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MILITARY SPECIFICATION

MACHINERY, METAL AND WOODWORKING

PACKAGING OF

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

1 SCOPE

1.1 This specification covers requirements for materials and methods for cleaning, drying, preservation-packaging, packing, and marking of new machinery, metal and woodworking, for the various levels of protection for handling, shipment, and storage.

2 APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. Unless otherwise specified (see 6.2.1), 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

L-P-378	- Plastic Sheet and Strip Thin Gauge Polyolefin
P-D-680	- Dry Cleaning Solvent
TT-P-664	- Primer Coating, Synthetic, Rust-Inhibiting, Lacquer-Resisting

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, US Army Armament, Munitions and Chemical Command, ATTN: DRSMC-LEE-S, Rock Island, IL 61299 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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-1055 - Barrier Material, Waterproofed Flexible
PPP-C-843 - Cushioning Material, Cellulosic
PPP-D-705 - Drum: Metal Shipping, Steel, 16 and 30 Gallon Capacity
PPP-D-729 - Drums, Shipping and Storage, Steel, 55-Gallon (208 Liters)
PPP-P-40 - Packaging and Packing of Hand Tools
PPP-T-60 - Tape: Packaging, Waterproofed
PPP-T-1150 - Tools and Tool Accessories for Power Driven, Metal and Woodworking, Machinery; Packaging and Packing of

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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-775 - Packaging of Hose, Hose Assemblies; Rubber, Plastic, Fabric, or Metal (Including Tubing); and Fittings, Nozzles, and Strainers
MIL-C-3774 - Crates, Wood; Open 12,000- and 16,000-Pound Capacity
MIL-P-3816 - Abrasives and Abrasive Products, Packaging of
MIL-C-5501 - Caps and Plugs, Protective, Dust and Moisture Seal General Specification for
MIL-H-6083 - Hydraulic Fluid, Petroleum Base, for Preservation and Operation
MIL-E-16298 - Electric Machines Having Rotating Parts and Associated Repair Parts: Packaging of
MIL-E-17555 - Electronic and Electrical Equipment, Accessories, and Repair Parts; Packaging and Packing of
MIL-B-26195 - Boxes, Wood-Cleated, Skidded, Load-Bearing Base
MIL-A-46153 - Antifreeze, Ethylene Glycol, Inhibited, Heavy Duty, Single Package
MIL-C-52950 - Crates, Wood, Open and Covered

STANDARDS

MILITARY

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

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

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D3951-82 Standard Practice for Commercial Packaging

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

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

2.2 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3 REQUIREMENTS

3.1 First article. When specified (see 6.2.1), the supplier shall furnish one complete pack for first article inspection. The first article may be either a preproduction pack or an initial production pack which conforms to the requirements of this specification. In either case, the approved first article and the production packs shall be identical and in accordance with the terms of the contract. Approval of the first article shall not relieve the supplier of the responsibility to furnish equipment in accordance with the requirements of this specification.

3.2 Disassembly and matchmarkings. Disassembly requirements and matchmarking of machinery shall be in accordance with MIL-STD-1186. The type of tags used for matchmarking and the method of application shall be in accordance with MIL-STD-129.

3.3 Materials. Materials used in preservation-packaging and packing of machinery shall be as specified herein. Materials shall be new and free from all defects and imperfections which may affect the serviceability of the completed package or pack.

3.4 Processing conditions. Preservation-packaging shall be accomplished within buildings which have facilities to limit the accumulation of dust and moisture on the equipment being processed. Machinery brought into processing areas from outside shall be allowed sufficient time to reach ambient temperature before processing. Cleaning, drying, and application of preservatives shall progress in an uninterrupted series of operations. When periods of interruption are necessary, temporary protection shall be provided to partially processed items, as required, to insure against contamination.

3.5 General requirements. Component parts of machinery, accessories, and maintenance tools shall be cleaned, dried, preserved, packaged, and packed as specified herein. Parts and assemblies which are not covered by this specification shall be preserved and packaged utilizing the materials and methods specified for similar parts and assemblies described herein. Cleaning and drying procedures, and preservatives and their application, specified herein shall conform to the criteria and guidelines of MIL-P-116. The fundamental principles and approved methods and techniques of packaging and packing are prescribed in 6.5.

3.6 Preservation. Preservation shall be Level A, or Industrial, as specified (see 6.2.1).

3.6.1 Level A.

3.6.1.1 Cleaning and drying. Thorough cleaning and drying of all bare ferrous metal surfaces is essential before the application of a preservative. Care must be taken to limit the handling of cleaned parts prior to the assembly of new machinery. Where practicable, processors and assemblers shall wear rubber or plastic gloves while handling cleaned parts. Unless otherwise specified herein, machines which have been functionally tested prior to shipment shall have all operational systems thoroughly drained before the application of a preservative. It may be necessary to connect the machine to a power source and operate at low speeds in order to drain all cavities.

3.6.1.1.1 Internal surfaces. All ferrous metal surfaces of parts which will be utilized internally in the assembly of new machinery shall be cleaned in accordance with process C-5 and dried in accordance with the applicable procedure of MIL-P-116. In the interim, to preclude contamination from forming on cleaned surfaces prior to the assembly operation, parts shall be coated with a light weight preservative oil conforming to P-9. To prevent dust from accumulating on cleaned parts, cover with a sheet of chemically neutral paper. In the event the supplier deems it necessary to clean a particular mechanism after draining the operational lubricant, flush with a solution of one part lubricating oil P-10, type I, grade 30 and nine parts cleaning solvent conforming to P-D-680. Otherwise, the mechanisms need not be cleaned.

3.6.1.1.2 External surfaces. All accessories and attachments such as chucks, faceplates, steady rests, toolholders, and abrasive wheels shall be removed from the assembly prior to the external cleaning operation. All external, critical ferrous metal surfaces (fit or function) of the machine shall be cleaned in accordance with process C-5 and dried in accordance with the applicable procedures of MIL-P-116. Noncritical ferrous metal surfaces shall be cleaned in accordance with process C-3 and dried as specified above. Nonmetallic composites and painted metal surfaces shall be cleaned by wiping with a clean, dry cloth. (Care must be taken to prevent cleaning solvents from coming in contact with nonmetallic composites.) When cleaned surfaces of the machine show signs of rusting before application of the final preservative, the cleaning process shall be confined to small areas of the assembly. Alternatively, the solvent used for the final wiping operation shall contain a small amount (approximately 5 percent by volume) preservative oil conforming to P-10, type 1, grade 30. (It is extremely important that elapsed time between these operations be held to an absolute minimum.)

3.6.1.1.3 Steam and air lines. Drain all water accumulation and dry by injecting moisture-free air into the systems.

3.6.1.1.4 Disassembled components. Parts detached from the basic machine shall be cleaned and dried as specified in 3.6.1.1.1 and 3.6.1.1.2.

3.6.1.1.5 Machine tools and tool accessories. Machine tools and tool accessories shall be cleaned and dried in accordance with Level A requirements of PPP-T-1150.

3.6.1.1.6 Electrical equipment. Electrical equipment shall be cleaned and dried in accordance with Level A requirements of MIL-E-17555.

3.6.1.1.7 Hoses and fittings. Hoses and fittings which are not attached to the basic machine shall be cleaned and dried in accordance with Level A requirements of MIL-P-775.

3.6.1.1.8 Maintenance tools. Hand tools shall be cleaned and dried in accordance with Level A requirements of PPP-P-40.

3.6.1.2 Preservation-packaging. Unless otherwise specified (see 3.6.1.2.24), the basic machine shall be preserved and packaged in accordance with method I criterion of MIL-P-116. Electronic and electrical equipment, hand tools, and accessories shall be preserved and packaged as specified herein. When it has been determined by the supplier that a preservative is required to protect a specific surface or item, but has not been specified herein, the preservative utilized shall be selected from MIL-P-116.

3.6.1.2.1 Lubricating systems. After the machine has been functionally tested, drain all lubricating oil from the reservoir and fill with type P-10, grade 30 preservative oil. The machine shall be cycled in order to circulate the oil throughout the system. Preservative oil shall then be drained from the reservoir.

3.6.1.2.2 Coolant systems. Coolant systems shall be filled to the operating level with equal parts of anti-freeze conforming to MIL-A-46153, and water. If the system contains a thermostat, the engine shall be operated long enough to allow the thermostat to open and assure mixing and even distribution of the coolant. The coolant system shall be tagged indicating:

"COOLANT SYSTEM CONTAINS WATER AND ANTIFREEZE SOLUTION IN EQUAL PARTS - DO NOT DRAIN - CHECK COOLANT LEVEL."

3.6.1.2.3 High-speed spindle bearings. Fill the reservoir to normal operating level with P-9 preservative oil. If the system is of such design that the oil will leak out during shipment or storage, the system shall be preserved by filling with preservative oil P-10, type I, grade 30 and drained.

3.6.1.2.4 Hydraulic systems. Both open- and closed-type systems shall be filled to normal operating level with preservative oil conforming to P-10, type I, grade 30. Filling of the systems shall be accomplished while the machine is connected to the power source. After filling, the machine shall be cycled in order to circulate the oil through the system. Prior to disconnecting the machine from the power source, place the piston(s), except opposing pistons, in their innermost position. Subsequently, drain the entire system. When specified (see 6.2.1), the hydraulic system shall be filled to normal operating level with hydraulic oil conforming to MIL-H-6083. After filling, the machine shall be cycled to circulate the oil. Position the piston(s) in the same manner as specified above. The oil shall remain in the reservoir.

3.6.1.2.4.1 Hydraulic systems for tracer mechanism. These systems shall be filled to a normal operating level with a rust inhibitor oil which is compatible with the supplier's unit. These systems shall not be drained.

3.6.1.2.5 Grease fittings. Charge all grease fittings with preservative compound conforming to P-11.

3.6.1.2.6 Nonlubricated interior surfaces. Surfaces of internal gears which do not run in lubricant shall be thoroughly coated with P-2 preservative.

3.6.1.2.7 Air motors. Interior surfaces of air motors and air lines shall be coated with a preservative oil conforming to P-10, type I, grade 30 by injecting oil into the air stream while operating the machine until the oil appears at the exhaust ports. Air inlets and outlets shall be sealed with plastic cap-plugs or tape conforming to MIL-C-5501 or PPP-T-60, type IV, respectively. Air cylinders shall not be disassembled from the machine unless parts are vulnerable to damage during shipment and storage.

3.6.1.2.8 Gear cases. Fill the gear cases with lubricating oil, P-10, type I, grade 30. Shift gears into all possible positions while operating the machine, then drain the oil and close all openings.

3.6.1.2.9 Sliding or friction surfaces. Surfaces of ways, gibs, driving gears, traversing and adjusting screws, and other critical, exterior operating machined surfaces shall be coated with P-2 preservative compound. Parts of the machine which are adjustable shall be locked into place.

3.6.1.2.10 Non-critical surfaces. Exterior, non-critical, ferrous metal surfaces of the basic machine, which have not been painted or plated, shall be coated with type P-1, P-2, or P-19 preservative.

3.6.1.2.11 Bearings and journals. Grease lubricated bearings shall be preserved with type P-11 preservative. Oil lubricated journals shall be filled with lubricating oil P-10, type I, grade optional.

3.6.1.2.12 Metal and woodworking tools and tool accessories. Tools and tool accessories shall be preserved and packaged in accordance with level A requirements of PPP-T-1150.

3.6.1.2.13 Hoses and hose fittings. Hoses and hose fittings which are not attached to the machine shall be preserved and packaged in accordance with level A requirements of MIL-P-775.

3.6.1.2.14 Hand tools. Hand tools shall be preserved and packaged in accordance with level A requirements of PPP-P-40.

3.6.1.2.15 Drive belts and pulleys. Drive belts shall either be removed from the machine or released from tension. Ferrous metal pulleys shall be coated with rust-inhibiting primer conforming to TT-P-664. Belts removed from the machine shall be packaged in accordance with method III criterion of MIL-P-116.

3.6.1.2.16 Grinding wheels and abrasives. All abrasive products shall be preserved and packaged in accordance with level A requirements of MIL-P-3816.

3.6.1.2.17 Electric motors. Electric motors shall be preserved and packaged in accordance with level A requirements of MIL-E-16298, and the applicable subparagraph for assembled machines.

3.6.1.2.18 Electrical control devices. Control units shall be preserved and packaged in accordance with level A requirements of MIL-E-17555.

3.6.1.2.19 Electrical wiring system. Exposed ends of wires, plug openings, sockets, connector plugs, terminals, and openings into switches and junction boxes shall be sealed with tape or cap-plugs conforming to PPP-T-60, type IV or MIL-C-5501, respectively. Electric cable shall be coiled to a minimum safe diameter and secured with cotton tape or twine to prevent uncoiling.

3.6.1.2.20 Closed dial indicators. Closed dial indicators shall be covered with 1 inch thick uncompressed cushioning materials conforming to PPP-C-843, type II, class B. Secure cushioning material in place with tape conforming to PPP-T-60, type IV. Other type cushioning materials and tapes may be used provided the materials are water-resistant, non-corrosive, and will provide equivalent protection of those specified above.

3.6.1.2.21 Drawers and door assemblies. Sliding surfaces of drawer guides shall be coated with P-11 preservative grease. Interior surfaces of door hinges shall be lubricated by the application of P-10, grade 30 preservative oil. In addition to mechanical locks or catches incorporated in the machine tool, secure doors and drawers with metal strapping or other devices which are suitable for the purpose intended. Fiberboard pads shall be placed under metal strapping, in selected places, to prevent marring the painted surfaces.

3.6.1.2.22 Closure of openings. Small openings (except vents and louvers installed for ventilation purposes) which will admit dust or water shall be sealed with tape conforming to PPP-T-60, type IV. Large openings shall be covered with waterproof barrier material conforming to class E-1 or L-4 of PPP-B-1055, or, as a minimum, plastic material conforming to L-P-378, type and class optional. Secure materials in place with tape specified above. When very large openings are covered, or when location of openings render coverings vulnerable to puncture, coverings shall be protected by applying wood, plywood or sheet metal over the materials. Open ends of all piping and fittings shall be plugged to prevent the entrance of foreign materials, using pipe fittings or plastic cap-plugs conforming to MIL-C-5501.

3.6.1.2.23 Technical data. Technical data furnished with the machine shall be packaged in accordance with method IC-1 criterion of MIL-P-116. The package shall be marked "TECHNICAL DATA" in bold black letters. The package shall be protected against puncture and abrasion. The data shall be either attached to the machine with tape conforming to PPP-T-60, type IV, placed in a stowage compartment of the machine, or positioned in a consolidated box containing accessories or disassembled components.

3.6.1.2.24 Method II packaging. When specified (see 6.2.1), complex items which cannot be treated entirely externally with a contact preservative or where removal of the preservative would prevent timely use of the machine shall be packaged in accordance with method II criterion of MIL-P-116. Accessories, maintenance tools, control units, and all internal surfaces of the machine shall be preserved and packaged as specified herein.

3.6.1.2.25 Consolidated packaging. When size and weight permit, packaged accessories, maintenance tools, and small disassembled components shall be consolidated and placed in drawers and stowage compartments of the machine. When it is not feasible to stow parts as specified above, place parts in box(es) conforming to PPP-B-636, class WR or WWVR; PPP-B-640, class 2; PPP-B-601, domestic type; or PPP-B-621, class 1. Large bulky disassembled components shall be packed as specified in 3.7.2.1 and 3.7.3, as applicable.

3.6.1.2.26 Cushioning. Cushioning materials and methods of application shall conform to the criteria and guidelines of MIL-P-116 and MIL-STD-1186. In the event there are conflicting requirements, MIL-STD-1186 will have precedence.

3.6.1.2.27 Protection of preservatives. All exposed preserved surfaces of machines which are subject to being disturbed during the packing operation shall be loosely covered with barrier material conforming to MIL-B-121, type 1, grade A. Not less than two layers of similar-type barrier material shall be used to separate wood or metal blocking and finished metal surfaces of the machine. When considered necessary, secure barrier in place with tape conforming to PPP-T-60, type IV.

3.6.1.2.28 Movable parts. Operating heads, sliding tables, rams, counter-balances, and other movable parts shall be secured by mechanical devices incorporated in the machine. The devices alone do not always provide adequate support to prevent movement in the handling and transporting of the item and therefore must be augmented with appropriate wood blocking, metal tie rods used in conjunction with wood blocking, metal strapping, or other devices which will immobilize the part. Handwheels, cranks, levers, and similar controls shall be secured in position with common annealed wire or steel strapping.

3.6.1.2.28.1 Positioning assemblies. Assemblies having vertical movement shall be blocked and braced in a lowered position; those capable of moving traversely shall be centered for blocking and bracing.

3.6.1.2.28.2 Tables. Tables or other components moving on ball bearings or other types of high efficiency, low-friction ball or roller bearing assemblies shall be removed, or blocked, and all components treated in such a manner that neither the way(s), surface(s), nor the anti-friction devices will be subject to brinelling or other damage.

3.6.1.2.28.3 Counterweights. Counterweights shall be locked and blocked in a manner which will release all tension from supporting cables, chains, and springs. Concealed counterweights suspended in closed columns shall be removed or blocked to prevent vertical or horizontal movement.

3.6.2 Industrial preservation. Preservation of metal and wood-working machinery shall conform to the requirements of ASTM D3951-82.

3.7 Packing. Packing shall be level A or B, or Industrial, as specified (see 6.2.1).

3.7.1 General requirements for levels A and B. When weight, size, and design permit, machines shall be assembled when being prepared for shipment. When it is not considered feasible to ship a machine assembled, components shall be packed in accordance with weight limitations specified herein.

3.7.2 Level A.

3.7.2.1 Machinery weighing less than 2,500 pounds. Unless otherwise specified (see 6.2.1), machinery including accessories, weighing less than 2,500 pounds, shall be packed in cleated plywood boxes conforming to PPP-B-601, overseas type; nailed wood boxes conforming to PPP-B-621, class 2, style 2, 3, 4 or 7; or skidded boxes conforming to MIL-B-26195, type II, style A, class optional, with plywood superstructure. Selection of containers shall be governed by the size and weight limitations of the applicable container specification. Machines designed with mounting holes in areas that can withstand rough handling without breakage shall be bolted to an auxiliary base before being packed in a box conforming to PPP-B-601 or PPP-B-621. Contents of boxes shall be arranged, anchored, blocked, braced, and cushioned in accordance with MIL-P-116 and MIL-STD-1186. In the event there are conflicting requirements, MIL-STD-1186 will have precedence. Top-heavy machines shall be packed as specified in 3.7.2.2.3. Box closure and strapping requirements shall be in accordance with the appendix to the applicable box specification.

3.7.2.2 Machinery weighing 2,500 to 30,000 pounds. Unless otherwise specified (see 6.2.1), machines weighing 2,500 to 30,000 pounds shall be packed individually in crates conforming to MIL-C-104, type I, class 2, style A. To conserve cubage, safeguard components of the machine, and to comply with weight and dimensional limitations of the crate specification, subassemblies removed through disassembly and control units may be packed in separate shipping containers. When packed separately, items weighing less than 2,500 pounds shall be packed as specified in 3.7.2.1. Arrangement of contents, anchoring, blocking, bracing, and cushioning shall be in accordance with the appendix to the crate specification, MIL-STD-1186, and as specified herein. MIL-STD-1186 will have precedence when there are conflicting requirements. When practicable, to facilitate loading into common carriers, the height of the crated machine shall be limited to 9 feet 8 inches.

3.7.2.2.1 Buttress blocking. Hold down bolts on machines weighing over 8,000 pounds shall be reinforced with backup buttress blocking extending from the machine base to the skid header; blocking shall be parallel to skid runners and in line with bolt holes on the machine. The blocks shall be similar to that used for the skid header. Carriage or step bolts shall be utilized to secure the block to the skid base.

3.7.2.2.2 Unsupported columns. Unsupported columns of the machine shall be reinforced by placing snug-fitting blocks between the columns and the skid platform or machine base, as applicable. Blocks extending from the column to the skid base shall be fitted so that tightening of the hold down bolts will not place undue stress on the column(s).

3.7.2.2.3 Top-heavy machinery. To safeguard equipment and personnel, top-heavy machine tools may be packed in a horizontal position, design permitting. Blocking and bracing shall be located at points of the machine with sufficient rigidity to carry the machine weight. Crates for top-heavy items requiring upright skidding due to design, structural weakness, etc., shall be sized to provide stability in handling and transit. The length and width of the skid platform shall extend beyond the machine a distance equivalent to the height of center of gravity of the machine above the base.

3.7.2.2.4 Leg-type machines. Leg-type machines with slotting holes for mounting shall be reinforced by placing a nominal 2- by 4-inch wood block against the leg opposite the slot opening and nailing to the skid base.

3.7.2.2.5 Bolting. Machines shall be secured to the skid base by not less than four bolts. When sufficient bolting points are not available, J-clamps or tie rod assemblies as specified in 3.6.1.2.28, or other devices, shall be used to provide the minimum of four holding points. Bolts shall pass completely through the skid runner or sleeper, as applicable, and the base flooring.

3.7.2.2.6 Consolidated containers. Consolidated containers specified in 3.6.1.2.25 shall be placed inside the shipping container housing the machine. The boxes shall be restrained by the use of metal strapping of sufficient strength or tie rod assemblies.

3.7.2.2.7 Operational oils. Operational oils furnished with the machine, but not placed in the machine stowage receptacles, shall be stowed in metal drum(s) conforming to PPP-D-705, type I or II or PPP-D-729, type I or II. Drums shall be positioned upright inside the shipping container housing the machine. Sufficient blocking shall be applied to immobilize the drum(s) inside the shipping container. Alternatively, when the drum(s) tend to increase the cubage of the shipping container, the drum(s) may be shipped as individual containers.

3.7.2.2.8 Machines exceeding crate limitations. Unless otherwise specified (see 6.2.1), machines exceeding the weight and size limitation of MIL-C-104 shall be packed in a similarly designed crate. The crate's structural members and anchoring devices shall be increased in number and size as needed to accommodate the load to be packed therein. The crate shall be capable of passing the rough handling test as specified in MIL-P-116.

3.7.3 Level B. Machines weighing 16,000 pounds or less shall be packed for shipment utilizing boxes conforming to PPP-B-601, domestic type, style A, B, I, or J; PPP-B-621, class 1, style 2, 3, 4, or 7; MIL-B-26195, type I, style A; or crates conforming to MIL-C-52950 or MIL-C-3774. Selection of the container shall be governed by the size and weight limitations of the applicable container specification. Machines designed with mounting holes in areas that can withstand rough handling without breakage shall be bolted to an auxiliary base before being packed in a box conforming to PPP-B-601 or PPP-B-621. Arrangement of contents, anchoring, cushioning, blocking, bracing, and container closure shall be the same as for level A (see 3.7.2.1). Items packed in open crates shall be covered with a waterproof shroud conforming to MIL-STD-1186. Machines exceeding 16,000 pounds shall be packed as specified in 3.7.2.2.

3.7.4 Industrial packing. Packing of metal and woodworking machinery shall conform to the requirements of ASTM D3951-82. When authorized by the transportation media and when safe handling with mechanical equipment is provided, the machines may be mounted on skids or a skid base in lieu of being boxed or crated. Openings in skids shall be a minimum of 3 inches in height to provide access for forklift tines. Machines not packed in fully sheathed containers shall be completely covered with a waterproof plastic shroud. The shroud shall be secured to the base of the machine. Polyvinyl Chloride (PVC) shall not be acceptable as shroud material because of the possible corrosive effect of PVC on shrouded material.

3.8 Marking.

3.8.1 Military. When military levels of preservation and packing are specified, marking shall be in accordance with MIL-STD-129. Special markings required shall be as specified by the contract or purchase order.

3.8.2 Industrial marking. When industrial preservation and packing is specified, marking shall be in accordance with ASTM D3951-82. Special markings required shall be as specified by the contract or purchase order. In addition, where practicable, center of balance markings and arrow markings, indicating THIS SIDE UP, shall be applied to each shipping container.

3.9 Workmanship. Workmanship shall be such that when the proper procedure is followed, materials and equipment being processed will be provided the maximum protection against corrosion and deterioration consistent with the shipment hazards known or anticipated, and suitable for the term of storage expected.

4 QUALITY ASSURANCE PROVISIONS

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

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

a. First article inspection (see 4.2.1).
b. Quality conformance inspection (see 4.2.2).

4.2.1 First article inspection. When first article inspection is required by the contract or purchase order (see 3.1), the contractor shall subject the first article pack to the applicable first article inspection and tests specified in MIL-P-116 and the examinations in the applicable container specification and Appendix B of MIL-STD-1186 to determine conformance to the requirements of this specification. When specified (see 6.2.1), first article packages shall be subjected to the rough handling and cyclic exposure test(s) (one or both) as specified in the first article inspection requirements of MIL-P-116. Failure of the first article to pass any of the inspections or tests shall be cause for rejection.

4.2.2 Quality conformance inspection. Quality conformance inspection shall be applied to production packs offered for acceptance under the contract or purchase order.

4.2.2.1 Level A and B preservation and packing. Quality conformance inspection shall consist of the applicable quality conformance inspections and tests specified in MIL-P-116 and the examinations in the applicable container specification and Appendix B of MIL-STD-1186 to determine conformance to the requirements of this specification. When specified (see 6.2.1), the packs shall be subjected to the rough handling and cyclic exposure test(s) (one or both) as specified in the quality conformance inspection requirements of MIL-P-116.

4.2.2.2 Industrial preservation and packing. Industrial preservation and packing shall be examined to determine conformance with the requirements of ASTM D3951-82.

4.3 Sampling.

4.3.1 Level A and B preservation and packing. Sampling for quality conformance inspection shall be conducted in accordance with MIL-STD-105 at the inspection level and acceptable quality level (AQL) specified in MIL-P-116 and Appendix B of MIL-STD-1186, respectively. Sampling for examination of the container shall be at level II and an AQL of 4.0. When specified (see 6.2.1), sampling for the rough handling and cyclic exposure test(s) (one or both) shall be at inspection level S-2 with an AQL of 4.0.

4.3.2 Industrial preservation and packing. Sampling for quality conformance inspection shall be conducted in accordance with MIL-STD-105 at inspection level S-4 with an AQL of 4.0.

4.3.3 Disposition of samples. All samples used for inspection and testing shall be reprocessed as necessary. They may, after reprocessing in accordance with the original method of preservation, be considered a part of the original lot. When the packaged item may have been damaged as a result of testing, the item shall be inspected as necessary to determine its acceptability.

5 PACKAGING

5.1 This section is not applicable to this specification.

6 NOTES

6.1 Intended use. This specification is intended to be used for reference in section 5 of commodity specifications or direct reference in contracts or orders. The cleaning, drying, preservation, packaging, packing, and marking requirements specified herein are intended to insure proper and safe storage and transportation of machinery, equipment, associated parts, and machine tool accessories for direct shipment to Government activities, or shipments to be processed at a military activity or agency.

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. First article, when required (see 3.1).
c. Specify level A or Industrial preservation (see 3.6); specify level A or B, or Industrial packing (see 3.7).
d. When hydraulic systems are to be filled with a preservative (see 3.6.1.2.4).
e. When method II protection is required (see 3.6.1.2.24).
f. Packing of equipment under 2,500 pounds, if different (see 3.7.2.1).
g. Packing of equipment weighing 2,500 pounds to 30,000 pounds, if different (see 3.7.2.2).
h. Packing of equipment weighing over 30,000 pounds, if different (see 3.7.2.2.8).
i. First article inspection, if different (see 4.2.1).
j. Rough handling test, when required (see 4.2.1).
k. Cyclic exposure test, when required (see 4.2.1).

6.6 Disposability methods. Environmental Pollution Preventative Measures are contained in the materials' specifications indicated herein. Refer to the materials' specifications (or preparing activity) for recommended disposability methods.

Custodians:
Army - AL
Navy - SH
Air Force - 99

Review activities:
Army - SM, ME
Navy - YD
DSA - IP

User activities:
Navy - OS

Preparing activity:
Army - AL

Project No. PACK-0708

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE

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)*

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

DD FORM 82 MAR 1426 PREVIOUS EDITION IS OBSOLETE.