings as indicated in MIL-STD-129 shall apply.

3.8.3.1.3 Container structural and handling markings. When and as applicable to the packed container, the following markings in accordance with MIL-STD-129 and the applicable container specification or appendix thereto shall apply: structural markings, handling markings such as center of balance, sling and lift points, load bearing and forklift areas, and arrows.

3.8.4 Instructions.

3.8.4.1 Unpacking instructions. In addition to any special marking required by the contract or order, unpacking instructions shall be provided for complex equipment or systems and floating bag (methods IIa and IA-16) type packs. The instructions shall contain, but not be limited to, the following information:

"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 which can be removed most readily.
(b) Remove nails with a nail-puller only.
(c) Remove screws with a screwdriver only.
(d) Never pound or hammer the shipping container.
(e) Keep all levers and crowbars away from the interior of the container."

3.8.4.1.1 Placement of unpacking instructions. A set of these instructions shall be placed in a sealed, waterproof, plastic 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.

3.8.4.2 Depreservation instructions. A set of instructions covering the depreservation of the equipment shall be furnished. Instructions shall show all information necessary for depreservation, such as, but not limited to: the addition of lubricants prior to operation, flushing of steam and hydraulic lines, removal of greaseproof barrier and tapes, and the location of detached components. Instructions shall be packaged in a transparent, waterproof, plastic bag, minimum 4 mils thick. Closure shall be by heat sealing. The shipping container in which the instructions are packed shall be marked to indicate instruction location.

3.8.5 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, prolonged periods of stowage and storage, and shall require the minimum of processing for service.

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.

4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.2 Classification of inspection. The inspection requirements specified herein are classified as follows:

(a) First article inspection (see 4.4).
(b) Quality conformance inspection (see 4.5).

4.3 Inspection conditions. Unless otherwise specified (see 6.2.1), all inspections shall be performed in accordance with the test conditions specified in the applicable specification.

4.4 First article.

4.4.1 First article inspection. The contractor shall conduct inspection on one complete package, packed for shipment, to ascertain that the preservation, packing and marking of the items conform to this specification. The first article sample will not be required when such a pack has previously been inspected and accepted for the same method for an identical item by the same contractor and satisfactory evidence can be furnished to the Government that the items have been prepared identically with the previously approved pack. First article inspection shall be repeated when changes are made in preservation and packing materials, processes, or designs (see 6.2.2).

4.4.2 Test. When specified (see 6.2.1), the first article pack shall be subjected to the rough handling test in accordance with MIL-P-116, except when a dummy or simulated load is specified (see 6.2.1). 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 item. Upon completion of the rough handling test when required, except when a dummy or simulated load is used, the item or equipment shall be inspected as applicable, in accordance with the initial acceptance limits of the applicable item or equipment specification to determine freedom from operational malfunctions.

4.5 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.

4.5.1 Commercial. Unless otherwise specified (see 6.2.1), the quality conformance inspection shall be in accordance with the contractor's procedure.

5. PACKAGING

5.1 Not applicable to this specification.

6. NOTES

6.1 Intended use. The packaging requirements specified herein are intended to assure proper and safe storage, stowage and transportation of material processed for shipment to Government activities or material processed for shipment at a Military activity or agency. In addition, the packing requirements specified herein are intended for use as a reference in section 5 of commodity specifications, and for direct reference in acquisition documents.

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

(a) Title, number, and date of this specification.
(b) When a first article is required (see 3.2).
(c) When PHST plan is applicable (see 3.4).
(d) Descriptive packaging details when required (see 3.8).
(e) When preservation and packing data is required (see 3.8).
(f) Required level of preservation (see 3.8.1) and level of packing (see 3.8.2, 3.8.2.6, and 3.8.2.9).
(g) Preservative type if other than specified (see 3.8.1.1.3.2).
(h) When contact preservative compound is required (see 3.8.1.1.3.4).
(i) Preservative when required, and type (3.8.1.1.3.4).
(j) When method II should apply (see 3.8.1.1.7.1 and 3.8.1.1.7.2).

(k) When a flexible, reusable container is required and class and grade of plastic sheet, when required (see 3.8.1.1.7.1 and 3.8.1.1.7.2).
(l) When repair parts boxes are required (see 3.8.1.1.7.5.1), and type (see 3.8.1.1.7.5.4).
(m) Quantity per unit pack if other than specified (see 3.8.1.1.7.5.2).
(n) Unit and intermediate containers if other than specified (see 3.8.1.1.7.5.3.1).
(o) Unit quantities required per intermediate container (see 3.8.1.1.7.5.3.2).
(p) Gross weight of fiberboard boxes if other than specified (see 3.8.1.1.7.5.3.2).
(q) When unsheathed or open crates are acceptable (see 3.8.2.1.4).
(r) Preservative treatment, when other than specified (see 3.8.2.1.4.1).
(s) Alternate pressure treatment, as specified (see 3.8.2.1.4.1 and 6.4).
(t) Special marking required (see 3.8.3).
(u) When bar code marking is not required (see 3.8.3).
(v) Inspection conditions if other than specified (see 4.3).
(w) When first article pack rough handling test is required (see 4.4.2).
(x) When a dummy or simulated load may be used (see 4.4.2).
(y) Quality conformance inspection, for commercial packaging, if other than specified (see 4.5.1).

6.2.2 Data requirements. When this specification is used in an acquisition and data are required to be delivered, the data requirements identified below shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved Contract Data Requirements List (CDRL), incorporated into the contract. When the provisions of DoD FAR Supplement, Part 27, Sub-Part 27.475-1 (DD Form 1423) 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 are cited in the following paragraphs.

Paragraph no.	Data requirement title	Applicable DID no.	Option
3.3.2 and 3.3.3.3	Certificate of compliance	DI-E-2121	----
3.8	Drawings, engineering, and associated lists	DI-E-7031	----
3.8	Special packaging instructions (SPI)	DI-PACK-80121	----
3.8	Preservation and packing data	DI-PACK-80120	----
3.8.2.4.1.2	Report, transportability problem item	DI-L-2123	----
4.4.1	First article inspection report	DI-T-4902	----

(Data item descriptions related to this specification, and identified in section 6 will be approved and listed as such in DoD 5010.12-L., 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 sections 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 First article. When a first article inspection is required, the item should be a first article sample. The first article should consist of one unit. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results and disposition of first articles. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection 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.

6.4 Alternate pressure treatment. The alternate recommended pressure treatment should be used in accordance with TT-W-00571, table I or III, using preservatives ACA, CCA, or ACC, at retentions "For above ground" or greater. Water added by treatment should be removed before painting or final acceptance.

6.5 Definition or explanation of terms.

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

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

(a) Multiple handling during transportation and intransit storage from point of origin to final user.
(b) Shock, vibration, and static loading during shipment.
(c) Loading on shipdeck, transfer at sea, helicopter delivery, and offshore or over-the-beach discharge, to final user.
(d) Environmental exposure during shipment or during intransit operations where port and warehouse facilities are limited or non-existent.

(e) Outdoor storage in all climatic conditions for a minimum of 1 year.
(f) Static loads imposed by stacking.

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

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

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

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

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

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

6.5.1.4 Commercial. Although not specifically defined by any Government regulation or instruction, commercial packaging (preservation and packing) is understood to be those practices by manufacturers and suppliers to protect and identify material and items packaged for retail and wholesale distribution purposes. ASTM D 3951 provides guidance in the application of commercial packaging. It has been determined by joint DoD instructions that commercial (also in some areas addressed as industrial packaging) should only be used or specified when such packaging is known to satisfy the DoD needs. Such use should be determined

before a contract for supplies is awarded or within the life cycle of the contract when substantial savings to the Government may result. Commercial (industrial) packaging should not be specified where multiple shipments and handlings are anticipated or desired.

6.5.2 Packaging and supply terms.

6.5.2.1 Assembly. A number of parts or subassemblies or any combination thereof joined together to perform a specific function and capable of disassembly (for example, pump-rotating element, fan assembly).

6.5.2.2 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 micro-inches or less and items requiring a high degree of cleanliness, free of contamination, special protection against shock, vibration, abrasion, or distortion.

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

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

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

6.5.2.6 Noncritical items. Items not meeting the criteria described in 6.4.2.2.

6.5.2.7 On board repair parts (OBRP). Assemblies, sub-assemblies, and parts carried on board a ship for maintenance and repair of shipboard equipment and components.

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

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

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

6.5.2.11 Repair parts. Those support items that are coded to be not repairable (for example, consumable items) (see MIL-STD-1561).

6.5.2.12 Spares. Those support items that are coded to be repairable (for example, repairable items) (see MIL-STD-1561).

6.5.2.13 Support items. Items subordinate to, or associated with, an end item (for example, spares, repair parts, tools, test equipment, support equipment, and sundry materials) and required to operate, service, repair, or overhaul an end item (see MIL-STD-1561).

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

6.6 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 will be separately packaged and marked (see 3.3.3).

6.7 Large heavy [illegible]d equipment. Large heavy crated equipment which is destined for delivery t[illegible] supply facility as a rotatable support item or held at the facility for an indefinite period awaiting delivery to the installation site and which may, due to warehousing space availability, be stored in other than a warehouse or covered shed type facility, should be preserved method IIA, utilizing the reusable container concept of MIL-C-58104 and crating per MIL-C-104, type II, class 2, style optional.

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

DSAM 4145.2, Vol. I, TM38-230-1, NAVSUP PUB 502, AFP 71-15, MCO P4030.31B, Packaging of Material Preservation (Volume I) (National Stock Number 0530-LP-050-2073).

DSAM 4145.2, 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 0530-LP-050-3211).

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 0530-LP-050-4001).

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 0530-LP-050-5007).

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

(Copies of the listed documents may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

6.9 Material safety data sheets. Contracting officers will identify those activities requiring copies of completed Material Safety Data Sheets prepared in accordance with FED-STD-313. The pertinent Government mailing addresses for submission of data are listed in appendix B of FED-STD-313. In order to obtain the MSDS FAR clause 52.223-3 must be in the contract.

6.10 Subject term (key word) listing.

Marking
Packing
Preservation

6.11 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.

Preparing activity:
Navy - SH
(Project PACK-N046)

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.

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE
MIL-T-17286D(SH)	TURBINES AND GEARS, SHIPBOARD PROPULSION AND AUXILIARY STEAM; PACKAGING OF

3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR
b. ADDRESS *(Street, City, State, ZIP Code)*	☐ USER
	☐ MANUFACTURER
	☐ OTHER *(Specify)*:

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)*

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