

MIL-V-3D
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SUPERSEDING
MIL-V-3C
8 March 1960
(See 6.7)

MILITARY SPECIFICATION

VALVES, FITTINGS, AND FLANGES
(EXCEPT FOR SYSTEMS INDICATED HEREIN);
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 requirements for the packaging (preservation, packing, and marking) of hardware valves such as globe valves, angle valves, check valves, cross valves, cylinder valves, gate valves, relief valves, and associated fittings and flanges for shipment and storage. This document does not provide packaging requirements for valves, fittings, and flanges intended for use in gas generating, fluid, and pneumatic systems with cleanliness and preservation requirement standards exceeding those specified herein.

1.2 Levels of protection. (See 6.4.1).

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 3.8.2.4 and 3.8.2.4.1).
Level B (see 3.8.2.4 and 3.8.2.4.2).
Level C (see 3.8.2.4 and 3.8.2.4.3).
Commercial (see 3.8.3).

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 5523, 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. Unless otherwise specified, the following specifications and standards 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 specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

- UU-P-268 - Paper, Kraft, Wrapping.
- PPP-B-566 - Boxes, Folding, Paperboard.
- 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.

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- 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-C-3774 - Crates, Wood; Open 12,000- and 16,000-Pound Capacity.
- MIL-P-4861 - Packing, Preformed, Rubber, Packaging of.
- MIL-C-5501 - Caps and Plugs, Protective, Dust and Moisture Seal, General Specifications for.
- MIL-L-10547 - Liners, Case, and Sheet, Overwrap; Water-Vaporproof or Waterproof, Flexible.
- MIL-P-23242 - Plastic Coating Compound, Strippable for Electroplating.
- MIL-A-25175 - Air Transport, Nontactical, Packing for.
- MIL-C-52950 - Crates, Wood, Open and Covered.

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STANDARDS

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- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-1186 - Cushioning, Anchoring, Bracing, Blocking and Waterproofing; with Appropriate Test Methods.

(Copies of specifications and standards 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)

- MH15.1 - Glossary of Packaging Terms.

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- D 996 - Packaging and Distribution Environments, Definitions of Terms Relating to.
- D 3951 - Commercial Packaging.

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

DEPARTMENT OF LABOR

- Code of Federal Regulations, Title 29
- Part 1910, Section 145 and 1001 - Occupational Safety and Health Standards.

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

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

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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 6.4. 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 to 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 and in the applicable referenced specifications.

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. 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 is encouraged and recommended and will be permitted under the conditions specified herein, provided they are equal 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, 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 (certification, see 6.2.2) or procedure and the related certified test report 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 process.

3.3.3.2 Packaged items. All asbestos and separately packaged components containing asbestos that is predominately distributed throughout the item and expected to produce dust in excess of OSHA exposure limits shall be packaged in sealed, dust and siftproof packages. Flexible packages shall be heat-sealed. All packages shall be marked as specified in 3.11.1.2.

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3.3.4 Talc/talcum. When used in the packaging process, in dusting for example, talc/talcum shall be asbestos free (see 3.3.3.1). A certificate of compliance (see 6.2.2) shall be required stating the dusting materials are asbestos free.

3.3.5 Cushioning and wrapping materials. Use of excelsior, newspaper, shredded paper (all types, including wax paper), and similar hydroscopic or nonneutral materials and all types of loose-fill materials, including polystyrene, is prohibited for applications such as cushioning, fill, stuffing, and dunnage. Unless otherwise specified (see 6.2.1), materials selected for cushioning and wrapping shall have properties (characteristics) resistant to fire. Kraft paper conforming to UU-P-268, type II grade C or D are acceptable wrapping materials under this requirement.

3.4 First article. When specified (see 6.2.1), a sample shall be subjected to first article inspection (see 4.3 and 6.3).

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 and 4.3.3).

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 to 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 and structural markings, such as "Use no hooks", "Method II", "Center of Gravity", and so forth.

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3.5.2 Packing data. When specified (see 6.2.1), coded and in clear preservation and packing, data shall be in accordance with the data ordering document included in the contract or order (see 6.2.2).

3.6 Disassembly. Equipment disassembly shall be the minimum necessary to make accessible for cleaning, drying, and preservation of equipment and its machined or critical surfaces. Removal of secondary assemblies, accessories, and projecting parts which will facilitate protection of the equipment from damage, pilferage, and loss, or reduction of cube is permitted where such removal will not affect permanent settings or alignments, and where the removed part can be readily assembled at the installation site without the need for special tools or gauges. Unless otherwise specified (see 6.2.1) handwheels shall be removed from (1) valves exceeding 20 pounds and (2) where the handwheel exceeds the valve body dimensions. After removal, the handwheel shall be separately preserved and packed within the same container as the valve. Alternately, the handwheel may be tightly and securely wired or strapped to the valve. The stem end shall be provided, as necessary, with a metal or plastic nipple or wood block, net, and washer. When a wood block is used, the stem shall be overwrapped with a neutral greaseproof, waterproof barrier material prior to applying the wood block. Removed hardware (bolts, nuts, pins, screws, washers, and others) shall be reinstalled in mating parts and secured to prevent their loss. Removed parts or items, other than hardware, shall be packaged to the same level of protection as the basic or prime equipment. Detached components shall be included within the same container as the basic unit.

3.7 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, oils, and fading.

3.8 Level of protection. (See 6.4.1.)

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

3.8.1.1 Level A.

3.8.1.1.1 Cleaning and drying. Valves, fittings, and flanges shall be cleaned and dried in accordance with MIL-P-116.

3.8.1.1.2 Preservation requirements.

3.8.1.1.2.1 Valves of ferrous or aluminum construction. Valves of ferrous or aluminum construction shall be preserved by method I of MIL-P-116. Internal ferrous or aluminum surfaces shall be sprayed or flushed with preservative type P-2, P-3, P-7, P-9, P-10, P-15 or P-21 of MIL-P-116, as specified (see 6.2.1). Unless otherwise specified (see 6.2.1), valves intended for operation in steam or water systems shall be sprayed or flushed internally with preservative type P-3 or P-21 of MIL-P-116. Valves intended for hydraulic

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systems shall be sprayed or flushed with preservative type P-15 of MIL-P-116. External surfaces of movable parts shall be coated with preservative type P-2 or P-7 of MIL-P-116. When removal of the preservative film can be readily accomplished without damage to the item or where removal of the preservative is not required in order to place the item in use, external unpainted, unplated, or otherwise unprotected surfaces shall be coated with preservative type P-1 or P-19 of MIL-P-116. When the specific type of preservative is not specified in the contract, order, or item specification for internal preservation of valves not intended for operation in steam or water, the selection from the preservatives specified herein shall be at the option of the contractor.

3.8.1.1.2.2 Valves of nonferrous (except aluminum) construction. Unless otherwise specified (see 6.2.1), valves of nonferrous (except aluminum (see 3.8.1.1.2.1)) construction shall be protected by method III of MIL-P-116. Contact preservatives will not be required.

3.8.1.1.2.3 Fittings and flanges. Unless otherwise specified (see 6.2.1), machined surfaces of fittings and flanges shall be preserved, as specified in 3.8.1.1.2.1, for protection of external surfaces as applicable for the materials used in construction. Fittings and flanges which are plated or coated, providing protection equivalent to method I of MIL-P-116, will not require a contact preservative and shall be packaged in accordance with method III of MIL-P-116. Unless otherwise specified (see 6.2.1), brazing fittings shall be unit protected with tight fitting plastic caps, conforming to MIL-C-5501, or with a hot dip non-oil exuding strippable plastic coating compound, conforming to MIL-P-23242. The compound dipping temperature at the time of application shall be $365 \pm 10^{\circ}\text{F}$.

3.8.1.1.2.4 Rings. When furnished loose with a fitting, metal and rubber rings, such as back up or brazing rings, shall be individually unit protected and packed with the fitting. Silver brazing rings shall be preserved method IC or metal rings method III in accordance with MIL-P-116. Rubber O-rings shall be individually preserved in accordance with MIL-P-4861. Multiple quantities of rings furnished separate from the fittings shall be unit protected, as specified herein, and packed in containers specified in 3.8.1.1.3.4.

3.8.1.1.2.5 Removal of packing material. When specified (see 6.2.1), valves having stems of ferrous materials, except preset, automatic, or relief valves, shall have the packing removed prior to cleaning and the application of preservative compounds. The required packing material shall be separately packaged, in accordance with method IC-1 of MIL-P-116. The bag containing the packing materials shall be securely fastened to the individual valve, by taping or tying, and the valve shall be marked with precautionary information requiring the installation of the packing material prior to placing the valve in use.

3.8.1.1.3 Unit protection.

3.8.1.1.3.1 Valves - sealed openings. Valves which are not wrapped or boxed as a part of the packaging procedure shall have all ports or other openings to the interior of the valve sealed with plastic, metal or wood caps, plugs, or flange covers to prevent entrance of dust or other foreign materials. When

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metal or wood flange covers, or metal or wood plugs are used, a neutral greaseproof waterproof barrier material shall be inserted between the plug or flange covers and the valve port or opening. Metal plugs or flange covers, when used, shall be protected against corrosion by painting or by the use of type P-1 or P-19 preservative compound of MIL-P-116.

3.8.1.1.3.2 Preparation. Care shall be taken to insure that external moving parts are cushioned and protected from damage. Male threads of air-tested fittings shall be protected with plastic or paperboard sleeves, metal caps, or as an alternate, may be protected by dipping in material conforming to type II of MIL-P-149, where this material can be readily removed. Alternatively, when a dry surface is desirable, coating compound conforming to MIL-P-23242 may be used. Surfaces of plugs, seals, or other types of protectors shall be neutral and acid free, as defined in MIL-B-121, and shall be greaseproof when in contact with preservative compounds.

3.8.1.1.3.3 Use of overwrapping with greaseproof material. Exterior surfaces of valves, fittings, or flanges coated with soft film preservatives shall be wrapped with greaseproof barrier material in accordance with MIL-P-116. No overwrapping with greaseproof material will be required for surfaces coated with type P-1 or P-19 preservative of MIL-P-116. Barrier material shall be secured in place with pressure-sensitive tape.

3.8.1.1.3.4 Valves, fittings, and flanges weighing 20 pounds or less. Unless otherwise specified (see 6.2.1), valves, fittings, and flanges weighing 20 pounds or less shall be unit packed in commercial quantities in waterproof or weather-resistant paperboard folding, set-up, metal stayed or fiberboard boxes conforming to PPP-B-566, PPP-B-676, PPP-B-665, or PPP-B-636 respectively, with box selection at the option of the contractor. Box closure shall be as specified in the applicable box specification or appendix thereto with method IV closure applicable to fiberboard boxes. Where weather-resistant type boxes are not available, boxes shall be overwrapped with waterproof barrier material and sealed to provide weather resistant protection. The gross weight of paperboard boxes shall not exceed 10 pounds; for fiberboard boxes 20 pounds.

3.8.1.1.3.5 Valves, fittings, and flanges weighing more than 20 pounds. Valves, fittings, and flanges weighing more than 20 pounds shall be individually packed directly into shipping containers, as required in table I for the level of packing specified.

3.8.1.2 Level C. Valves, fittings, and flanges shall be preserved as specified for level A (see 3.8.1.1) except that unit containers (see 3.8.1.1.3.4) may be of the nonwater, weather-resistant domestic type or class.

3.8.1.3 Commercial. Valves, fittings, and flanges shall be preserved (unit protected) in accordance with ASTM D 3951.

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

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3.8.2.1 General requirements for levels A, B and C. 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, of uniform size, and of minimum cube and tare, consistent with protection required, and shall contain identical quantities of identical items when practicable. Items packaged in a container designed as a shipping container shall be cushioned, blocked, braced, and anchored to prevent movement and damage and shall meet the rough handling test as specified (see 4.3.2). 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 6 of table I). Crates shall be used for the shipment of individual items exceeding the weight limitation specified for wood and plywood container specification. Open crates shall be used only 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 water-proof barrier material conforming to PPP-B-1055. 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 packaged in fiberboard boxes as specified in 3.8.1.1.3.4.

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

3.8.2.3 Cushioning, anchoring, blocking, bracing and waterproofing. Cushioning, anchoring, blocking, bracing and waterproofing of container contents shall be in accordance with MIL-STD-1186, MIL-P-116 and the applicable container specification or appendix thereto. Supplemental information is provided in 6.6.

3.8.2.4 Levels A, B and C. Unless otherwise specified (see 6.2.1), items preserved as specified in 3.8.1 shall be packed in exterior shipping and storage containers in accordance with table I. Unless otherwise specified (see 6.2.1), the container selection under the level of packing specified shall be at the contractor's option.

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TABLE I. Container selection.

Specification	Container	Packing application			Use criteria			
		level A	level B	level C	Gross weight maximum lb - See note 5			
		(Style, type, or class)			Under 20 lb	20-200 lb	200-500 lb	Over 500 lb
PPP-B-585	Boxes, Wood, Wirebound.	Class 3	Class 2	Class 1	Yes	Yes	Note 2	No
PPP-B-591 (Note 7)	Boxes, Shipping, Fiberboard Wood-cleated (Weight link 400 lb).	Not applicable	Class 2	Class 1	Yes	Yes	Note 2	
PPP-B-601	Boxes, Wood, Cleated-Plywood.	Overseas type	Overseas type	Domestic type	Note 4	Yes	Note 2	Note 4
PPP-B-621	Boxes, Wood, Nailed and Lock-Corner.	Class 2	Class 2	Class 1	Note 4	Yes	Note 2	Note 4
PPP-B-636 (Note 7)	Boxes, Shipping, Fiberboard.	Not applicable	Weather resistant	Domestic type	Yes	Yes Note 1	No	No
PPP-B-640 (Note 7)	Boxes, Fiberboard, Corrugated, Triple-Wall.	Not applicable	Weather resistant	Non-weather resistant	Yes	Yes	Note 6	No
MIL-C-104	Crates, Wood, Lumber and Plywood Sheathed, Nailed and Bolted.				No	Note 4	Notes 3&4	Yes Note 3
MIL-C-3774	Crates, Wood, Open, 12,000 and 16,000-Pound Capacity.				No	Note 4	Note 4	Yes Note 3
MIL-C-52950	Crates, Wood, Open and Covered.				No	No	Note 4	Yes Note 3

See notes at top of next page.

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NOTES:

1. Fiber boxes shall not exceed the weight limitations of the applicable fiber box specifications.
2. Boxes exceeding 200 pounds gross weight shall be modified by the addition of two nominal 3 by 4 inch wood skids placed flat at right angles to the long dimension. Ends of skids shall be beveled full depth at a 45 degree angle.
3. Sheathed crates shall be used for shipment of valves weighing more than 500 pounds. When specified (see 6.2.1), valves weighing more than 500 pounds may be packed in unsheathed crates conforming to MIL-C-52950.
4. Not recommended for this weight category.
5. Maximum gross weight, container plus contents, shall not exceed the applicable requirements for the style, type, or class container selected for the level of packing to be applied.
6. When approved (see 6.2.1), triple wall boxes may be used for individual items weighing more than 200 pounds, provided the box is modified with reinforcing structural members and properly skidded.
7. Type III loads shall not be packed in these containers unless converted to a type II load. See appendix to PPP-B-636.

3.8.2.4.1 Level A. Shipping containers shall be closed, strapped, or banded in accordance with the applicable container specification or appendix thereto. Unless otherwise specified (see 6.2.1), shipping containers shall have caseliners conforming to MIL-L-10547. Caseliners shall be closed and sealed in accordance with MIL-L-10547. Waterproofing of products packed in crates shall be in accordance with the applicable crate specification and as specified herein (see 3.8.2.1 and 3.8.2.3). When containers are packed with products or packages meeting the following requirements, no caseliner 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) Unit packs for which the containers conform to weather-resistant class of PPP-B-636 and are closed and sealed as specified herein.

3.8.2.4.2 Level B. Shipping containers shall be closed, strapped or banded in accordance with the applicable container specification or appendix thereto, with method V closure applicable to PPP-B-636 containers. Fiberboard containers conforming to PPP-B-636, closed, sealed, and banded as specified herein and used as shipping containers, need not be overpacked. When specified (see 6.2.1) caseliners (see 3.8.2.4.1) shall be furnished.

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3.8.2.4.3 Level C. Shipping containers shall be closed, strapped, or banded in accordance with the applicable container specification or appendix thereto, with method I closure applicable to PPP-B-636 containers. Intermediate fiberboard containers conforming to PPP-B-636, closed as specified herein and used as shipping containers, need not be overpacked.

3.8.2.4.4 Fittings and flanges weighing more than 20 pounds. Fittings and flanges weighing more than 20 pounds shall be packed for the level specified in 3.8.2.4, except that flanges that can be effectively packed by bundling may be stacked and securely bolted in bundles face to face, or hub to hub, with flanged face out and with outer flange faces fully protected by wood, pressed wood, metal, or similar flange covers bolted to the face. When wood or metal flange covers are used, a neutral greaseproof barrier material shall be inserted between the flange face and the flange cover. When metal covers are used, they shall be painted or protected against corrosion with a preservative compound as specified in 3.8.1.1.3.1. Fittings weighing over 50 pounds, except butt welding or silver brazing fittings which do not require packing for physical protection, shall have flange faces of fittings protected in the same manner as flanges. Soil pipe or case-iron water pipe fittings and flanges in volte-face bundles may be shipped unpacked or may be strapped on pallets to facilitate handling.

3.8.3 Commercial packing. Commercial packing shall conform to ASTM D 3951.

3.9 Provisioned items (repair parts). Provisioned items (repair parts) shall be preserved, packed, and marked in accordance with MIL-R-196 for the level specified (see 6.2.1).

3.10 Palletization. Unless otherwise specified (see 6.2.1) material shall be palletized in accordance with MIL-STD-147 when one of the following criteria is met.

- (a) Load shall consist of four or more unskidded containers.
- (b) The load shall utilize a minimum of 80 percent of the pallet base.

3.11 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 markings. 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 of MIL-STD-129.

3.11.1 Special marking. In addition to the markings required in 3.11, the following shall apply.

3.11.1.1 O-rings. Interior packs containing O-rings shall be marked in accordance with MIL-P-4861.

3.11.1.2 Asbestos items (see 3.3.3 through 3.3.3.2). An asbestos caution label shall be affixed to each interior (unit and intermediate) pack and shipping container. The caution label shall conform to the OSHA Regulation, Part 1910, Section 145 and 1001. The caution label shall state the following:

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"CAUTION

CONTAINS ASBESTOS FIBERS,
AVOID CREATING DUST.
BREATHING ASBESTOS DUST
MAY CAUSE SERIOUS BODILY HARM."

3.12 Special instruction.

3.12.1 Technical manuals. Technical manuals, which accompany shipments that are packed level A, B, or C shall be packaged in transparent waterproof plastic bags, minimum 4 mil thick. Closure shall be by heat sealing. For Army, technical manuals shall be packed in accordance with method IC-1 of MIL-P-116. Technical manuals shall not be packed within any sealed flexible barrier material used to enclose the item(s). Packing lists shall indicate that a technical manual is enclosed, and shall also state the approximate location therein. For ease of removeability, 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).

3.13 Workmanship. All operations and processes involved in accomplishing the cleaning, preservation, packaging, packing, and marking requirements specified herein, shall be in accordance with the highest grade practice associated with this type of work.

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 inspections. There shall be two types of inspections 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. The contractor shall conduct inspection on one complete package, packed for shipment, to ascertain that the cleaning, drying, preservation, packaging, packing, and marking of the item conforms to this specification. The first article sample will not be required when such a

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pack has previously been inspected and accepted for the same method for an identical or similar item, by the same contractors, and satisfactory evidence can be furnished to the Government that the equipment or items have been prepared identically. First article inspection shall be repeated when changes in preservation and packing materials, processes, or designs are made.

4.3.2 First article testing for levels A and B protection. When specified (see 6.2.1), a complete pack of item or equipment shall be subjected to the examination and tests of MIL-P-116, including the rough handling test and tables III, IV, and V as applicable, therein. When specified (see 6.2.1), a dummy or simulated load packaged for shipment may be used for the rough handling tests.

4.3.2.1 First article test exceptions. A first article test will not be required when:

- (a) Commercial packaging is specified.
- (b) Commercial packing is specified.
- (c) Detailed packaging instructions are furnished by the contracting activity.
- (d) Previous submittal (see 4.3.1).

4.3.3 Test reports. The contractor shall prepare a first article test report in accordance with the data ordering document included in the contract or order (see 6.2.2).

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

4.4.1 Packing and marking. Examination of the packing and marking requirements not covered by any specification referenced shall be performed on sample packs selected in accordance with MIL-STD-105 at inspection level I. Any pack having one or more defects shall not be offered for delivery. The acceptable quantity level (AQL) for packs is 1.0 percent major when examined for defects including those listed in table II.

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TABLE II. Classification of defects.

Major	Defects	Level			
		A	B	C	Commercial
101	Materials and methods not as specified.	X	X	X	-
102	Lack of or incorrect use of cushioning and wrapping materials (see 3.3.5 and 3.8.1.1.3.3).	X	X	X	X
103	Complete descriptive packaging, packing, or drawings of sample pack not submitted (see 3.5).	X	X	X	-
104	Packaging data not submitted (see 3.5.2).	X	X	X	-
105	Items not properly cleaned in accordance with MIL-P-116 (see 3.8.1.1.1).	X	-	X	-
106	Preservatives improperly applied and exterior surfaces not coated with correct preservative (see 3.8.1.1.2.1).	X	-	X	-
107	Openings not sealed as specified (see 3.8.1.1.3.1).	X	-	X	-
108	Valves of nonferrous construction not protected by method III of MIL-P-116 (see 3.8.1.1.2.2).	X	-	X	-
109	Valve stems of ferrous materials (other than preset, automatic, or relief valves) incorrectly processed and packing not removed (see 3.8.1.1.2.5).	X	-	X	-
110	Packing not as specified (see 3.8.2.4).	X	X	X	X
111	Unsealed case liners (see 3.8.2.4.1).	X	X	-	-
112	Boxes not modified when gross weight exceeds 200 pounds (see note 2, table I).	X	X	X	-
113	Marking illegible, incomplete, or incorrect (see 3.11).	X	X	X	X
114	Repair parts not packaged in accordance with 3.9.	X	X	X	X
115	Palletization not in accordance with 3.10.	X	X	X	-

5. PACKAGING

5.1 Not applicable to this specification.

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6. NOTES

6.1 Intended use. The cleaning, drying, preservation, packing, and marking requirements specified herein are intended to insure proper and safe storage and transportation for mechanical valves, fittings, and flanges not installed as a component of equipment. It is not intended to provide complete delivery requirements for valves having hydraulic or electrical activating mechanisms or controls. Additional information or special requirements may be required for peculiar types of valves.

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 materials do not require fire resistant characteristics (see 3.3.5).
- (c) When first article sample is required (see 3.4 and 4.3.2).
- (d) When a dummy or simulated load may be used for the rough handling tests (see 3.4.1 and 4.3.2).
- (e) When descriptive details and drawings of the sample pack are required and transportation data shall be submitted (see 3.5.1 and 3.5.2).
- (f) When hand wheels are not to be removed (see 3.6).
- (g) Levels of protection required (see 3.8.1, 3.8.2, 3.8.2.4, 3.9 and 3.12.1).
- (h) Type of preservative other than specified for steam or water-system valves (see 3.8.1.1.2.1).
- (i) When protection other than method III of MIL-P-116 may be used (see 3.8.1.1.2.2).
- (j) Unit protection (preservation) requirements other than specified for brazing fittings (see 3.8.1.1.2.3).
- (k) When removal of packing is required (see 3.8.1.1.2.5).
- (l) When the unit pack quantity is other than commercial (see 3.8.1.1.3.4).
- (m) When items shipped in open crates do not require a flexible waterproof barrier (see 3.8.2.1).
- (n) When container selection is other than the contractor's option (see 3.8.2.4).
- (o) When valves may be packed in unsheathed crates (see note 3, table I).
- (p) When triple wall fiberboard boxes may be used for individual items weighing more than 200 pounds (see note 6, table I).
- (q) When caseliners conforming to MIL-L-10547 are not required (see 3.8.2.4.1).
- (r) When caseliners are required (see 3.8.2.4.2).
- (s) Level of preservation and packing required for provisioned items (see 3.9).
- (t) When palletization per the criteria is not required (see 3.10(a) and (b)).
- (u) Special marking required (see 3.11).
- (v) When bar code markings are not required (see 3.11).

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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 shall 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.

<u>Paragraph no.</u>	<u>Data requirements title</u>	<u>Applicable DID no.</u>	<u>Option</u>
3.3.2.1 and 3.3.4	Certificate of compliance	DI-E-2121	---
3.5.1	Drawings, engineering, and associated lists	DI-E-7031	Level 2 for preliminary design - Level 3 for drawings - Drawing number - contractor Design activity designation Contractor - parts lists required - certification data sheets
3.5.1 and 4.3.3	Report, test	DI-T-2072	---
3.5.2	Preservation and packing data	DI-L-7135	---

(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 sections 3, 4, or 5 of the 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).

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6.3 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.

6.4 Definitions or explanation of terms.

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

6.4.1.1 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:

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

NOTE: 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.

6.4.1.2 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:

- (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.

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NOTE: 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.

6.4.1.3 Level C. This packaging provides minimum protection. It is needed to protect material under known favorable conditions. The following criteria determines 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.

6.4.1.4 Commercial. Although not specifically defined by any Government regulation or instruction, commercial packaging (preservation and parking) 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.

6.4.2 Packaging terms.

6.4.2.1 Commercial packaging. The methods and materials employed by the contractor to satisfy the requirements of the commercial distribution system.

6.4.2.2 Containerization. The use of an article of transport equipment designed to facilitate and optimize the carriage of goods, by one or more modes of transportation, without intermediate handling of the contents.

6.4.2.3 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.

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

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

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6.4.2.6 Military packaging. The materials and methods or procedures, prescribed in Federal/military specifications, standards, drawings, or other authorized documents, which are designed to provide the degree of packaging protection determined necessary to prevent damage and deterioration during worldwide distribution of material.

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

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

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

6.4.2.10 Unitization. Assembly of packs of one or more line items of supply into a single load in such a manner that the load can be handled as a unit through the distribution system. Unitization (unitized loads/unit loads) encompasses consolidation in a container, placement on a pallet or load base, or securely binding together.

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

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:

- DSAM 4145.2 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)
- 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 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, NCO 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

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(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 - ME
Navy - SH
Air Force - 69

Preparing activity:

Navy - SH
(Project PACK-0655)

Review activities:

Army - SM, MI
Navy - SA, YD
DLA - CS
Air Force - 99

User activities:

Navy - MC

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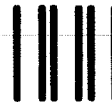
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