

INCH-POUND

MIL-STD-290F

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SUPERSEDING

MIL-STD-290E

1 May 1981

DEPARTMENT OF DEFENSE STANDARD PRACTICE

PACKAGING AND MARKING OF PETROLEUM AND RELATED PRODUCTS



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FOREWORD

1. This standard is approved for use by all Departments and Agencies of the Department of Defense.
2. This standard should be used in conjunction with DLAI 4145.3/AFJMAN 24-204, "Preparing Hazardous Material for Military Air Shipments", Code of Federal Regulations, Parts 100-180 of Title 49, Title 29, and any other applicable law or regulation required for the safe handling, storage, and transportation of material covered under this standard.
3. Beneficial comments (recommendations, additions, deletions) and any pertinent data that may be of use in improving this document should be addressed to: Defense Supply Center Richmond, DSCR-VBD, 8000 Jefferson Davis Highway, Richmond, VA 23297-5610 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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1. SCOPE

1.1 Scope. This standard provides detailed requirements and approved uniform methods for packaging, packing, and marking of petroleum and related products for shipment, handling and storage.

1.2 Application.

1.2.1 Centrally procured items. The level of protection, as well as any special marking requirements, should be incorporated in the appropriate purchasing documents.

1.2.2 Locally procured items. This standard is not mandatory for items locally procured for immediate use.

1.3 Options. Where options are indicated concerning methods of packaging or designation of the method is not specified in the contract or order, the selection should be at the option of the contractor.

2. APPLICABLE DOCUMENTS

2.1 General. The following documents of the issues in effect on the date of invitation for bids or request for proposal form a part of this standard to the extent specified herein.

2.2 Government documents.

2.2.1 Specifications and standards. The following specifications and standards form a part of this standard to the extent specified herein. Unless otherwise specified, the issues of these documents should be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS), and the supplement thereto, cited in the solicitation. Unless otherwise indicated, the issues in effect on the date of invitation for bids or request for proposal should apply.

SPECIFICATIONS

FEDERAL

PPP-C-96	- Cans, Metal, 28 Gage and Lighter.
PPP-C-186	- Containers, Packaging and Packing for Drugs, Chemicals, and Pharmaceuticals.
PPP-P-704	- Pails, Metal: (Shipping, Steel, 1 through 12 Gallons).
PPP-D-729	- Drums, Shipping and Storage, Steel, 55 Gallon (208 Liters).
NN-P-71	- Pallets, Material Handling, Wood, Stringer Construction, 2-Way and 4-Way (Partial).

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MIL-PRF-2104	- Lubricating Oil, Internal Combustion Engine, Combat/Tactical Service.
MIL-PRF-2105	- Lubricating Oil, Gear, Multipurpose (Metric).
MIL-H-5606	- Hydraulic Fluid, Petroleum Base; Aircraft, Missile and Ordnance.
MIL-PRF-6081	- Lubricating Oil, Jet Engine.
MIL-PRF-6083	- Hydraulic Fluid, Petroleum Base for Preservation and Operation.
MIL-PRF-7808	- Lubricating Oil, Aircraft Turbine Engine, Synthetic Base.
MIL-PRF-8188	- Corrosion-Preventive, Gas Turbine Engine, Synthetic Base.
MIL-PRF-9000	- Lubricating Oil, Shipboard Internal Combustion Engine, High Output Diesel.
MIL-PRF-17331	- Lubricating Oil, Steam Turbine and Gear, Moderate Service.
MIL-PRF-17672	- Hydraulic Fluid, Petroleum, Inhibited.
MIL-PRF-21260	- Lubricating Oil, Internal Combustion Engine, Preservative Break-In.
MIL-PRF-23699	- Lubricating Oil, Aircraft Turbine Engine, Synthetic Base, NATO Code Number O-156.
MIL-H-46170	- Hydraulic Fluid, Rust Inhibited, Fire Resistant Synthetic Hydrocarbon Base.
MIL-PRF-83282	- Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Metric, NATO Code Number H-537.
MIL-PRF-87252	- Coolant Fluid, Hydrolytically Stable, Dielectric.
MIL-PRF-87257	- Hydraulic Fluid, Fire Resistant; Low Temperature, Synthetic Hydrocarbon Base, Aircraft and Missile.
DOD-L-85734	- Lubricating Oil, Helicopter Transmission System, Synthetic Base.

STANDARDS

FEDERAL

FED-STD-313	- Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities.
FED-STD-595	- Colors Used in Government Procurement.

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MIL-HDBK-774	- Palletized Unit Loads.
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DEPARTMENT OF DEFENSE (continued)

MIL-STD-2073-1 - Standard Practice for Military Packaging.

(Unless otherwise indicated, copies of the above specifications and standards are available from the Standardization Documents Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other government publications. The following other government publications form a part of this document to the extent specified herein. Unless otherwise indicated, the issues in effect on the date of invitation for bid or request for proposal should apply.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR - Labor.

49 CFR - Transportation.

(Application for copies should be addressed to the Superintendent of Documents, U.S. Government Printing Office, North Capital & H Streets NW, Washington, DC 20402.)

2.3 Non-government publications. The following documents form a part of this standard to the extent specified herein. Unless otherwise specified, the issues of documents that are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of the documents not listed in the DoDISS are the issues of documents cited in the solicitation.

AUTOMATIC IDENTIFICATION MANUFACTURERS (AIM)

AIM-BC1 - Uniform Symbology Specification Code 39
(DoD adopted).

(Application for copies should be addressed to the Automatic Identification Manufacturers, 634 Alpha Drive, Pittsburgh, PA 15238-2802.)

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI MH2 - Materials Handling (Containers) - Steel Drums and Pails.

ANSI Z129.1 - Hazardous Industrial Chemicals - Precautionary
Labeling (DoD adopted).

(Application for copies should be addressed to the American National Standards Institute, Attn: Sales Dept., 1430 Broadway, New York, NY 10018-3363.)

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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- | | |
|---------------------|--|
| ASTM D 3951 | - Standard Practice for Commercial Packaging (DoD adopted). |
| ASTM D 3953 | - Standard Specification for Strapping, Flat Steel and Seals (DoD adopted). |
| ASTM D 4727/D 4727M | - Standard Specification for Corrugated and Solid Fiberboard Sheet Stock (Container Grade) and Cut Shapes (DoD adopted). |
| ASTM D 4919 | - Standard Specification for Testing of Hazardous Materials Packagings (DoD adopted). |
| ASTM D 5118/D 5118M | - Standard Practice for Fabrication of Fiberboard Shipping Boxes (DoD adopted). |
| IEEE/ASTM SI 10 | - Standard for Use of the International System of Units (SI): The Modern Metric System (DoD adopted). |

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

- | | |
|-----------------|---|
| SAE AMS-C-22587 | - Cartridges, Grease, 14 Ounce (for Cartridge-Type Grease Gun) (DoD adopted). |
| SAE J 1703 | - Motor Vehicle Brake Fluid (DoD adopted). |

(Application for copies should be addressed to the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096-0001.)

UNIFORM FREIGHT CLASSIFICATION, UNIFORM CLASSIFICATION COMMITTEE, AGENT

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

2.4 Order of precedence. In the event of a conflict between the text of this standard and the references cited herein, the text of this standard takes precedence. Nothing in this standard, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

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3. DEFINITIONS

3.1 Commercial packaging. Commercial packaging consists of the methods and materials employed by the supplier that satisfy the requirements of the commercial distribution system. Commercial packaging should provide the same level of protection against physical and environmental damage as military packaging during shipment and handling.

3.2 Containers. Containers, as specified for petroleum and related products, consist of tubes, cartridges, bags, bottles, boxes, cans, drums, jars, and pails used to protect contents from physical damage during shipment, handling, and storage. When hazardous materials are specified, they should be tested in accordance with ASTM D 4919.

3.3 Unit pack. Unit pack is defined as 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 identifiable pack. For petroleum products, the unit pack is a can, box, bottle, container, tube, cartridge, bag, drum, pail, or pack as described in sections 4 and 5 herein.

3.4 Exterior pack. Exterior pack is defined as a container or bundle that is sufficient by reason of material, design, and construction to protect material during shipment and storage. Exterior pack may be the unit pack or a container with any combination of unit or intermediate packs.

3.5 Intermediate pack. Intermediate pack should consist of a wrap or box which contains two or more identical unit packs.

3.6 Level of protection. Level of protection is defined in terms of the amount of processing required to protect an item under known and unknown conditions. There is no direct relationship between the level of protection and the method of preservation and packing. The level of protection and its application are determined by the conditions an item is expected to encounter during shipping, handling, and storage.

3.7 Marking. Marking is the application of numbers, letters, labels, tags, symbols, or colors to items for identification and handling during shipment and storage.

3.8 Shelf life items. Shelf life items are items of supply possessing deteriorative or unstable characteristics to the degree that a storage time period should be assigned to ensure satisfactory performance.

3.8.1 Type I shelf life items. Type I shelf life items, as determined through an evaluation of technical and test data and/or actual experience, are items of supply that possess a definite non-extendible period of shelf life.

3.8.2 Type II shelf life items. Type II shelf life items are items of supply with assigned storage time periods that may be extended after the completion of prescribed test or inspection(s) and/or restorative action(s).

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4. GENERAL REQUIREMENTS

4.1 Unit containers. Unit containers for packaging petroleum and related products shall conform to the requirements of levels B, C, or commercial packaging procedures as specified in table I.

4.2 Coating of metal containers. When required, metal containers shall be painted as specified in table I and paragraph 5.9.1.

4.3 Packing. Petroleum products, as specified in table I, shall be packed in unit containers conforming to requirements specified in MIL-STD-2073-1. When commercial packing is specified, packing shall be in accordance with ASTM D 3951. Specialty products shall be packed as specified in paragraphs 5.6 through 5.6.2.3.

4.4 Marking. Unless otherwise specified in the contract or order, packed petroleum and related products shall be marked as specified in paragraphs 5.10 through 5.10.31 herein.

4.4.1 Bar code marking. In addition to paragraph 4.4, when bar coding is specified in the contract or order, it shall be in accordance with AIM-BC1. Unless otherwise specified (see 6.2), or specifically exempted in the contract, order, or by service and/or agency directive, bar code markings are required on all level A shipments.

4.5 Palletization. When specified in the contract or order, packed petroleum and related products shall be palletized in accordance with MIL-HDBK-774 and paragraph 5.3.1 (see 6.2).

4.6 Department of Transportation (DOT) regulations. All petroleum and related products herein regulated by DOT as hazardous material or hazardous substances shall be packed in containers tested to Part 178 of Title 49 CFR. The containers shall also meet the requirements of DLAI 4145.3/AFJMAN 24-204 when Military Airlift Command and other DoD components are involved (see 6.2). When specified, petroleum and related products shall be packed in containers meeting the internal air gauge pressure and leakage test requirements of Title 49 CFR.

4.7 Reclaimed materials. The containers and materials used in this standard may contain reclaimed materials to the maximum extent possible, provided such materials will not jeopardize the intended use, performance, or design life of the containers and materials. Reclaimed materials shall 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, rebuilt, or remanufactured end products are allowed under this standard. The reclaimed or recovered materials shall be in accordance with Public Law 94-580 to the maximum extent possible.

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5. DETAILED REQUIREMENTS

5.1 Packing products in unit containers.

5.1.1 Unit pack. When unit packs are specified in the contract or order, unit containers shall conform to the requirements of table I for the appropriate level specified in the contract or order (see 6.2).

5.1.2 Intermediate pack. When intermediate containers are specified in the contract or order, petroleum and related products shall be packed in containers conforming to table I.

5.1.3 Exterior pack. When petroleum and related products are specified to be packed in exterior containers by the contract or order, the filled and closed containers shall be packed level B, C, or commercial (see 6.2).

5.1.3.1 Level B intermediate packs of filled containers of less than 1-pint capacity. Unless otherwise specified in the contract or order, intermediate packs in the quantities and arrangements specified in table II shall be packed in containers conforming to requirements of MIL-STD-2073-1.

5.1.3.2 Level B intermediate packs of filled containers of 1-pint capacity and over. Unless otherwise specified in the contract or order, filled and closed containers of capacities of one pint and over, and intermediate packs in the quantities and arrangements specified in table II, shall be packed in containers conforming to requirements of MIL-STD-2073-1. Exterior packs shall also be packed in fiberboard containers conforming to MIL-STD-2073-1 or ASTM D 4727/D 4727M. The fiberboard containers shall be constructed and closed in accordance with requirements of MIL-STD-2073-1. Containers with protruding closures shall be protected with cell spacers or buffer pads formed from scored sheets of fiberboard or from polystyrene materials or full height, snug fitting, half-slotted style, interlocking fiberboard partitions. The design number and arrangement of the pads shall prevent movement and provide clearance. Boxes shall be top loading or end loading.

5.1.3.3 Level C intermediate packs of filled containers of less than 1-pint capacity. Unless otherwise specified in the contract or order, intermediate packs in the quantities and arrangements specified in table II shall be packed in containers conforming to requirements of MIL-STD-2073-1. Exterior packs shall also be packed in containers conforming to requirements of MIL-STD-2073-1.

5.1.3.3.1 Filled cans of 1-pint capacity and over. Unless otherwise specified in the contract or order, filled cans of 1-pint capacity or more shall be packed and cushioned as specified in 5.1.3.2 with the exception that fiberboard boxes shall be domestic grade conforming to MIL-STD-2073-1 or ASTM D 4727/D 4727M. The fiberboard boxes shall be constructed and closed in accordance with the requirements specified in MIL-STD-2073-1 or ASTM D 4727/D 4727M.

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5.2 Packing standard grease cartridges (for cartridge-type grease guns).

5.2.1 Unit packing. Unless otherwise specified in the contract or order, grease shall be furnished in grease cartridges conforming to the requirements specified in table I for levels B, C, or commercial (see 6.2).

5.2.2 Intermediate packing. Unless otherwise specified in the contract or order, grease shall be furnished in grease cartridges conforming to the requirements specified in table I for levels B, C, or commercial.

5.2.3 Exterior packing. Unless otherwise specified in the contract or order, grease shall be furnished in grease cartridges conforming to the requirements specified in table I for levels B, C, or commercial.

5.2.4 Level B. Unless otherwise specified in the contract or order, not more than 60 grease filled cartridges for the intermediate pack, as specified in paragraph 5.2.2, shall be packed in fiberboard containers conforming to requirements of MIL-STD-2073-1 or ASTM D 4727/D 4727M. The fiberboard containers shall be constructed and closed in accordance with the requirements specified therein. Containers may be top loading or end loading.

5.2.5 Level C. Unless otherwise specified in the contract or order, not more than 60 grease filled cartridges for the intermediate pack, as specified in paragraph 5.2.2, shall be packed in fiberboard containers conforming to requirements of MIL-STD-2073-1 or ASTM D 4727/D 4727M. The fiberboard boxes shall be constructed and closed in accordance with the requirements specified therein. Containers may be top loading or end loading.

5.2.6 Commercial level. Unless otherwise specified in the contract or order, 60 grease filled cartridges for commercial pack shall be packed in accordance with the requirements of ASTM D 3951.

5.3 Packing products in drums. When drums are specified in the contract or order, they shall conform to the requirements in table I for the appropriate level specified. When military air shipment is specified, drums shall meet the requirements of ASTM D 4919, Title 49 CFR and DLAI 4145.3/AFJMAN 24-204 (see 6.2).

5.3.1 Palletization. When palletization of packed petroleum and related products is specified in the contract or order, the packed items shall be palletized in accordance with MIL-HDBK-774. Marking of palletized loads shall be in accordance with MIL-HDBK-774. Unless otherwise specified in the contract or order, double wing pallets shall be used (see 6.2).

5.3.1.1 Arrangement of drums on pallets. When specified in the contract or order, four 55-gallon drums shall be palletized on a standard 48"x48" double wing pallet conforming to NN-P-71 (see figure 7). Strapping shall conform to ASTM D 3953.

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5.3.1.2 Unitization loads for DoD and other government agencies' utilization. When specified in the contract or order, 55-gallon drums shall be palletized on standard 40"x48" four-way entry pallets conforming to NN-P-71. The drums shall be secured to the pallets by stretch wrap bonding. If stretch wrap bonding capabilities are unavailable, or if the commodity is not compatible with the stretch wrap process, drums shall be secured to the pallets with 3/4-inch steel strapping conforming to ASTM D 3953 and shall be applied girth-wise. Quantities of less than three drums need not be palletized (see figure 8).

5.4 Packing products in pails. Unless otherwise specified in the contract or order, petroleum and related products shall be packed in pails conforming to the requirements in table I for levels B, C, or commercial (see 6.2).

5.5 Packing products in bottles and jars.

5.5.1 Unit packing. Unless otherwise specified in the contract or order, petroleum and related products shall be packed in bottles or jars conforming to the requirements in table I for levels B, C, or commercial (see 6.2).

5.5.2 Intermediate packing. Unless otherwise specified in the contract or order, petroleum and related products shall be packed in bottles or jars conforming to the requirements in table I for levels B, C, or commercial.

5.5.3 Commercial packing. Unless otherwise specified in the contract or order, petroleum and related products shall be packed in bottles or jars conforming to the requirements of ASTM D 3951.

5.5.4 Exterior packing. Unless otherwise specified in the contract or order, petroleum and related products packed in containers specified above shall be exterior packed in accordance with the requirements specified in table I for levels B, C, or commercial (see 6.2).

5.5.4.1 Level B. Unless otherwise specified in the contract or order, unit and intermediate packs of the quantities and arrangements specified in table III shall be packed in fiberboard containers conforming to requirements of MIL-STD-2073-1 or ASTM D 4727/D 4727M. The fiberboard boxes shall be constructed and closed in accordance with MIL-STD-2073-1 or ASTM D 4727/D 4727M. For 1-pound unit containers and larger, full-height partitions with full size top and bottom pads shall be used.

5.5.4.2 Level C. Unless otherwise specified in the contract or order, unit and intermediate packs shall be packed as specified in 5.5.1 and 5.5.2 with the exception that domestic grade, fiberboard containers shall conform to MIL-STD-2073-1 or ASTM D 4727/D 4727M. The fiberboard containers shall be constructed and closed in accordance with MIL-STD-2073-1 or ASTM D 4727/D 4727M.

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5.5.4.3 Commercial. Unless otherwise specified in the contract or order, filled bottles, jars, and collapsible tubes shall be packed in a manner that will afford adequate protection against damage during direct shipment from the supply source to the first receiving activity. Shipping containers shall conform to the Uniform Freight Classification Rules or the carrier's rules and regulations applicable to the mode of transportation.

5.6 Packing of specialty products.

5.6.1 Unit packing. Packing of specialty products, such as stick form grease, aerosol and non-aerosol containers, vials, and syringes shall be unit packed in accordance with ASTM D 3951.

5.6.2 Exterior packing. Unless otherwise specified in the contract or order, stick form grease and other specialty products shall be packed level B, C, or commercial (see 6.2).

5.6.2.1 Level B. Unless otherwise specified in the contract or order, stick form grease units and other specialty products to be packed as specified in 5.6.2 shall be packed in fiberboard containers conforming to requirements of MIL-STD-2073-1 or ASTM D 4727/D 4727M. The fiberboard boxes shall be constructed and closed in accordance with MIL-STD-2073-1 or ASTM D 4727/D 4727M. The item's weight shall be not more than the weight limit specified in the appropriate container specification.

5.6.2.2 Level C. Unless otherwise specified in the contract or order, stick form grease units and other specialty products to be packed as specified in 5.6.2 shall be packed in fiberboard containers conforming to requirements of MIL-STD-2073-1 or ASTM D 4727/D 4727M. The domestic fiberboard containers shall be constructed and closed in accordance with the appropriate container specification.

5.6.2.3 Commercial level. Unless otherwise specified in the contract or order, stick form grease units and other specialty products shall be packed in a manner that will provide adequate protection against damage during direct shipment from the supply source to the first receiving activity. Shipping containers shall conform to the Uniform Freight Classification Rules or the carrier's rules and regulations applicable to the mode of transportation.

5.7 Packing of wax.

5.7.1 Unit packing of 1-pound wax cakes. Single 1-pound cakes or four 1/4-pound cakes shall be wrapped in wax paper or unit packed in plastic bags and packed in folding or set-up boxes.

5.7.2 Exterior packing. 1-pound wax cakes shall be packed level B, C, or commercial as specified (see 6.2).

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5.7.2.1 Level B. Twenty 1-pound cakes or 80 1/4-pound cakes shall be unit packed in fiberboard containers conforming to MIL-STD-2073-1 or ASTM D 4727/D 4727M. The fiberboard containers shall be constructed and closed in accordance with MIL-STD-2073-1 or ASTM D 4727/D 4727M.

5.7.2.1.1 10- and 11-pound wax slabs. When wax slabs are in five or six 10- or 11-pound slabs, the wax shall be packed in fiberboard containers conforming to MIL-STD-2073-1 or ASTM D 4727/D 4727M. The fiberboard containers shall be constructed and closed in accordance with MIL-STD-2073-1 or ASTM D 4727/D 4727M.

5.7.2.1.2 Packing of solid wax. Solid wax shall be packed in fiber drums conforming to Type II Grade C or PPP-D-723. Net contents of hot-filled drums shall be 370 ± 30 pounds.

5.7.2.2 Level C unit packing of 1-pound wax cakes. Twenty 1-pound cakes or 80 1/4-pound cakes shall be unit packed in a domestic fiberboard container conforming to requirements of MIL-STD-2073-1 or ASTM D 4727/D 4727M. Fiberboard containers shall be constructed and closed in accordance with MIL-STD-2073-1 or ASTM D 4727/D 4727M.

5.7.2.2.1 Level C unit packing of 10- and 11-pound wax slabs. When wax slabs are in five or six 10- or 11-pound slabs, the wax shall be packed in a domestic fiberboard container conforming to the requirements of MIL-STD-2073-1 or ASTM D 4727/D 4727M. The fiberboard containers shall be constructed and closed in accordance with MIL-STD-2073-1 or ASTM D 4727/D 4727M.

5.7.2.3 Commercial level packing of solid wax. Solid wax shall be packed in accordance with ASTM D 3951.

5.8 Cleaner, lubricant, and preservative (CLP).

5.8.1 Unit packing container sizes of CLP. CLP shall be unit packed in one of the following high density polyethylene containers:

- a. 0.5-fluid ounce plastic bottle.
- b. 4-fluid ounce plastic bottle.
- c. 1-pint plastic bottle with trigger sprayer.
- d. 1-gallon plastic bottle.
- e. 1-liter plastic bottle with a trigger sprayer.

5.8.2 Exterior packing. Exterior packing of CLP shall be packed level A, B, or C, or as specified in the contract or order. Unit packs per container shall not exceed the following:

- a. 0.5-fluid ounces -----240 units/container
- b. 4-fluid ounces -----120 units/container
- c. 1-pint -----20 unit/container
- d. 1-gallon-----4 units/container
- e. Specify packing arrangement for metric containers.

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5.8.2.1 Level A. Level A packing for overseas shipment only. CLP shall be packed in wood containers conforming to Title 49 CFR or ASTM D 4919.

5.8.2.2 Level C. Level C packing of CLP shall be packed in accordance with the requirements of ASTM D 3951, or as specified in the contract or order.

5.9 Exterior color coating of metal containers.

5.9.1 General. The exterior coating (paint type) on metal containers shall be as specified in the contract or order for all containers except as specified in 5.9.2 through 5.9.5.1. Type I cans requiring unpainted top and bottom lids shall be provided with a 1/4-inch unpainted margin on both ends of the 8-ounce can bodies, a 1/2-inch unpainted margin on both ends of the 1-quart can bodies, and a 3/4-inch unpainted margin on both ends of the 1-gallon can bodies. Striping on side seams shall not be required. Exterior paint shall not be required on friction rings, on the tops and bottoms of cans, or on collapsible tubes with a holding capacity of four ounces or less. The exterior tops and bottoms of 5-gallon cans (and larger) shall be painted. When level C or commercial level is specified, exterior painting of metal containers shall conform to FED-STD-595, "Colors Used in Government Procurement", or the supplier's commercial color, except solid RED, YELLOW, or GREEN coatings shall be used only as specified in 5.9.2 through 5.9.5.1. Except as specified in 5.9.3.1 and 5.9.3.2, the silver colored, uncolored, or plain tin-plate cans shall not be allowed for 1-quart and 1-gallon type I cans (metal, round, open-top, hermetically sealed when filled).

5.9.1.1 Painting. Containers of 1-gallon capacity or less for any products having stringent particulate contamination limits shall not have a coating (paint) applied to the ends of the containers, nor shall paint be applied within 1/2-inch of the ends. Side striping shall not be required.

5.9.2 Hydraulic fluid.

5.9.2.1 MIL-H-5606 - Hydraulic Fluid, Petroleum Base; Aircraft, Missile and Ordnance. Containers of 1-gallon capacity or less and 10-gallon drums shall be coated RED, a color approximating Color No. 11105 or 21105 of FED-STD 595. Except for 10-gallon drums, containers larger than 1-gallon shall be coated TAN, approximating Color No. 22648 of FED-STD-595. Exterior tops and bottoms of cans shall not be coated.

5.9.2.2 MIL-PRF-83282 - Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Metric, NATO Code Number H-537. Containers of 1-gallon capacity or less shall be coated RED, a color approximating Color No. 11105 or 21105 of FED-STD-595. Containers larger than 1-gallon shall be coated TAN, approximating Color No. 22648 of FED-STD-595. The exterior tops and bottoms of the cans shall not be coated.

5.9.2.3 MIL-PRF-6083 - Hydraulic Fluid, Petroleum Base for Preservation and Operation. Containers of 1-gallon capacity or less shall be coated RED, a color approximating Color No. 11105 or 21105 of FED-STD-595. Containers larger than 1-gallon shall be coated TAN, approximating Color No. 22648 of FED-STD-595. Five-gallon pails and 55-gallon drums shall have a WHITE band (approximately one inch wide) painted on the side directly below the top head chime. Exterior tops and bottoms of the cans shall not be coated.

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5.9.2.4 MIL-H-46170 - Hydraulic Fluid, Rust Inhibited, Fire Resistant, Synthetic Hydrocarbon Base.

5.9.2.4.1 Type I. Containers of Type I hydraulic fluid shall be coated TAN, approximating Color No. 22648 of FED-STD-595.

5.9.2.4.2 Type II. Containers of Type II hydraulic fluid of 1-gallon capacity or less shall be coated RED, a color approximating Color No. 11105 or 21105 of FED-STD-595. Containers larger than 1-gallon shall be coated TAN, approximating Color No. 22648 of FED-STD-595. In addition, 5-gallon pails and 55-gallon drums shall have a BLACK band (approximately one inch wide) painted on the side directly below the top head chime. The exterior tops and bottoms of the cans shall not be coated.

5.9.2.5 MIL-PRF-87257 - Hydraulic Fluid, Fire Resistant; Low Temperature, Synthetic Hydrocarbon Base, Aircraft and Missile. Containers of hydraulic fluid of 1-gallon capacity or less shall be coated RED, a color approximating Color No. 11105 or 21105 of FED-STD-595. Containers larger than 1-gallon shall be coated TAN, approximating Color No. 22648 of FED-STD-595. The exterior tops and bottoms of the cans shall not be coated.

5.9.2.6 Hermetically sealed cans. For all hydraulic fluid cans, contractor's commercial hermetically sealed cans, 1-gallon capacity and smaller, may be used provided the container base color is red and all required markings are provided on the can.

5.9.3 Synthetic lubricating oils.

5.9.3.1 MIL-PRF-7808 - Lubricating Oil, Aircraft Turbine Engine, Synthetic Base. Exterior tops, bodies, and bottoms of 8-ounce, 1-quart, and 1-gallon containers shall not be painted. Contractor's commercial hermetically sealed containers, 1-gallon capacity and smaller, may be used provided the container base color is silver or unpainted and all required markings are provided on the can.

5.9.3.2 MIL-PRF-8188 - Corrosion Preventive Oil, Gas Turbine Engine, Synthetic Base. Exterior tops, bodies, and bottoms of 1-gallon capacity and smaller containers shall not be painted.

5.9.3.3 MIL-PRF-23699 - Lubricating Oil, Aircraft Turbine Engine, Synthetic Base, NATO Code Number O-156. Exterior tops and bottoms of 8-ounce and 1-quart cans shall not be painted. The bodies shall be GREEN approximating Color No. 14110 of FED-STD-595 and the markings shall be YELLOW approximating Color No. 13655 of FED-STD-595. Contractor's commercial hermetically sealed containers, 1-gallon capacity and smaller, may be used provided the container base color is green and all required markings are provided in yellow on the can.

5.9.3.4 DOD-L-85734 - Lubricating Oil, Helicopter Transmission System, Synthetic Base. The exterior tops and bottoms of 1-quart and 1-gallon cans shall not be painted. The bodies shall be PURPLE approximating Color No. 17142 of FED-STD-595 and the markings shall be WHITE approximating Color No. 17875 of FED-STD-595. Contractor's commercial hermetically sealed containers, 1-gallon capacity and smaller, may be used provided the container base color is purple and all required markings are provided in white on the can.

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5.9.4 Petroleum lubricating oil.

5.9.4.1 MIL-PRF-6081 - Lubricating Oil, Jet Engine. Exterior tops and bottoms of 1-quart and 1-gallon cans containing petroleum lubricating jet engine oil shall not be painted.

5.9.4.2 MIL-PRF-87252 - Coolant Fluid, Hydrolytically Stable, Dielectric. Exterior tops and bottoms of 1-quart and 1-gallon cans shall not be painted. The bodies shall be BLUE approximating Color No. 15450 of FED-STD-595 and the markings shall be a contrasting color.

5.9.5 Brake fluid.

5.9.5.1 SAE J 1703- Motor Vehicle Brake Fluid. Exterior tops and bottoms of 1-pint, 1-quart, and 1-gallon containers shall not be painted.

5.10 Marking.

5.10.1 Marking of materials. All markings shall be clear, legible, durable, and non-fading. Marking of unit packs, intermediate packs, and exterior packs shall be accomplished by labeling, stamping, stenciling, printing, lithographing, silk-screening, photo-marking, or embossing, or by the use of other similar processes.

5.10.2 Labels. Labels shall be used for address markings (see 5.10.26). Labels shall be permitted for the contract data, and shall be used when required by regulation or status. Unless prohibited by the contract or order, printed pressure sensitive labels are authorized for identification markings on unit, intermediate, and exterior containers. When labels are used, the labels shall be waterproof, regardless of the level of protection of the pack cited.

5.10.3 Color of markings. Level B and level C markings on TAN coated containers shall be BLACK. Markings on uncoated containers, such as fiberboard or plastic, and on containers coated other than TAN, shall be of a contrasting color.

5.10.4 Abbreviations. The following abbreviations are authorized for use. In addition, abbreviations of item descriptions shall be permitted when approved by the procuring activity. Periods shall not be used with abbreviations.

(a) Package units:

Bottle -----	BT	Container -----	CO
Box -----	BX	Drum -----	DR
Cake -----	CK	Hogshead -----	HH
Can -----	CN	Jar -----	JR
Carton -----	CT	Pack -----	PK
Cartridge -----	CA	Tube -----	TU

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(b) Quantitative units

Ampoule-----	AM	Gross -----	GR
Dozen-----	DZ	Group -----	GP
Each -----	EA	Hundred -----	HD
Great Gross -----	GG	Lot -----	LO

(c) Weights and measures units:

Cube -----	CU	Kilogram -----	KG
Cubic Centimeter-----	CC	Liter -----	L
Dram-----	DM	Ounce-----	OZ
Fluid Ounce -----	FL OZ	Pint -----	PT
Foot-----	FT	Pound -----	LB
Gallon -----	GL	Quart-----	QT
Quart Imperial-----	QI	Gallon Imperial-----	GB
Gill -----	GI	Volume -----	VO
Gram-----	G	Weight -----	WT

(d) Product markings:

Aircraft -----	ACFT	Mark -----	MK
Automotive -----	AUTO	Month -----	MO
Contract -----	CONTR	National Item	
Copy-----	CY	Identification Number-----	NIIN
Dimensions -----	DMN	National Stock Number- -----	NSN
Engine -----	ENG	Net Weight -----	NET/WT
Federal Supply Class -----	FSC	Packed -----	PKD
Government Bill Of Lading --	GBL	Petroleum-----	PETRO
Gyroscope -----	GYRO	Port Transportation Officer --	PTO
Identification -----	IDENT	Preservative -----	PRESERV
Invoice-----	INV	Qualification number-----	QUAL
Less Than Carload -----	LCL	Quantity -----	QTY
Less Than Truckload -----	LTL	Reciprocating-----	RCIP
Lubrication -----	LUBE	Temperature -----	TEMP
Manufacturer -----	MFR	Transportation Officer-----	TO
Manufacturer's Part Number -	MFR/PN	Turbine -----	TURB

5.10.5 Identification, contract data, and address markings.

5.10.5.1 Identification and contract data markings on unit containers of 1-gallon capacity or less. When required by the contract, identification, and contract data shall be marked on unit container sizes of 1-gallon capacity or less as specified in table I (see figure 1).

5.10.5.2 Identification and contract data markings on unit and intermediate containers. When required by the contract, identification, and contract data shall be marked on unit and intermediate containers as specified in table II (see figure 2).

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5.10.5.3 Identification, contract data, and address markings on drums. Identification, contract data, and address markings shall be marked on drums and pails as specified in table III (see figures 3 and 4). When shipments are palletized, address markings are not required on individual containers.

5.10.5.4 Identification, contract data, and address markings of unit loads. Identification, contract data, and address markings shall be marked on individual shipping containers (boxes) as required. All pallet loads shall be marked in accordance with MIL-HDBK-774 (see figure 6).

5.10.6 Location and sequence of markings. The sequence of marking elements shown in the figures and tables herein are recommended but are not mandatory. The location of the data may be varied as dictated by the size of the marking and the size and shape of the container. Only applicable information shall be marked on containers, not the words in the tables, e.g., "code" or "military symbol". Containers not specified in this standard shall be marked to conform to the tables herein as closely as possible. Markings on containers of a 5-gallon capacity (or greater) shall be of sufficient size to be easily readable from six feet.

5.10.7 NATO code. The NATO code number is an identifying designation consisting of a letter and a number assigned to a petroleum product standardized for use by the NATO Armed Forces. The NATO code number shall be placed above the military symbol and enclosed in a rectangle, which shall be either a continuous or broken line. When required, the NATO code number is available from the MIL/DoD Standard or from the NATO Standardization Agreement (STANAG) 1135.

5.10.8 Military symbol. When required, the military symbol shall be the identifying designation as assigned in a particular product specification.

5.10.9 Item description. The item description shall be the exact name and description cited in the contract.

5.10.10 Specification. The specification number, drawing number, or cut sheet number shall be the same as that appearing in the contract or order. It shall include the revision and amendment designation, if any. For hermetically sealed cans 1-gallon capacity or less, the revision or amendment number may be embossed on the head of the can. Non-specification products, e.g., "brand name or equal" shall be identified with the appropriate brand name and part number cited in the contract or order.

5.10.11 Type, class, and grade. The applicable type, class, and grade of the product, as designated in the product specification, shall be shown. The type, class, and grade may be omitted from the markings when they are the same as the military symbol.

5.10.12 National stock number (NSN). The national stock number shall be the exact NSN consisting of 13 digits, e.g., 1500-00-000-0000. If the NSN is not available, the applicable federal supply class (FSC), if known, shall be shown in addition to the manufacturer's part number (MFR/PN). Sufficient space shall be left blank immediately above the MFR/PN for the subsequent placement of the NSN.

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5.10.13 Military airlift requirement. When military airlift shipment is required, the contracting officer shall provide all necessary instructions and forms in accordance with DLAI 4145.3/AFJMAN 24-204.

5.10.14 Shelf life markings. There are two types of shelf life items (see 3.8) and when specified in the contract, the type of shelf life shall be marked below the item identification data on exterior packs (fiberboard shipping boxes, drums, and pails).

a. Marking for Type I shelf life items shall be as follows:

Date of Manufacture _____
Expiration Date _____

Instructions:

For the Date of Manufacture, show the month and year of manufacture.

For the Expiration Date, show the month of manufacture plus the number of months assigned shelf life.

b. Marking for Type II shelf life items shall be as follows:

Date of Manufacture _____
Test Date _____
New Test Date _____

Instructions:

For the Date of Manufacture, show the month in which the material was manufactured.

For the Test Date, show the date of manufacture plus the number of months shelf life assigned in the contract or order.

After New Test Date, leave a blank.

5.10.14.1 Date of manufacture. When shelf life marking is not required, the date of manufacture (of contents) shall be designated by the center month of each quarter and year, namely February, May, August, and November, in which manufacturing took place. The date of manufacture may be indicated on the lids of hermetically sealed cans by embossing.

5.10.15 Batch or lot number. The batch or lot shall be that series of numbers, letters, or both, established by the manufacturer to record production and control of products. Where lot or batch numbers are applicable, both shall be provided. On containers larger than 1-gallon, the word "BATCH" or "LOT" shall precede the applicable batch or lot number and shall be applied on the side of the container and applied in such a manner, utilizing quality materials, to preclude the tendency to obliterate or smear. On hermetically sealed containers of 1-gallon capacity or less, the lot/batch number may be embossed on the lid of the container.

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5.10.16 Contract number. The contract number given in the applicable procurement document shall be used on containers larger than 1-gallon and all intermediate and shipping containers.

5.10.17 Qualification number. The qualification number is the identification code assigned to a product that has been tested for compliance with the specification or commercial item description in advance of procurement. The qualification number, for container marking purposes, is that series of numbers or letters shown in the column "Test and Qualification Reference" of the applicable Government or industry Qualified Products List (QPL), e.g., WORT-P97-3 or AML-AE-1234.5. For Government Qualified Products Lists, if the QPL does not include a qualification number as specified above, the information listing under the column "Government Designation" of the QPL shall be shown. The qualification number shall be required on all unit containers 1-gallon and larger and all intermediate and shipping containers. The abbreviation "QUAL" shall precede the applicable qualification number on all unit containers larger than 1-gallon, and all intermediate and shipping containers. When a contractor is supplying a "rebrand" qualified product manufactured by another company, the name of the qualified holder shall prefix the qualification number on all containers requiring qualification number marking.

5.10.18 Net contents. Containers shall show the net contents by volume or by weight in pounds, as appropriate for the commodity.

5.10.19 Regulatory marking and labeling. Regulatory marking and labeling of hazardous materials shall be done in accordance with Title 49 CFR, and DLA 4145.3/AFJMAN 24-204, to satisfy all modes of transportation from the shipping activity to the first receiving activity.

5.10.20 Proper shipping name. The proper shipping name is the name of each item of hazardous material shown in Roman print in Part 172.101 of Title 49 CFR. The proper shipping name shall be marked on the outside of each shipping container. It shall be distinct and apart from the item description.

5.10.21 UN/NA identification number. The UN/NA identification number is assigned to each item of hazardous material regulated for transportation in accordance with the requirements of Title 49 CFR. This number shall be marked on the outside of each unit pack shipping container and intermediate container and shall appear immediately after the proper shipping name.

5.10.22 Other precautionary and statutory markings. Markings required by statute or regulation shall not be obscured by other markings. Special markings may be required by the specification and/or the contract.

5.10.23 Flash point and boiling point markings. Unit and intermediate packs and shipping containers packed with flammable and combustible liquids with a flash point below 200 °F shall be marked with the flash point of the contents. If the flash point is less than 73 °F, the boiling point shall also be included. Flash point and boiling point markings shall be expressed in degrees Fahrenheit and shall be applied to the identification-marked side by means of labeling, printing, stamping, or stenciling. The flash point shall be determined by using the appropriate test prescribed in Part 173.120(c) of Title 49 CFR.

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5.10.24 Precautionary marking of hazardous and chemical materials. All unit and intermediate packs of hazardous and chemical materials shall be labeled in accordance with applicable laws, statutes, regulations, UN standards, and ordinances including Federal, state, and municipal requirements. In addition, unit and intermediate containers that serve as shipping containers shall be marked with the applicable precautionary information in accordance with ANSI Z129.1. All markings shall be located as specified in tables IV through V. When the container size and configuration does not permit precautionary markings within the prescribed location, they shall be located on the opposite side of the unit container as specified in figure 1. Letters in the signal words "POISON", "CAUTION", and "WARNING" shall be large, legible, and appropriate for the space available.

5.10.25 Unit of issue. The unit of issue, unit of measure, and quantity shall be as specified in the contract or order.

5.10.26 Address marking. Address markings specified in the contract or order shall be applied to the shipping containers by means of labels, tags, or as otherwise specified (see 6.2).

5.10.26.1 Full carloads and full truckloads. The domestic address is not required on shipping containers and palletized unit loads shipped in full carloads or full truckloads to a single consignee.

5.10.26.2 Less-than-carloads (LCL) and less-than-truckloads (LTL). The domestic address is required on shipping containers and palletized unit loads for less-than-full-carloads or less-than-full-truckloads lots. The domestic address is not required on shipping containers in a palletized unit load. One address marking shall be applied to each unit load in a LCL or LTL shipment.

5.10.27 Gross weight. The gross weight shall consist of the combined weight of the item, cushioning materials, and containers. The capital letters "WT" shall precede the gross weight numerals. All weight shall be numerically indicated and shall be expressed in pounds to the next largest whole pound.

5.10.28 Cube. The letter "CU" shall precede the cubic displacement numerals. The cube shall be the cube displacement of the shipping container, calculated from the extreme overall length, width, and height. The dimensions shall be shown in cubic feet. The cube shall be expressed decimally to the nearest one-tenth of a foot. Irregular, cylindrical, or round items shall be considered as rectangular.

5.10.29 Contractor's name. Where the contractor's name requires two lines, a readily identifiable abbreviation is permitted.

5.10.30 Returnable drums deposit marking. When drums are to be returned to the supplier for a deposit refund, drums shall be conspicuously marked to indicate the amount of deposit due and the location to which it is returnable.

5.10.31 Hazardous material data. When specified in the contract or order, a Material Safety Data Sheet shall be prepared and submitted in accordance with the requirements of FED-STD-313.

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6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. This standard is intended for use in packaging, packing, marking and labeling of petroleum and related products for shipment, handling, and storage.

6.2 Ordering data.

- 4.3 State level B or C, or commercial packing.
- 4.5 Specify palletization, if required.
- 4.6 Specify when military air shipment requirements also apply.
- 5.1.1 State level B or C, or commercial unit packing.
- 5.1.3 State level B or C, or commercial exterior packing.
- 5.2.1 State level B or C, or commercial unit packing.
- 5.3 State level B or C, or military airlift requirements. When military airlift is required the contracting officer shall provide necessary instructions and forms in accordance with DLAI 4145.3/AFJMAN 24-204.
- 5.3.1 Specify palletization, if required.
- 5.4 State level B or C, or commercial packing.
- 5.5.1 State level B or C, or commercial packing.
- 5.5.4 State level B or C, or commercial packing.
- 5.6.2 State level B or C, or commercial exterior packing.
- 5.7.2 State level B or C, or commercial exterior packing.
- 5.10.26 Specify address marking method.

6.3 Subject term (key word) listing.

bottles	jar
brake fluid	labels
cans	Level B
cartridge	Level C
cleaner, lubricant, and preservative (CLP)	oil
commercial	pail
container colors	palletization
drums	synthetic lubricating oils
fiberboard	tubes
grease cartridges	wax
hydraulic fluid	

TABLE I. Unit containers for petroleum and related products.

UNIT CONTAINERS	SPECIFICATION REQUIREMENTS			CLOSURE AND SEALS	COATING REQUIREMENTS
	LEVEL B	LEVEL C	COMMERICAL		
Bottles	Bottles shall be round, oblong or rounded square with sloping shoulders. Side walls shall be thicker than shoulders. Bottle openings shall be of sufficient size to permit easy removal of contents.	Same as for Level B	Bottles normally used for the products being furnished.	Adequate to prevent leakage.	Not applicable.
Cans, metal 28 gauge and lighter	<p>PPP-C-96</p> <p>Type I - Round, open top, double seamed ends.</p> <p>Type III - Open top, double seamed ends key opening with reclosure feature.</p> <p>Type IV - Round, square or oblong; both ends double seamed onto body.</p> <p>Type V, Class 2 - Multiple friction plug.</p> <p>Type V, Class 4 - Screw cap.</p> <p>Type V, Class 9 - Press valve closure shall be with a plastic, push-pull spout.</p> <p>Type VIII - Round, dome or cone top; both ends double seamed onto body.</p> <p>Type IX, Class I - Round can, soldered side seam, double seamed concave top and bottom.</p> <p>Type IX, Class 2- Round can, soldered side seam, double seamed concave dome top with 1-inch opening.</p> <p>Type IX, Class 3 - Round can, draw seamless body and dome top with 1-inch opening and double seamed bottom.</p> <p>The metallic coating weight of cans shall not be less than 1.25-pound hot -dipped tinplate or 0.25-pound electrolytic tinplate, side seams may be cemented or soldered.</p>	PPP-C-96 same as for Level B		Inner seals shall be furnished with a closure for Type V, Class 4 of PPP-C-96 for containers of one pint or more. Type IX, cans shall be fitted with a pressure valve for dispensing a surface spray. The Class 2 and 3 cans shall be fitted with a cap to protect the valve. Cans containing suspended solids that may settle out shall contain a metal ball to facilitate agitation of solids in suspension.	Exterior coating of cans (tops, bodies, and bottoms) and metal screw caps shall be in accordance with 5.9.

TABLE I. Unit containers for petroleum and related products (continued).

UNIT CONTAINERS	SPECIFICATION REQUIREMENTS			CLOSURE AND SEALS	COATING REQUIREMENTS
	LEVEL B	LEVEL C	COMMERICAL		
	Type I quart and gallon cans may also have welded side seams. Type I cans shall be fabricated from not less than 35 gauge (MSC) tinplate. Type V Class 4 and Class 8 or 9 cans of 1-gallon capacity shall be provided with a handle affixed to the top of the can. Cans shall be of commercial sizes as regularly supplied by the petroleum industry for the product being furnished.				
Cartridge, grease	SAE AMS-C-22587 Both ends of the cartridge shall be unpainted. Each cartridge shall be marked below the removable cover, "Remove cover and place this end in gun first."	SAE AMS-C-22587			Not applicable.
Drums, steel, (120 pounds grease), fully removable lug cover head	PPP-D-705, 20 Gauge, Type III	PPP-D-705, 22 Gauge, Type III	ANSI MH2	Adequate to prevent leakage. Gasket required.	The exterior coating of drums shall be in accordance with the color coating requirements specified in 5.9. Side seams shall be coated with a clear lacquer.
Drums, steel, 16 gallons fully removable head.	PPP-D-705, Type VI	Same as for Level B	ANSI MH2	Adequate to prevent leakage. Gasket required.	The exterior coating of drums shall be in accordance with color and coating requirements specified in 5.9. Side seams may be coated with a clear lacquer.
Drums, steel, 55 gallon, closed head	PPP-D-729, 16 Gauge, Class A	PPP-D-729, 18/18 Gauge, Type II, Class A	ANSI MH2	Adequate to prevent leakage. Drums used for MIL-L-17331 and MIL-H-17672 shall not be fitted with zinc coated closures.	Fog-spraying is not mandatory for contractor-furnished drums. If these drums are fog-sprayed, they must be steamed cleaned and dried before filling. The exterior coating of the drums shall be in accordance with the color and coating requirements specified in 5.9. Type III and MIL-PRF-17672. Drums used for MIL-PRF-17331H and MIL-PRF-17672 shall not have interiors coated with zinc phosphate.

TABLE I. Unit containers for petroleum and related products (continued).

UNIT CONTAINERS	SPECIFICATION REQUIREMENTS			CLOSURE AND SEALS	COATING REQUIREMENTS
	LEVEL B	LEVEL C	COMMERICAL		
Drums, steel, 55 gallon, open head	PPP-D-729, Type III and IV	Same as for Level B	ANSI MH2	Adequate to prevent leakage. Gasket required.	Contractor furnished drums, fog spraying of surface is not mandatory. Drums intended to be filled with aviation fuels shall not have the materials that are soluble in aviation fuels. In the drums are fog sprayed, they shall be steamed cleaned. The color and coating of drums shall be in accordance with the color and coating requirements specified in 5.9.
Jars	Jars shall be round spout-type with an opening wide enough to permit easy removal of contents with a spatula.	Same as for Level B	Jars normally used for the product being furnished.	Adequate to prevent leakage.	Not applicable.
Pails, metal with fully removable cover	PPP-P-704, Type II, Class 8	PPP-P-704, Type II, Class 3	ANSI MH2	Adequate to prevent leakage. Gasket required.	The exterior coating for pails shall be in accordance with the color and coating requirements specified in 5.9.
Pails, metal, tight head	PPP-P-704, Type I, Class 3, 24 gauge, 1-5 gallon	Same as for Level B	ANSI MH2	A vented closure, illustrated in figures 9, 10, 11 or 12 of PPP-P-704, or a 1-3/4 inch screw cap closure equipped with an inner seal and a separate 1/2-inch vent tube installed directly opposite the closure shall be used. The vent shall be installed by the pail manufacturer and equipped with a cap attached to the vent tube. Only metal self-venting closures are acceptable for aviation engine lubricating oils and aviation hydraulic fluids. Self-venting closures for products conforming to the following specifications shall conform to figure 9 or 10 of PPP-P-704 and need not be colored olive drab: MIL-PRF-2104, MIL-PRF-2105, MIL-PRF-9000, MIL-L-14107, and MIL-PRF-21260.	
Tubes	Type I - Metal Type II - Plastic Type III - Laminated polyethylene-aluminum foil-paper	Same as for level A	Tubes normally used for the product being furnished.	The caps shall be made from thermo-set, thermo plastic or the same material as used for the tube.	Not applicable.

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TABLE II. Classification of cans and requirements for arrangement in interior and exterior packs.

Size of cans	Number of intermediate packs	Arrangement of intermediate packs in exterior packs		Arrangement of cans in intermediate or exterior packs		Total number of cans
		Floored	Layers	Floored	Layers	
Composite and Type I and Type VIII, rounds cans						
8-ounce	2	1x2	1	4x3	3	72
1-quart	None	-	-	4x3	2	24
1-gallon	None	-	-	2x3	1	6
Type III, open-top, key-opening with reclosure feature cans						
1-pound	None	-	-	4x3	2	24
Type V, Class 2 and Type VIII, round cans						
4-ounce	4	1x2	2	3x2	4	96
8-ounce	6	1x2	3	3x4	1	72
1.75-pound	None	-	-	3x4	2	24
6.5-pound	None	-	-	3x2	1	6
1-pint	None	-	-	4x6	2	48
1-quart	None	-	-	4x3	2	24
1-gallon	None	-	-	2x3	1	6
Type V, Classes 4, 6, 8 and 9 and Type VIII, round and oblong cans						
2-ounce	4	1x2	2	3x8	2	192
4-ounce	4	1x2	2	4x6	1	96
8-ounce	6	1x3	2	2x6	1	72
1-pint	None	-	-	12x4	1	48
1-quart	None	-	-	4x6	1	24
1-gallon	None	-	-	2x3	1	6
1-pint	None	-	-	12x4	1	48
Type IX, Classes 1, 2 and 3, cans, pressurized with valve						
12-ounce	2	1x2	1	4x6	1	48
16-ounce	2	1x2	1	4x6	1	48

TABLE III. Packing arrangement of tubes, bottles and jars.

Unit weight of contents	Intermediate pack arrangements				Exterior pack arrangements				
	Number of unit containers	Arrangement of unit containers			Number of intermediate packs	Arrangement of packs			Number of unit containers
		No. of layers	No. of rows	No. in rows		No. of layers	No. of rows	No. in rows	
2-ounce or less	48	2	4	6	4	1	2	2	192
4-ounce	24	1	4	6	4	2	1	2	96
6-ounce	24	1	4	6	4	2	1	2	96
8-ounce	24	1	4	6	2	2	1	1	48
1-pound	N/A	N/A	N/A	N/A	N/A	1	4	6	24
1-quart	N/A	N/A	N/A	N/A	N/A	1	3	4	12

TABLE IV. Markings on drums and pails for levels B, C, and commercial

Marking Elements	Size	Reference	Side Markings			Top Markings		
			Drums		Pails	Drums		Pails
			Closed Head	Open Head (see Note 1)		Closed Head	Open Head	
NATO (when assigned)	3/4	5.10.7		X	X	X	X	
Military Symbol (when assigned)	1	5.10.8	X	X	X	X	X	
Item Description	1/2	5.10.9	X	X	X	X	X	
Specification Number	1/2	5.10.10	X	X	X	X	X	
Type, Class, Grade (omit when same as Military Symbol)	1/2	5.10.11	X	X	X	X	X	
National Stock Number	1/2	5.10.12		X	X	X	X	
Overseas Address (see Note 2)	1				Opposite side	X	X	
Domestic Address	1		X	X				X
Date of Manufacture	Legible	5.10.14.1		X	X	X	X	
Contractor's Name	Legible	5.10.29	X	X	X			
Batch or Lot Number	Legible	5.10.15		X	X	X	X	
Contract Number	Legible	5.10.16		X	X	X	X	
Qualification Number	Legible	5.10.17		X	X	X	X	
Net Weight	Legible	5.10.18		X	X	X	X	
Gross Weight	Legible	5.10.27		X	X	X	X	
Cube	Legible	5.10.28		X	X	X	X	
Shelf Life	1/2	5.10.14	X	X	Opposite side			
Precautionary Marking (when required)	1	5.10.24	X	X	Opposite side			
Flash Point (when required)	1/2	5.10.23	X	X	Opposite side			
Regulatory Markings	As required by regulation	5.10.19	X	X	Opposite side			

AN "X" INDICATES MARKINGS ARE REQUIRED IN THE LOCATION SHOWN.

NOTES:

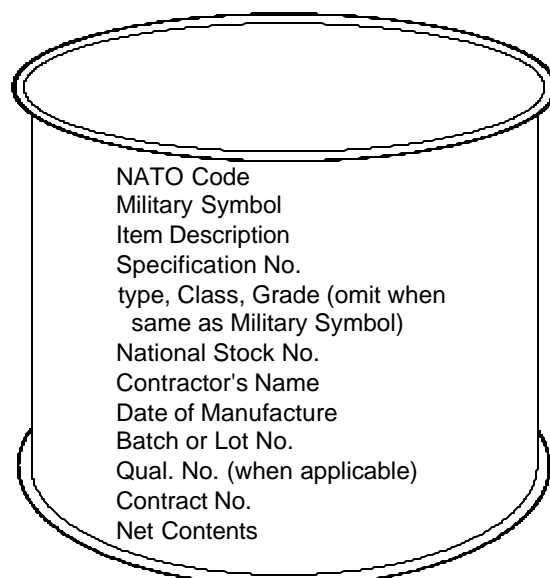
- When space does not permit placing required markings on the 400-pound drum between the rolling hoops, the NATO symbol and the Military Symbol, when assigned, may be placed immediately above the upper rolling hoop.
- Overseas address shall be placed on side of drum opposite other side of markings if top head construction will not permit such marking.

TABLE V. Identification and contract data marking on unit and intermediate containers (folding, setup, and fiberboard).

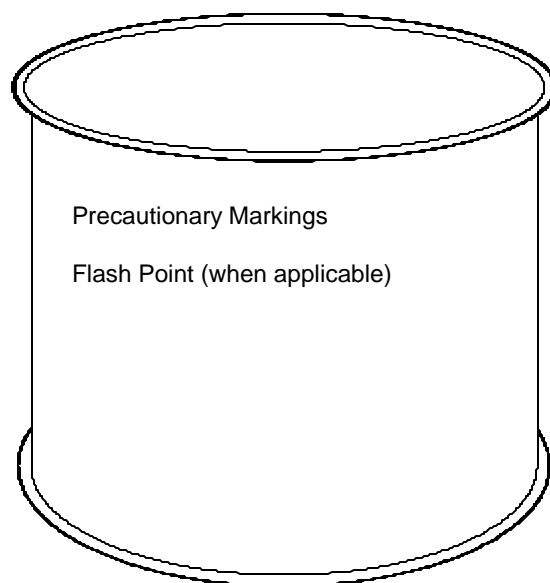
Marking Elements (Levels B, C, and Commercial)	Reference	Size
NATO Code (when assigned)	5.10.7	Legible
Military Symbol (when assigned)	5.10.8	Legible
Item Description	5.10.9	Legible
Specification Number	5.10.10	Legible
Type, Grade, Class (omitted when same as Military Symbol)	5.10.11	Legible
National Stock Number	5.10.12	Legible
Quantity	5.10.25	Legible
Unit of Issue	5.10.25	Legible
Precautionary Marking (when required)	5.10.24	Legible
Flash Point Marking (when required)	5.10.23	Legible
Bar Code Marking	4.4.1	Legible
Date of Manufacture	5.10.14.1	Legible
Batch or Lot Number	5.10.15	Legible

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The sequence and location of marking elements as shown in this figure are recommended but are not mandatory. The sequence of data and location may be varied as necessary to meet the marking requirements.



Side



Opposite Side

FIGURE 1. Marking unit containers (1-gallon or less) for level B shipments.

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The sequence and location of marking elements as shown in this figure are recommended but are not mandatory. The data markings and location may be varied to meet marking requirements.

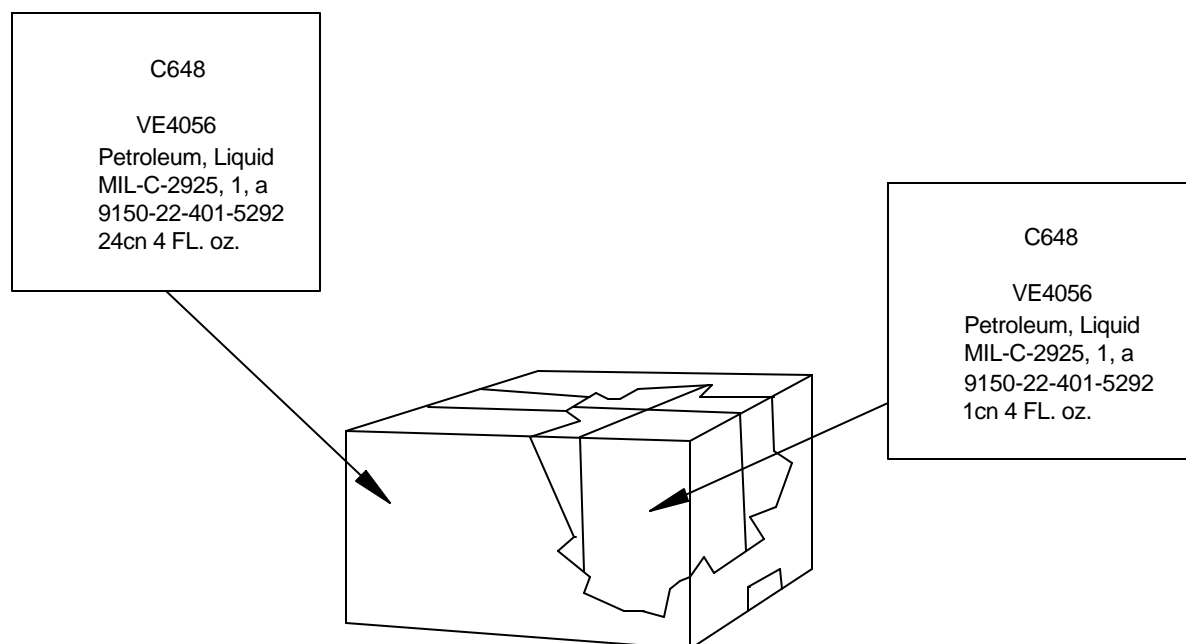
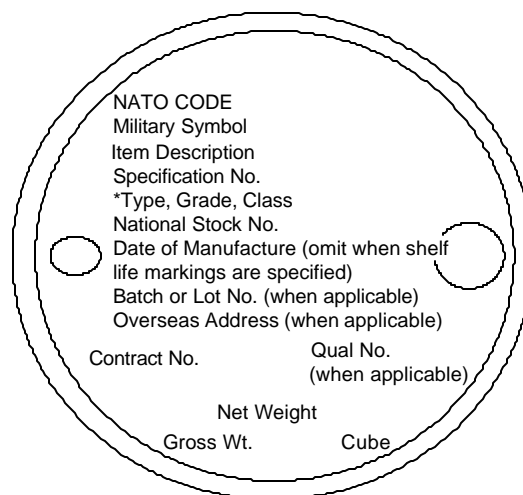


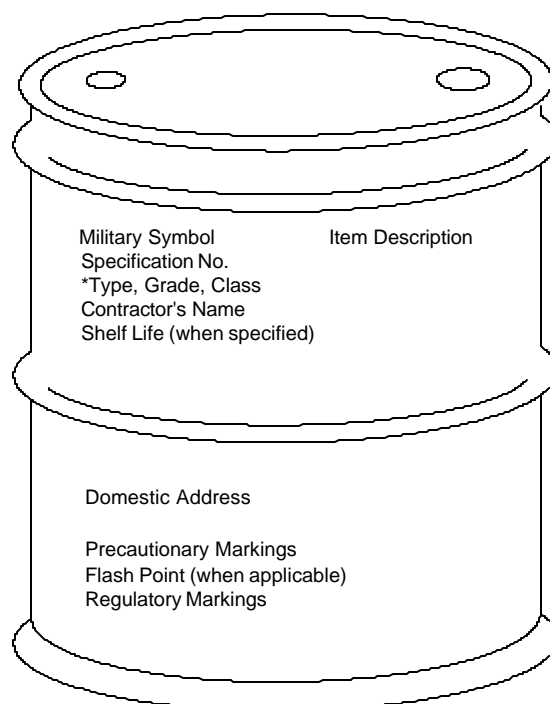
FIGURE 2. Marking unit and intermediate packs; level B, C, and commercial

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The sequence and location of marking elements as shown in this figure are recommended but are not mandatory. The data markings and location may be varied to meet marking requirements.



Top Head



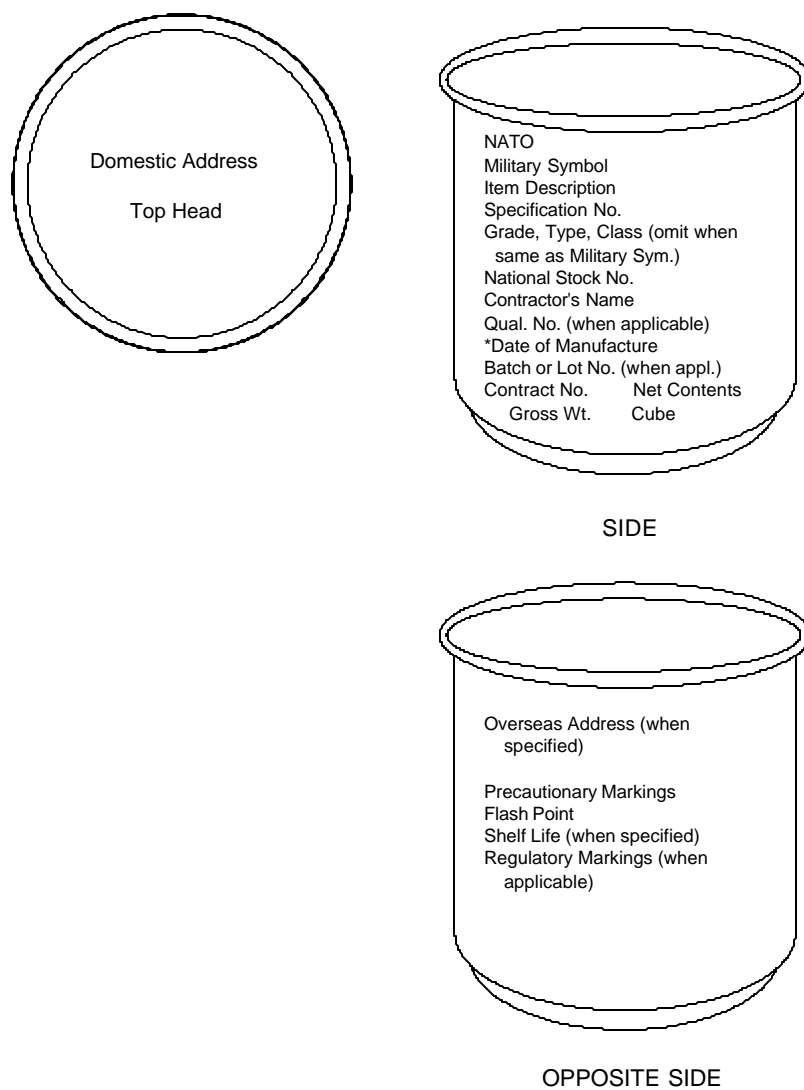
Side

*Not required when same as Military Symbol

FIGURE 3. Marking closed-head drums.

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The sequence and location of marking elements as shown in this figure are recommended but are not mandatory. The data markings and location may be varied to meet marking requirements.

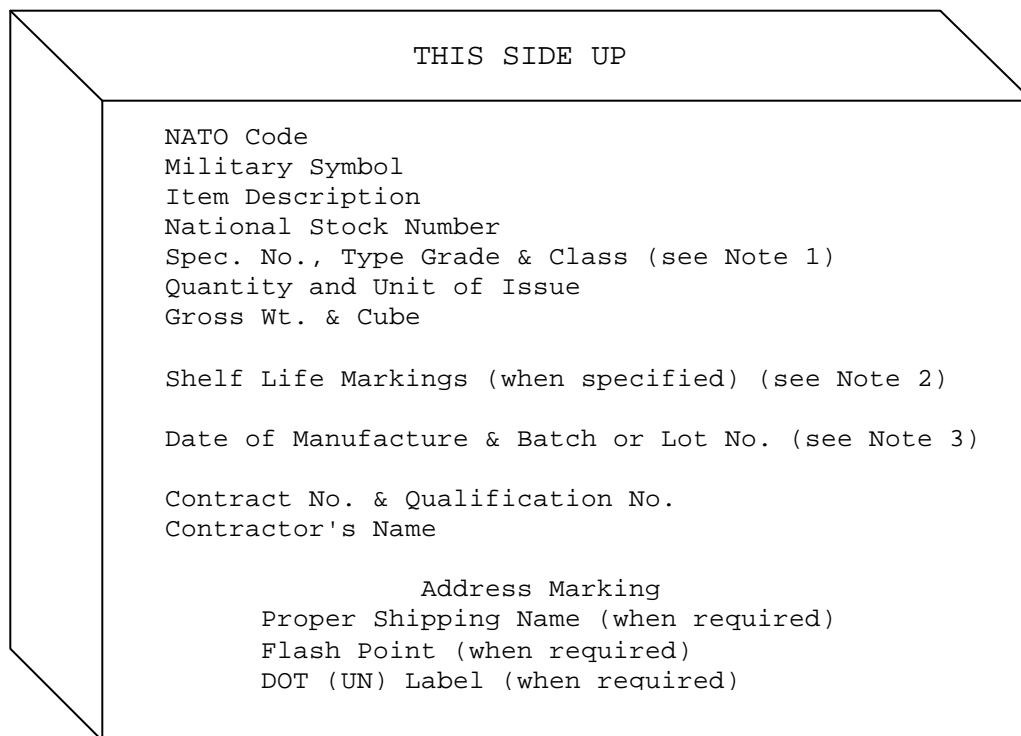


*Not required when shelf life markings are specified.

FIGURE 4. Marking of pails for levels B, C, and commercial.

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The sequence and location of marking elements as shown in this figure are recommended but are not mandatory. The data markings and location may be varied to meet marking requirements.



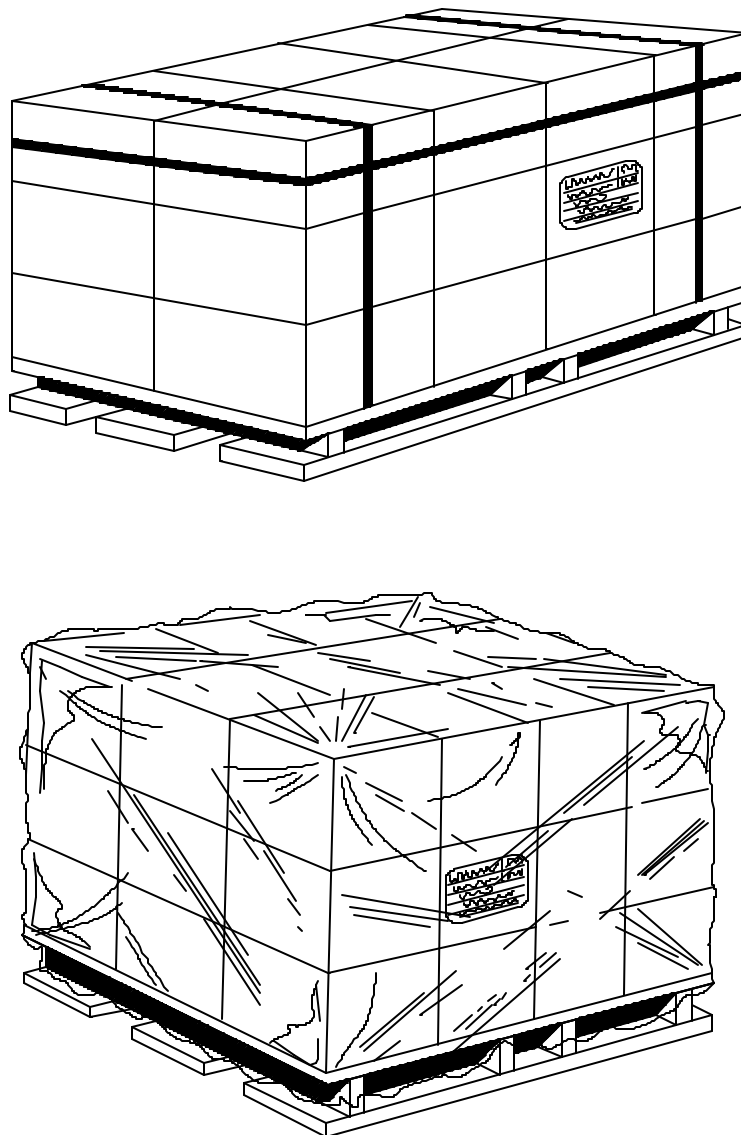
If container is too small to accommodate address labels on identification marked side, apply address labels onto opposite side of container. When shipments are palletized, address markings are not required on individual containers.

Notes:

1. Omit Type, Grade, and Class when they are the same as the Military Symbol.
2. Shelf life markings may be placed on the end when space is not available on the side.
3. Omit Date of Manufacture when self-life markings are specified.

FIGURE 5. Marking of fiberboard exterior packs (levels B, C, and commercial).

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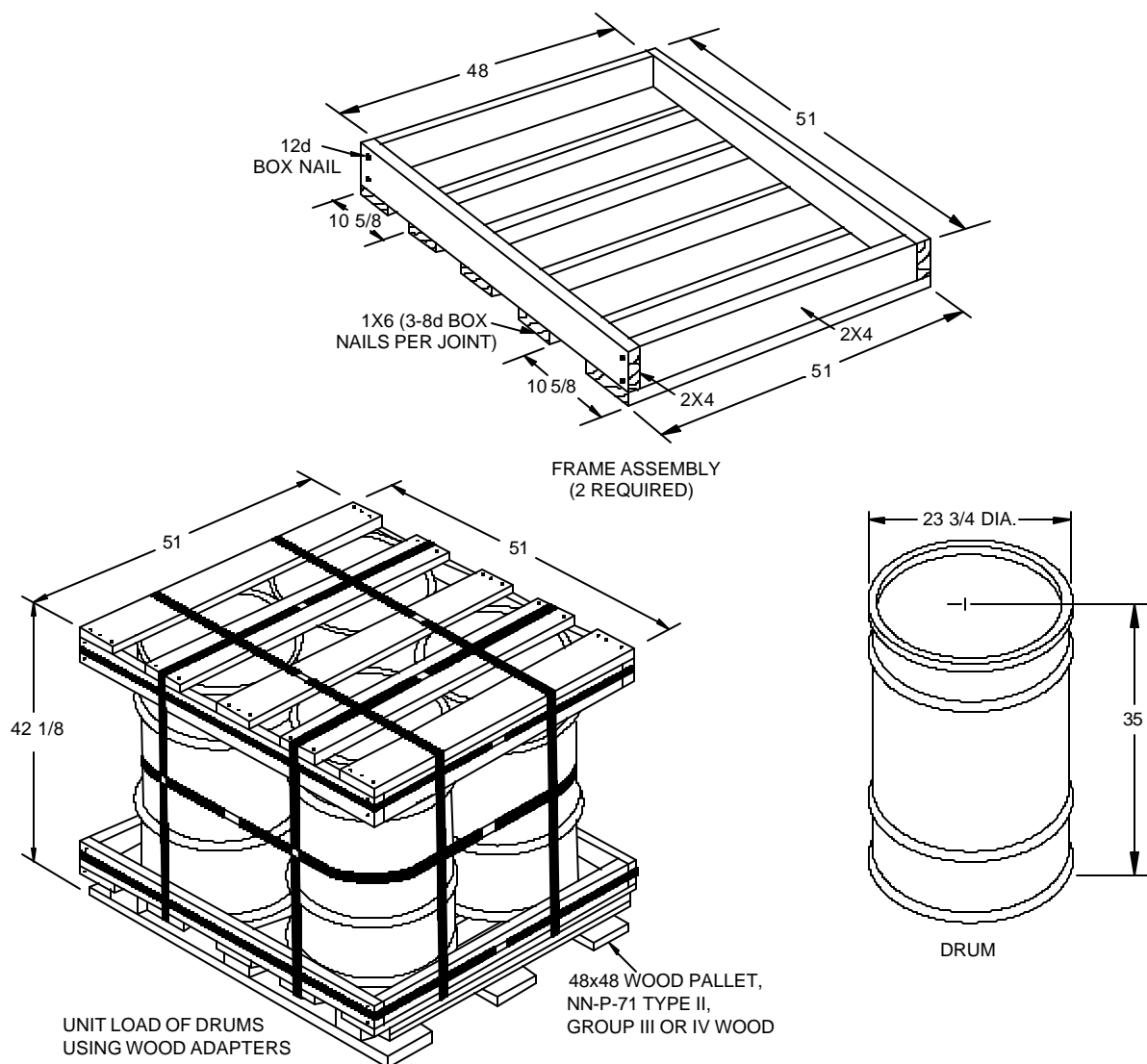
Load is built on pallets so that the identification and contract data markings on individual containers are shown on two adjacent sides of the load.

If a smooth surface is available, the shipment address shall be applied to the wider side of the load.

If the load does not have a smooth surface, the address may be applied on a fiberboard panel or on a tag placed on any suitable space on the wider side of the load.

FIGURE 6. Marking palletized load for shipment of petroleum and related products.

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Notes:

1. Tie-down straps. Unit loads shall be provided with not less than four tie-down straps with two straps running the length of the unit loads and two straps running the width of the unit loads.
2. Steel strapping. A 3/4-inch steel strapping conforming to ASTM D 3953 shall be used.

FIGURE 7. 55-gallon drum palletization for DoD and other government agencies' utilization.

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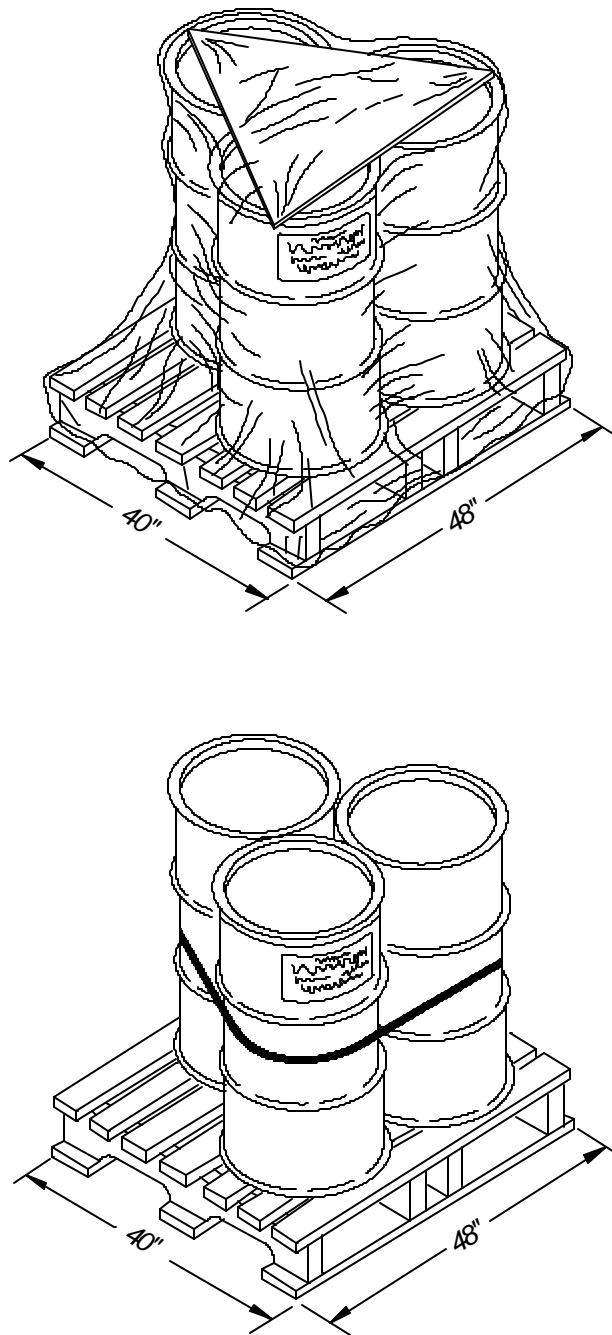


FIGURE 8. 55-gallon drum palletization design for four-way 40x48-inch pallets to provide stretch wrap-bonding capabilities.

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Custodians:

Army - SM

Navy - SA

Air Force - 68

Preparing activity:

DLA - GS

(Project PACK-0984)

Reviewers:

Army - AR, CR4, MI, MR

Navy - AS, MC, SH, YD

DLA - PS

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1. **DOCUMENT NUMBER**
MIL-STD-290F

2. **DOCUMENT DATE (YYYYMMDD)**
20000717

DOCUMENT TITLE PACKAGING AND MARKING OF PETROLEUM AND RELATED PRODUCTS

4. **NATURE OF CHANGE** *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

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b. **ORGANIZATION**

c. **ADDRESS** *(Include Zip Code)*

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(1) Commercial
(2) DSN
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8. PREPARING ACTIVITY

a. **NAME**

Defense Supply Center Richmond

b. **TELEPHONE** *Include Area Code)*

(1) Commercial (2) DSN
(804) 279-5019 695-5019

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