INCH−POUND

PPP−C−2020A
June 27, 1994

SUPERSEDING
PPP−C−2020
June 18, 1981

FEDERAL SPECIFICATION

CHEMICALS, LIQUID, DRY, AND PASTE: PACKAGING OF

This specification is approved by the Commissioner of Federal Supply Service, General Services Administration, for use by all Federal agencies.

1. SCOPE

1.1 Scope. This specification covers the requirements for the packaging of liquid, dry, and paste chemicals and photographic dry and liquid chemicals (both non−hazardous and hazardous chemicals).

1.2 Classification. Unit containers for liquid, dry, and paste chemicals shall be of the following types and classes as specified (see 6.2):

TYPE I − Glass Containers

Class 1 − Bottles, jars, vials, tubes, and ampoules
Class 2 − Carboys

TYPE II − Metal Containers

Class 1 − Cans
Class 2 − Pails and drums
Class 3 − Collapsible tubes

Comments or suggestions pertaining to this specification should be addressed to: Technical Director, U. S. Army Edgewood Research, Development and Engineering Center, ATTN: SCBRD−ENE−S, Aberdeen Proving Ground, MD 21010−5423

AMSC N/A FSC PACK

Type III – Plastic Containers

Class 1 – Bags
Class 2 – Pouches
Class 3 – Bottles, jars, vials, and tubes
Class 4 – Pails
Class 5 – Drums and carboys

Type IV – Paper Containers

Class 1 – Fiber drums
Class 2 – Spirally wound fiber cans
Class 3 – Fiberboard boxes
Class 4 – Paper sacks

TYPE V – Textile and Plastic Bags

TYPE VI – Composite Containers

Class 1 – Composite cans with metal ends for liquid chemicals
Class 2 – Composite cans for dry chemicals
Class 3 – Metal pails and drums with plastic liners
Class 4 – Fiber drums with plastic liners

2. APPLICABLE DOCUMENTS

2.1 Except when prevented in 3.1.1.2 herein, the following documents of the issue in effect on date of invitation for bids or request for proposal form a part of this specification to the extent specified herein:

Federal Specifications

NN−P−71 – Pallets, Material Handling, Wood, Stringer Construction, 2−Way and 4−Way (Partial)
PPP−B−566 – Boxes, Folding, Paperboard
PPP−B−585 – Boxes, Wood, Wirebound
PPP−B−601 – Boxes, Wood, Cleated−Plywood
PPP−B−621 – Boxes, Wood, Nailed and Lock−Corner
PPP−B−636 – Boxes, Shipping, Fiberboard
PPP−B−1163 – Box, Corrugated Fiberboard, High Compression Strength, Weather−Resistant, Wax−Resin Impregnated
PPP−B−1714 – Bags, Shipping: Woven Polypropylene
PPP−C−55 – Cans, Composite, for Dry Products

PPP−C−96	−	Cans, Metal, 28 Gage and Lighter
PPP−C−186	−	Containers, Packaging and Packing for Drugs, Chemicals, and Pharmaceuticals
PPP−C−569	−	Containers, Plastic, Molded (for Liquids, Pastes and Powders): Overpacked
PPP−C−843	−	Cushioning Material, Cellulosic
PPP−C−1337	−	Containers, Composite: (Steel Drum with Polyethylene Insert)
PPP−C−1581	−	Cans, Composite, with Metal Ends, for Liquid Items
PPP−D−723	−	Drums, Fiber
PPP−D−729	−	Drums, Shipping and Storage, Steel, 55−Gallon (208 Liters)
PPP−D−736	−	Drums, Shipping, Steel, DOT−6A, DOT−6B, and DOT−17C
PPP−D−1860	−	Drums, Plastic, Molded Polyethylene
PPP−F−320	−	Fiberboard: Corrugated and Solid, Sheet Stock (Container Grade), and Cut Shapes
PPP−P−704	−	Pails, Metal: (Shipping, Steel, 1 Through 12 Gallons)
PPP−P−1655	−	Pail, Plastic, Shipping and Storage
PPP−T−66	−	Tape: Pressure−Sensitive Adhesive, Vinyl Plastic Film

Federal Standards

Fed. Std. No. 123	−	Marking for Shipment (Civil Agencies)

Commercial Item Descriptions

A−A−52450	−	Vermiculite, Absorbent (For Packaging Liquid Hazardous Materials)

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards and Commercial Item Descriptions. The Index, which includes cumulative bimonthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

(Single copies of this specification, other Federal specifications, and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from the Federal Supply Service Bureau, Specification Section, Suite 8100, 470 East L'Enfant Plaza, SW, Washington, DC, 20407 or from General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA, Atlanta, GA; Kansas City, MO; Fort Worth, TX; and San Francisco, CA.)

(Federal Government activities may obtain copies of Federal standardization documents and the Index of Federal Specifications, Standards and Commercial Item Descriptions from established distribution points in their agencies.)

Military Specifications

MIL−P−116	−	Preservation, Methods Of
MIL−P−117	−	Bags, Sleeves and Tubing − Interior Packaging
MIL−C−3955	−	Can, Composite, Spirally Wound
MIL−B−26701	−	Bottles, Screw Cap and Carboys, Polyethylene Plastic
MIL−D−40030	−	Drums, Plastic, Molded Polyethylene
MIL−D−43703	−	Drums, Shipping and Storage, Molded Polyethylene
MIL−P−81997	−	Pouches, Cushioned, Flexible Electrostatic−Free, Reclosable, Transparent
MIL−T−43036	−	Tape, Pressure−Sensitive Adhesive, Plastic Film (for Sealing Fiber Containers and Cans)

Military Standards

MIL−STD−129	−	Marking for Shipment and Storage
MIL−STD−147	−	Palletized Unit Loads

Military Publications

AFI−24−204, TM 38−250, NAVSUP Pub 505, MCO P4030.19E, DLAM 4145.3 − Packaging and Handling of Dangerous Materials for Transportation by Military Aircraft

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

Code of Federal Regulations (CFR)

16 CFR 1500	−	Consumer Product Safety Commission, Hazardous Substances and Articles; Administrative and Enforcement Regulations
29 CFR 1910	−	Occupational Safety and Health Standards
40 CFR 261	−	Protection of Environment
40 CFR 262 to 263	−	Generators and Transporters of Hazardous Waste
49 CFR 100 to 199	−	Department of Transportation Hazardous Materials Regulations

(The Code of Federal Regulations and Federal Register (FR) are for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. When indicated, reprints of certain regulations may be obtained from the Federal agency responsible for issuance thereof.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

American Society for Testing and Materials (ASTM) Standards

C 516 − Vermiculite, Loose Fill Insulation
D 3951 − Standard Practices for Commercial Packaging

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

International Civil Aviation Organization

"Technical Instructions for the Safe Transport of Dangerous Goods by Air"

(Application for copies should be addressed to Document Sales Unit, International Civil Aviation Organization, 1000 Sherbrooke Street West, Suite 400, Montreal, Quebec, Canada H3A 2R2.)

International Maritime Organization

"International Maritime Dangerous Goods Code"

(Application for copies should be addressed to the International Maritime Organization, 4 Albert Embankment, London SE1 75R.)

National Motor Freight Traffic Association, Inc., Agent

"National Motor Freight Classification"

(Application for copies should be addressed to the American Trucking Association, Inc., Traffic Department, 1616 P Street, NW, Washington, DC 20036.)

Postal Regulations

(Information applicable to packaging of chemicals for shipment by the U.S. Postal Service to domestic and foreign destinations is readily available from local postmasters.)

Uniform Classification Committee, Agent

"Uniform Freight Classification"

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

United Nations

"Recommendations on the Transport of Dangerous Goods"

(Application for copies should be addressed to United Nations, Sales Section, New York, NY or Geneva, Switzerland.)

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

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

3. REQUIREMENTS

3.1 General requirements.

3.1.1 Materials. All materials shall be as specified herein. Materials for which specific requirements have not been specified shall be subject to approval by the contracting activity after coordination with the appropriate technical or engineering office for whom the chemicals are to be obtained. Asbestos and loose−fill polystyrene shall not be used in unit packs or packs for any degree of protection.

3.1.1.1 Non−regulated materials (see 3.2). Non−regulated materials are chemicals that do not pose a hazard in transportation or to the environment. These materials are not subject to the hazardous materials shipment regulations or provisions.

3.1.1.2 Regulated materials (see 3.3). Chemicals that are listed in the Hazardous Materials Table in 49 CFR Part 172.101, the Dangerous Goods List Table 2.14 in International Civil Aviation Organization − Technical Instructions for Safe Transportation of Dangerous Goods by Air (ICAO−TDGA), or the General Index of Dangerous Goods in International Maritime Organization − International Maritime Dangerous Goods Code (IMO−IMDGC) are known as hazardous materials or dangerous goods. Transportation of hazardous materials or dangerous goods shall be in compliance with the applicable regulations mentioned above. Packaging of hazardous materials shall comply with the mandatory Performance Oriented Packaging (POP) requirements, as specified in the above regulations, which are in force and effect on the day of shipment.

3.1.2 Unit containers. All unit containers for level A protection shipments shall be new. The re−use of used containers shall be permitted for all but level A protection shipments provided that the containers have been reconditioned, tested, inspected, and have been found to meet the applicable requirements of the contracting activity. Unit containers shall conform to the

applicable requirements specified herein and to the requirements of the contract and applicable referenced commodity specifications. The unit containers and their filling operations shall be in compliance with Occupational Safety and Health Standards. In the absence of the designation of a particular type, class, grade, or style container by the procuring activity, the contractor shall select an appropriate container, subject to approval by the contracting officer after coordination with the appropriate technical or engineering office for whom the chemicals are to be obtained.

3.1.3 Outage. Unit containers shall have a sufficient outage (see 6.4) to prevent leakage from, or distortion of, the containers because of expansion of the contents as a result of a change in temperature during transit or storage. The minimum outage shall be in accordance with 49 CFR 100 to 199 or ICAO−TDGA. Closures shall be applied in accordance with the specific instructions of the container manufacturer.

3.1.4 Stability and permeability. Unit containers and their closures (including closure liners and facings), linings, and space fillers shall neither affect nor be affected by the chemical contents. There shall be no physical or chemical interaction between the container and the chemical contents which would alter the container or the volume, strength, quality, or purity of the contents beyond any limits specified in the contract or in the commodity specification.

3.1.5 Workmanship. Unit, intermediate, pack and overpack containers shall be free of foreign matter such as dirt, oil, and grease and damage such as chips, cracks, corrosion, rust, dents (except for those caused by normal shipping and handling), deformation, tears, and other defects which would impair their serviceability. There shall be no defects or omissions which would impair the effectiveness of the complete pack or any portion thereof.

3.2 Non−POP containers. Shipping containers for materials defined in 3.1.1.1 do not have to meet POP requirements. Unregulated photographic dry and liquid chemicals shall be packaged as specified in 3.2.1.1.3, 3.2.1.1.4, 3.2.1.1.6, 3.2.1.1.8, 3.2.1.1.13.

3.2.1 Unit packing. A specified unit quantity (see 6.2) +1 or −0 percent of chemical shall be unit packed and preserved level A, level B, or commercial as specified (see 6.2).

3.2.1.1 Level A.

3.2.1.1.1 Type I, class 1 − glass bottles, jars, vials, tubes, and ampoules. Glass bottles, jars, vials, tubes, and ampoules shall conform to group A, class 1 of PPP−C−186. The glass type, container style, light penetration grade, closure, facing on liner of closure, and seal shall conform to PPP−C−186 and shall be as specified (see 6.2). The containers shall be filled with the specified chemical and then shall be tightly closed and sealed with a secondary closure. The secondary closure shall consist of a shrinkable plastic sleeve (see 6.5) or a strip of tape conforming to type I, class optional of PPP−T−66 centered between the skirt of the cap and the shoulder of the neck of the bottle, jar, or vial. No less than one and one−third turns of tape shall be applied around the cap−neck circumference. The glass containers shall be enclosed upright and cushioned in enclosure A, B, or C as specified (6.2).

(a) Enclosure A. Each unit container shall be placed in a moisture vaporproof, telescoping can conforming to type II, grade B of MIL−C−3955. The unit container shall be cushioned with vermiculite conforming to A−A−52450 (type I, class 3 of ASTM C 516). The vermiculite shall be uniformly distributed around all surfaces of the unit container and shall completely fill all voids in the can or drum. The can or drum shall be sealed with tape conforming to type II of MIL−T−43036. The tape shall be applied no less than one and one−third times around the circumference of the can or drum.

(b) Enclosure B. Each unit container shall be placed in a tin or terneplate slip cover or multiple friction cover closure can conforming to type VI or type V, class 2 of PPP−C−96, respectively. The can shall be coated in accordance with plan B of PPP−C−96 with side seam striped. Unit containers shall be cushioned with vermiculite as specified for enclosure A.

(c) Enclosure C. Each unit container shall be placed in a two−part expanded polystyrene case. The polystyrene case shall be molded to produce a completely fused closed cell composition having a minimum density of 1.25 pounds per cubic foot. The case shall consist of two parts, a bottom section with packets for the inside containers and a top section that covers and interlocks with the bottom section. Both the bottom and top sections shall be designed to provide a snug fit for the inside container. The case shall be constructed in accordance with table Ia and Ib:

TABLE Ia. Minimum thickness for multiple bottle cases (60 pounds maximum) (not more than 4 individual bottles per case)

	Nominal capacity of individual inside containers	
	5 pints	1 gallon
Side wall and bottom, inches	3/4	1
Between inside containers, inches	5/8	5/8
Top, inches (see Note)	3/4	1

Note: In recess for closure cap for inside container, 1/4−inch thickness is permissible; closure cap shall not be in contact with the inside of the top section.

TABLE Ib. Minimum thickness for single bottle cases (20 pound maximum)

	Nominal capacity of inside containers			
	Pint	Quart	5 Pints	1 Gallon
Side wall, inches	5/8	5/8	3/4	1 1/2
Top wall, inches (see Note)	3/4	3/4	3/4	1
Bottom wall, inches	1	1	3/4	1 1/2

Note: In recess for closure cap for inside container, 1/4−inch thickness is per−missible; closure cap shall not be in contact with the inside of the top section.

Cases shall be closed for shipment with pressure−sensitive tape having a tensile strength of not less than 55 pounds per inch of width or tape of equivalent strength. The tape shall completely encircle the case, with overlap of not less than one inch, in one direction so as to transverse the joint of the two sections perpendicularly. If the design of the case is such that the tape is subject to abrasion in transportation and handling, tape shall be applied similarly on the same axis, but at 90°.

Each case shall be closed for shipment with pressure−sensitive tape, non−metallic strapping, or other efficient means if they perform without failure under the tests prescribed by this section.

3.2.1.1.2 Type I, class 2 − glass carboys. Glass carboys and their closing devices, cushioning, and outside containers shall conform to commercially available carboy specifications.

3.2.1.1.3 Type II, class 1 − metal cans. Metal cans shall conform to PPP−C−96. The type, class, type of closure, interior coating, and size shall be as specified (see 6.2). The exterior of the cans shall be coated in accordance with plan B of PPP−C−96 with side seam striped.

3.2.1.1.4 Type II, class 2 − metal pails and drums. Metal pails and drums shall conform to the applicable requirements of table II as specified (see 6.2). Special closure, venting devices, interior coating, and corrosion resistance of hardware components requirements shall be as specified (see 6.2). The exterior coating of all level A metal pails and drums shall be applied as specified in PPP−P−704 and PPP−D−729, respectively.

TABLE II. Metal pails and drums

Capacity		Uniform Freight Classification (UFC)	Federal or military specification
Gallons	Liters		
1 to 10	4 to 38	UFC Rule 40	PPP−P−704, type III, class as specified (see 6.2)
1 to 12	4 to 45	UFC Rule 40	PPP−P−704, type I, class as specified (see 6.2)
1 to 12	4 to 45	UFC Rule 40	PPP−P−704, type II, class as specified (see 6.2)
16 and 30	61 and 114	UFC Rule 40	
30	114		PPP−D−736, type I through VI
55	208	UFC Rule 40	
55	208		PPP−D−729, type V, VI, or VII as specified (see 6.2)
55	208	UFC Rule 40	PPP−D−729, type I, class A or B, type II, or type IV as specified (see 6.2)

3.2.1.1.5 Type II, class 3 − metal collapsible tubes. Metal collapsible tubes shall conform to group B, class 1 of PPP−C−186. The tube capacity, type of opening, closure, and bottom end seal shall be as specified (see 6.2).

3.2.1.1.6 Type III, class 1 − plastic bags. Plastic bags shall conform to MIL−B−117. The class, style, and size of the bags shall be as specified (see 6.2). The filled plastic bags shall be closed by heat sealing in accordance with MIL−P−116 and shall meet the applicable protection requirements specified in MIL−B−117.

3.2.1.1.7 Type III, class 2 − plastic pouches. Plastic pouches shall conform to MIL−P−81997. The pouch type and size shall be as specified (see 6.2).

3.2.1.1.8 Type III, class 3 − plastic bottles, jars, vials, and tubes. Plastic bottles, jars, vials, and tubes shall conform to group A, class 2 of PPP−C−186 with style, capacity, and closure as specified (see 6.2). Alternately, plastic bottles shall conform to MIL−B−26701 with size as specified (see 6.2) or to type III of PPP−C−569 with class and capacity as specified (see 6.2). Container closures shall be sealed by a secondary closure as specified in 3.2.1.1.1.

3.2.1.1.9 Type III, class 4 − plastic pails. Plastic pails shall conform to MIL−D−43703 or PPP−P−1655 with type, class, and capacity as specified (see 6.2). Closures shall be furnished with a tamper−proof inner or outer seal, as applicable.

3.2.1.1.10 Type III, class 5 − plastic drums and carboys. Plastic drums and carboys shall conform to the applicable requirements of table III as specified (see 6.2). Closures shall be furnished with a tamper−proof inner or outer seal, as applicable.

TABLE III. Plastic drums and carboys

Capacity		Federal or military specification
Gallons	Liters	
5, 6−1/2, 13	19, 25, 49	None (see Note)
5, 15, 30	19, 57, 114	MIL−D−43703
6−1/2, 13	25, 49	MIL−B−26701
15, 30, 55	57, 114, 208	PPP−D−1860

Note: Carboys shall conform to commercially available carboy specifications.

3.2.1.1.11 Type IV, class 1 − fiber drums. Fiber drums shall conform to PPP−D−723. The type of closure and special moisture vapor barrier shall be as specified (see 6.2).

3.2.1.1.12 Type IV, class 2 − spirally wound fiber cans. Spirally wound fiber cans shall conform to type I or II, grade B of MIL−C−3955 and shall be closed as specified therein. The can size shall be as specified (see 6.2).

3.2.1.1.13 Type IV, class 3 − fiberboard boxes. Fiberboard boxes shall be weather−resistant type conforming to UFC Rule 41 conventional style or to PPP−B−1163 with style, class, type, grade, and size as specified (see 6.2). The boxes shall be closed as specified in the applicable box specification.

3.2.1.1.14 Type IV, class 4 − paper sacks. Paper sacks shall conform to UFC Rule 40 wet−strength multiple−wall paper bags. The intended contents, liners, water−proof requirements, size and closure shall be as specified (see 6.2).

3.2.1.1.15 Type V − textile and plastic bags. Textile bags shall conform to UFC Rule 40 cloth bags. Plastic bags shall conform to type I or type II as applicable of PPP−B−1714. The bag class and size shall be as specified (see 6.2).

3.2.1.1.16 Type VI, class 1 − composite cans with metal ends for liquid chemicals. Composite cans with metal ends for liquid chemicals shall conform to class II, type optional of PPP−C−1581. The can style and size shall be as specified (see 6.2).

3.2.1.1.17 Type VI, class 2 − composite cans for dry chemicals. Composite cans for dry chemicals shall conform to type optional, class 2 of PPP−C−55 with secondary closure. The can shape, style, and size shall be as specified (see 6.2).

3.2.1.1.18 Type VI, class 3 − metal pails and drums with plastic liners. The metal pails or drums with plastic liners shall conform to type II of PPP−C−1337 with class and size optional, or style B, size optional of MIL−D−40030.

3.2.1.1.19 Type VI, class 4 − fiber drums with plastic liners. The fiber drums with plastic liners shall conform to polyethylene containers, molded or thermo−formed polyethylene containers, or style A or B containers of MIL−D−40030 within a suitable fiber drum. The liner shall be blocked and cushioned within the fiber drum to assure that the fiber drum cavity is completely filled and that all motion of the liner within the drum is prevented.

3.2.1.2 Level B.

3.2.1.2.1 Type I, class 1 − glass bottles, jars, vials, tubes, and ampoules. Glass bottles, jars, vials, tubes, and ampoules shall conform to group A, class 1 of PPP−C−186. The glass type, container style, light penetration grade, closure, facing on liner of closure, and seal shall conform to PPP−C−186 and shall be as specified (see 6.2). The containers shall be filled with the specified chemical and then shall be tightly closed and sealed with a secondary closure as specified in 3.2.1.1.1. For liquid chemicals, the containers shall be cushioned in absorbent cushioning material as specified in 3.2.1.1.1.

3.2.1.2.2 Type I, class 2 − glass carboys. Glass carboys and their closing devices, cushioning, and outside containers shall conform to the applicable requirements as specified in 3.2.1.1.2.

3.2.1.2.3 Type II, class 1 − metal cans. Metal cans shall conform to the applicable requirements as specified in 3.2.1.1.3.

3.2.1.2.4 Type II, class 2 − metal pails and drums. Metal pails and drums shall conform to the applicable requirements as specified in 3.2.1.1.4. All requirements for level A protection shall apply except that the exterior coatings shall be applied using any coating certified by the supplier as being serviceable for no less than 1 year in temperate climate exterior service. The coating color shall be brown, olive green, olive drab, or forest green.

3.2.1.2.5 Type II, class 3 − metal collapsible tubes. Metal collapsible tubes shall conform to the applicable requirements as specified in 3.2.1.1.5.

3.2.1.2.6 Type III, class 1 − plastic bags. Plastic bags shall conform to MIL−B−117. The class, style, and size of the bags shall be as specified (see 6.2). The filled plastic bags shall be closed by heat sealing or other equally effective means and shall meet the applicable protection requirements specified in MIL−B−117.

3.2.1.2.7 Type III, class 2 − plastic pouches. Plastic pouches shall conform to the requirements as specified in 3.2.1.1.7.

3.2.1.2.8 Type III, class 3 − plastic bottles, jars, vials, and tubes. Plastic bottles, jars, vials, and tubes shall conform to the applicable requirements as specified in 3.2.1.1.8.

3.2.1.2.9 Type III, class 4 − plastic pails. Plastic pails shall conform to the requirements as specified in 3.2.1.1.9.

3.2.1.2.10 Type III, class 5 − plastic drums and carboys. Plastic drums and carboys shall conform to the requirements as specified in 3.2.1.1.10.

3.2.1.2.11 Type IV, class 1 − fiber drums. Fiber drums shall conform to UFC Rule 51. The special moisture vapor barrier shall be as specified (see 6.2).

3.2.1.2.12 Type IV, class 2 − spirally wound fiber cans. Spirally wound fiber cans shall conform to MIL−C−3955 and shall be closed as specified therein. The can type, grade, style, class, and size shall be as specified (see 6.2).

3.2.1.2.13 Type IV, class 3 − fiberboard boxes. Fiberboard boxes shall conform to UFC Rule 41 or to PPP−B−636. The box class, variety, grade, and size shall be as specified (see 6.2). The boxes shall be closed as specified in the applicable box specification.

3.2.1.2.14 Type IV, class 4 − paper sacks. Paper sacks shall conform to UFC Rule 40 as applicable with size, moisture barrier properties, and closure as specified (see 6.2).

3.2.1.2.15 Type V − textile and plastic bags. Textile bags shall conform to the applicable requirements as specified in 3.2.1.1.15.

3.2.1.2.16 Type VI, class 1 − composite cans with metal ends for liquid chemicals. Composite cans with metal ends for liquid chemicals shall conform to the requirements as specified in 3.2.1.1.16.

3.2.1.2.17 Type VI, class 2 − composite cans for dry chemicals. Composite cans for dry chemicals shall conform to the requirements as specified in 3.2.1.1.17.

3.2.1.2.18 Type VI, class 3 − metal pails and drums with plastic liners. The metal pails or drums with plastic liners shall conform to type I of PPP−C−1337. The container class and capacity shall be as specified (see 6.2).

3.2.1.2.19 Type VI, class 4 − fiber drums with plastic liners. The fiber drums with plastic liners shall conform to a molded or thermo−formed polyethylene container with size as specified (see 6.2) within a close−fitting fiber drum conforming to UFC Rule 51 as applicable having a size as specified (see 6.2). The liner shall be blocked and cushioned within the fiber drum to

assure that the fiber drum cavity is completely filled and all motion of the liner within the drum is prevented.

3.2.1.3 Commercial. Unregulated chemicals shall be preserved in containers in compliance with Uniform Freight Classification and National Motor Freight Classification rules, ASTM D 3951, and any other applicable regulatory requirements in a manner that will preserve the specified purity of the chemical in containers that will retain integrity from the supply source to the first receiving activity and for the normal shelf life of the chemical.

3.2.2 Intermediate packing.

3.2.2.1 Level A. Level A unit packs shall be intermediately packed as specified in table IV. Unit packs of the same type and size, and containing the same chemical shall be snugly intermediately packed with closures on top in the applicable configuration specified in table V.

Unit containers of less than 2 fluid ounces (59 milliliters) or 2 ounces avoirdupois (57 grams) shall be first snugly arranged in a box conforming to variety 2, process II, style optional of PPP−B−566 in a three by four pattern, in cells formed from partitions of the same material as the box. Twelve of these 12−unit boxes shall then be placed upright in a fiberboard box conforming to a weather−resistant, conventional style box of UFC Rule 41 or grades optional of PPP−B−636 and arranged in three layers, with each layer consisting of four boxes in a two by two pattern.

Protective materials used in level A, intermediate packing, such as pads, liners, partitions, and separators, shall be of the same material as used for the box. Full−height partitions shall be used to provide a snug−fitting cell for each unit (not applicable to containers of less than 2 fluid ounces (59 milliliters) capacity). Full−height liners shall be used for all four sides of the box. Full size top and bottom pads shall be used. Separators shall be placed between layers of unit containers. Protective pads shall be placed over protruding closures and handles. The boxes shall be provided with cushioning material conforming to type I, class B of PPP−C−843 or fiberboard pads and with snug−fitting slotted partitions. A sufficient amount of the non−reactive cushioning material shall be provided to completely absorb the liquid contents of the unit containers in the event of breakage except when type I, class 1 containers are in enclosures A, B, or C as specified in 3.2.1.1.1. Paperboard folding and fiberboard boxes shall be closed in accordance with the appendix of the applicable box specification.

Table IV. Level A intermediate packing methods and containers

Unit Container Classification	MIL−P−116 Packaging Method	Intermediate Container
Type I, class 1	III	UFC Rule 41 weather−resistant conventional style
Type II, class 1	III	PPP−B−566, variety 2, process II, style optional or UFC Rule 41 weather−resistant conventional style
Type II, class 3	IC2	PPP−B−566, variety 2, process II, style optional or UFC Rule 41 weather−resistant conventional style. Seal in a bag conforming to type II, class B, style optional of MIL−B−117.
Type III, classes 1 and 2	III	PPP−B−566, variety 2, process II, style optional or UFC Rule 41 weather−resistant conventional style
Type III, class 3	IC2	PPP−B−566, variety 2, process II, style optional or UFC Rule 41 weather−resistant conventional style
Type IV, class 2	III	UFC Rule 41 weather−resistant conventional style
Type VI, classes 1 and 2	IC2	PPP−B−566, variety 2, process II, style optional or UFC Rule 41 weather−resistant conventional style

Table V. Level A intermediate packing configuration

Nominal volume or weight of unit containers	Equivalent volume or weight	No. of layers per box	No. of rows per layer	Unit Containers per row	Total unit Containers
2 fluid ounces	59 ml	3	4	6	72
4 fluid ounces	118 ml	1	3	4	12
8 fluid ounces	237 ml	1	3	4	12
1 pint	437 ml	1	3	4	12
1 quart	946 ml	1	2	4	8
2 quarts	1.89 liters	1	2	3	6
5 pints	2.37 liters	1	2	3	6
1 gallon	3.79 liters	1	2	2	4
2 ounces	57 grams	3	4	6	72
4 ounces	113 grams	1	3	4	12
8 ounces	227 grams	1	3	4	12
1 pound	454 grams	1	3	4	12
2 pounds	0.91 kg	1	2	4	8
2 to 5 pounds	0.91 to 2.27 kg	1	2	3	6
over 5 pounds	over 2.27 kg	1	2	2	4

3.2.2.2 Level B. Level B unit packs shall be intermediately packed as specified in 3.2.2.1 except that packaging method III of MIL−P−116 shall be substituted for packaging method IC2 of MIL−P−116 for type II, class 3; type III, class 3; and type IV, class 1 containers.

3.2.2.3 Commercial. Unregulated chemicals shall be packed in containers in compliance with Uniform Freight Classification and National Motor Freight Classification rules, ASTM D 3951, and any other applicable regulatory requirements in a manner that will preserve the specified purity of the chemical in containers that will retain integrity from the supply source to the first receiving activity and for the normal shelf life of the chemical.

3.2.3 Packing. Unregulated chemicals shall be packed level A, B or commercial as specified (see 6.2). Glass carboys conforming to 3.2.1.1.2 or 3.2.1.2.2, metal pails and drums of 5 gallons (18.9 liters) or more nominal capacity conforming to 3.2.1.1.4 or 3.2.1.2.4, plastic pails conforming to 3.2.1.1.9 or 3.2.1.2.9, plastic drums and carboys conforming to 3.2.1.1.10 or 3.2.1.2.10, paper sacks conforming to 3.2.1.1.14 or 3.2.1.2.14 having a net weight of 20 pounds (9 kilograms) or more, textile bags conforming to 3.2.1.1.15 or 3.2.1.2.15 having a net weight of 20 pounds

(9 kilograms) or more, and metal pails and drums with plastic liners conforming to 3.2.1.1.18 or 3.2.1.2.18 shall require no overpacking for shipment. Level A and B packs shall show no evidence of leakage or sifting of contents, breakage, damage, or substantial distortion when rough handled as specified in 4.2.4.

3.2.3.1 Level A. Quantities of the same chemical packed in unit or intermediate containers (see 3.2.2) of the same size, type, and class shall be packed in shipping containers conforming to class optional, styles 1, 2, 2 1/2, 6, or 7, of PPP−B−621; PPP−B−585 with class, style and type of load as specified (see 6.2); and PPP−B−601 with type, style, grade and type of load as specified (see 6.2). Motion of contents within the shipping containers shall be prevented by the insertion, as needed, of fiberboard pads formed from material conforming to PPP−F−320 with class and grade as specified (see 6.2). The unit containers shall be packed closure end up in quantities totalling no more than 70 pounds (31.8 kilograms) gross weight per shipping container. Each box shall be closed as specified in the applicable box specification and shall then be reinforced using flat strapping.

3.2.3.2 Level B. Unit containers and intermediate packs shall be packed as specified in 3.2.3.1 except that fiberboard pads shall be formed from material conforming to the requirements for fiberboard materials as used for boxes conforming to UFC Rule 41 and the shipping boxes shall conform to one of the following:

(a) Wood box, nailed − UFC Rule 40, section 1
(b) Wood box, nailed − PPP−B−621
(c) Wood box, wirebound − PPP−B−585
(d) Plywood box, cleated − PPP−B−601
(e) Fiberboard box − UFC Rule 41
(f) Fiberboard box − PPP−B−636

3.2.3.3 Commercial. Uniform quantities of like unregulated chemicals shall be packed in a manner that will assure carrier acceptance and safe delivery. Containers shall be in compliance with Uniform Freight Classification and National Motor Freight Classification rules, and ASTM D 3951. Containers for like quantities of like chemicals shall be of uniform size, shape, and material.

3.3 Performance oriented packaging (POP) containers. Materials defined in 3.1.1.2 shall be packed in a POP certified container (see 6.2). At least one container in the series of unit, intermediate, and pack shall be POP tested and certified. The POP container should be the lowest possible shipping configuration. Packaging (including marking and labeling) of hazardous materials shall be in accordance with the applicable requirements of 49 CFR 171 to 199 and ICAO−TDGA or IMO−IMDGC, as applicable to the mode of transportation. The packaging shall also meet the applicable packaging performance tests specified in the above regulations. Regulated photographic dry and liquid chemicals shall be packaged as specified in 3.3.1.2, 3.3.1.3, 3.3.1.5, 3.3.1.7 or 3.3.1.12.

3.3.1 Unit pack. A specified unit quantity +1 or −0 percent of chemical shall be packed and preserved (see 6.2).

3.3.1.1 Type I, class 1 − glass bottles, jars, vials, tubes, and ampoules. Glass bottles, jars, vials, tubes, and ampoules shall conform to the requirements as specified in 3.2.1.1.1 except that the glass containers shall be enclosed upright and cushioned in one of the following enclosures:

(a) Enclosure A. Each unit container shall be placed in a moisture vaporproof, telescoping can conforming to type II, grade B of MIL−C−3955 and to the general packing requirements of a 1G fiber drum of 49 CFR or ICAO−TDGA, as applicable. The metal ends shall be a minimum 28 gauge. The unit container shall be cushioned with a sufficient quantity of vermiculite conforming to A−A−52450 (type I, class 3 of ASTM C 516) to absorb the total amount of liquid in the appropriate container. The vermiculite shall be uniformly distributed around all surfaces of the unit container and shall completely fill all voids in the can or drum. The can or drum shall be sealed with tape conforming to type II of MIL−T−43036. The tape shall be applied no less than one and one−third times around the circumference of the can or drum.

(b) Enclosure B. Each unit container shall be placed in a tin or terneplate slip cover or multiple friction cover closure can conforming to the general packing requirements of a 1A2 container of 49 CFR or ICAO−TDGA, as applicable and to type V or type VI, class 2 of PPP−C−96. The can shall be coated in accordance with plan B of PPP−C−96 with side seam striped. The can shall be tightly closed and sealed with with a secondary closure. The secondary closure shall consist of a shrinkable plastic sleeve. Unit containers shall be cushioned with vermiculite as specified for enclosure A.

(c) Enclosure C. Each unit container shall be placed in a two−part expanded polystyrene case conforming to the general packing requirements of a 4H1 container of 49 CFR or ICAO−TDGA, as applicable.

3.3.1.2 Type II, class 1 − metal cans. Metal cans shall conform to the general packing requirements of a 1A1 or 1A2 container of 49 CFR or ICAO−TDGA, as applicable and to PPP−C−96. The type, class, type of closure, interior coating, and size shall be as specified (see 6.2). The exterior coating of the cans shall be coated in accordance with plan B of PPP−C−96 with side seam striped.

3.3.1.3 Type II, class 2 − metal pails and drums. Metal pails and drums shall conform to the applicable requirements of table VI as specified (see 6.2). Special closure, venting devices, interior coating, and corrosion resistance of hardware components requirements shall be as specified (see 6.2). The exterior coating of all level A metal pails and drums shall be applied as specified in PPP−P−704 and PPP−D−729, respectively.

TABLE VI. Metal pails and drums

Capacity		United Nation(UN) Packaging Codes	Federal or military specification
Gallons	Liters		
1 to 10	4 to 38	1A2	PPP−P−704, type III, class as specified (see 6.2)
1 to 12	4 to 45	1A1	PPP−P−704, type I, class as specified (see 6.2)
1 to 12	4 to 45	1A2	PPP−P−704, type II, class as specified (see 6.2)
10 1/2	40	1A2	
16 and 30	61 and 114	1A1 or 1A2	
30	114	1A2	PPP−D−736, type I through VI
55	208	1A1	PPP−D−729, type V, VI, or VII as specified (see 6.2)
55	208	1A2	PPP−D−729, type I, class A or B, type II, or type IV as specified (see 6.2)

3.3.1.4 Type II, class 3 − metal collapsible tubes. Metal collapsible tubes shall conform to the general packing requirements of an IP.3 container of ICAO−TDGA. The tube capacity, type of opening, closure, and bottom end seal shall be as specified (see 6.2).

3.3.1.5 Type III, class 1 − plastic bags. Plastic film bags shall conform to the general packing requirements of a 5H4 container of 49 CFR or ICAO−TDGA, as applicable. The bag class and size shall be as specified (see 6.2).

3.3.1.6 Type III, class 2 − plastic pouches. Plastic pouches shall conform to the general packing requirements of an IP.5 container of ICAO−TDGA.

3.3.1.7 Type III, class 3 − plastic bottles, jars, vials, and tubes. Plastic bottles, jars, vials, and tubes shall conform to the general packing requirements of an IP.2 container of ICAO−TDGA.

3.3.1.8 Type III, class 4 − plastic pails. Plastic pails shall conform to the general packing requirements of a 1H1 container of 49 CFR or ICAO−TDGA, as applicable and to MIL−D−43703 or PPP−P−1655 with type, class, and capacity as specified (see 6.2). Closures shall be furnished with a tamper−proof inner or outer seal, as applicable.

3.3.1.9 Type III, class 5 − plastic drums. Plastic drums shall conform to the applicable requirements of table VII as specified (see 6.2). Closures shall be furnished with a tamper−proof inner or outer seal, as applicable.

TABLE VII. Plastic drums

Capacity		United Nation(UN) Packaging Codes	Federal or military specification
Gallons	Liters		
5, 15, 30	19, 57, 114	1H1	MIL−D−43703
15, 30, 55	57, 114, 208	1H1	PPP−D−1860

3.3.1.10 Type IV, class 1 − fiber drums. Fiber drums shall conform to PPP−D−723 and to the general packing requirements of a 1G container of 49 CFR or ICAO−TDGA, as applicable. The type of closure and special moisture vapor barrier shall be as specified (see 6.2).

3.3.1.11 Type IV, class 2 − spirally wound fiber cans. Spirally wound fiber cans shall conform to the general packing requirements of a 1G container of 49 CFR or ICAO−TDGA, as applicable and to type I or II, grade B of MIL−C−3955. The can size and closure shall be as specified (see 6.2).

3.3.1.12 Type IV, class 3 − fiberboard boxes. Fiberboard boxes shall be weather−resistant class conforming to PPP−B−636, grade V3c or W5c, or to a specified style, class, type, grade and size of PPP−B−1163 (see 6.2), which conforms to the general packing requirements of a 4G container of 49 CFR or ICAO−TDGA. The boxes shall be closed as specified in the applicable box specification.

3.3.1.13 Type IV, class 4 − paper sacks. Paper sacks shall conform to the general packing requirements of a 5M2 container of 49 CFR or ICAO−TDGA, as applicable. The intended contents, liners, water−proof requirements, size and closure shall be as specified (see 6.2).

3.3.1.14 Type V − textile and plastic bags. Textile bags shall conform and to the general packing requirements of a 5L3 container of 49 CFR or ICAO−TDGA, as applicable. Plastic bags shall conform to type I or type II as applicable of PPP−B−1714 and to the general packing requirements of a 5H2 or 5H3 container of 49 CFR or ICAO−TDGA, as applicable. The bag class and size shall be as specified (see 6.2).

3.3.1.15 Type VI, class 1 − composite cans with metal ends for liquid chemicals. Composite cans with metal ends for liquid chemicals shall conform to the general packing requirements of a 1G container and to class 2 of PPP−C−1581. The can size and closure shall be as specified (see 6.2).

3.3.1.16 Type VI, class 2 − composite cans for dry chemicals. Composite cans for dry chemicals shall conform to the general packing requirements of a 1G container and to class 2 of PPP−C−55. The can size and closure shall be as specified (see 6.2).

3.3.1.17 Type VI, class 3 − metal pails and drums with plastic liners. The metal pails or drums with plastic liners shall conform to type II of PPP−C−1337 with class and size optional and to the general packing requirements of a 6HA1 composite container of 49 CFR or ICAO−TDGA, as applicable.

3.3.1.18 Type VI, class 4 − fiber drums with plastic liners. The fiber drums with plastic liners shall conform to the general packing requirements of a 6HG1 composite container of 49 CFR or ICAO−TDGA, as applicable. The 6HG1 containers shall consist of a molded or thermo−formed polyethylene container, conforming to style A or B containers of MIL−D−40030 within a suitable fiber drum. The liner shall be blocked and cushioned within the fiber drum to assure that the fiber drum cavity is completely filled and all motion of the liner within the drum is prevented.

3.3.2 Intermediate packing and packing. If the unit pack is selected to be the POP container, intermediate and pack containers shall serve as overpacks and can be selected from 3.2.2 and 3.2.3 as appropriate (see 6.2). If the intermediate container is POP tested and certified, the pack container shall serve as an overpack and can be selected from 3.2.3 (see 6.2).

3.3.2.1 Intermediate configuration. POP unit pack of the same type and size and containing the same chemical shall be snugly intermediately packed as specified in table VI.

3.3.2.2 Intermediate and pack containers. The intermediate and pack containers shall conform to one of the following general packing requirements:

(a) 4G container of 49 CFR or ICAO−TDGA, as applicable, and to PPP−B−636, as appropriate
(b) 4C1 container of 49 CFR or ICAO−TDGA, as applicable, and to PPP−B−585 and PPP−B−621, as appropriate
(c) 4D container of 49 CFR or ICAO−TDGA, as applicable, and to PPP−B−601, as appropriate
(d) 4H1 or 4H2 container of 49 CFR or ICAO−TDGA, as applicable

3.4 Marking.

3.4.1 Civil agencies. Interior packages, shipping containers, and palletized loads shall be marked in accordance with Fed. Std. No. 123, unless otherwise specified, UN recommendations, and any applicable hazardous materials regulations. In addition, each unit, intermediate, and shipping container shall be marked to show lot number, if applicable, and date of manufacture of contents.

3.4.2 Military agencies. Interior packages, exterior shipping containers, and palletized loads shall be marked in accordance with MIL−STD−129, UN recommendations, and any applicable hazardous materials regulations. In addition, each unit, intermediate, and shipping container shall be marked to show lot number, if applicable, and date of manufacture of contents.

3.5 Unitization. When specified (see 6.2), shipping containers shall be palletized. Level A and B shipments shall be palletized in accordance with the applicable requirements of MIL−STD−147 using a softwood pallet conforming to type IV, grade A of NN−P−71. When specified (see 6.2), the pallet shall conform to type IV, grade B of NN−P−71. All wood storage aids, if used, shall be treated as specified for the pallet. Commercial shipments shall be unitized as specified in the contract or order.

4. QUALITY ASSURANCE PROVISIONS

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

4.1.1 Responsibility for compliance. All items shall meet all requirements of section 3. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.1.2 Contractor assurance of compliance. The contractor's quality program or detailed inspection system shall provide assurance of compliance of all characteristics with the applicable specification requirements using, as a minimum, the conformance criteria specified herein.

4.1.3 Alternative inspection provisions. Alternative inspection procedures, methods, or equipment, such as statistical process control, tool control, and other types of sampling procedures may be used by the contractor when they provide, as a minimum, the level of quality assurance required by the inspection provisions specified herein. Prior to applying such alternative procedures, methods, or equipment, the contractor shall describe them in a written proposal submitted to the Government for evaluation and approval. (See 6.3.) When required, the contractor shall demonstrate that the effectiveness of each proposed alternative is equal to or better than the quality assurance provisions specified herein. In cases of dispute as to whether the contractor's proposed alternative provides equal quality assurance, the provisions of this specification shall apply. All approved alternative inspection provisions shall be specifically incorporated into the contractor's quality program or detailed inspection system, as applicable.

4.2 Quality conformance inspection.

4.2.1 Lotting. A lot shall consist of unit containers of the same type, class, and size, filled with the same chemical, unit packaged and packed in the same manner, and presented for delivery at one time.

4.2.2 Sampling. Sampling shall be conducted in accordance with the classification of characteristics in 4.2.5 and, when specified, table VIII. Samples shall be selected at random. The sample unit shall be one filled and closed unit, intermediate, or shipping container, as applicable, ready for shipment.

4.2.3 Inspection procedure. Every item in the lot shall be inspected for critical characteristics. The lot represented shall be rejected when nonconformance to a critical characteristic is found. Sample items and, when applicable, the packaging thereof shall be examined and tested in accordance with the classification of characteristics in 4.2.5. Failure of any sample item to conform to any characteristic in the classification of characteristics based on the sampling and acceptance criteria specified therein shall be cause for rejection of the lot represented.

TABLE VIII. Sampling

Lot size	Inspection levels and sample sizes										
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
2 to 8	*	*	*	*	*	*	*	*	5	3	2
9 to 15	*	*	*	*	*	*	13	8	5	3	2
16 to 25	*	*	*	*	*	20	13	8	5	3	3
26 to 50	*	*	*	*	32	20	13	8	5	5	5
51 to 90	*	*	*	50	32	20	13	8	7	6	5
91 to 150	*	*	125	50	32	20	13	12	11	7	6
151 to 280	*	*	125	50	32	20	20	19	13	10	7
281 to 500	*	315	125	50	48	47	29	21	16	11	9
501 to 1200	*	315	125	75	73	47	34	27	19	15	11
1201 to 3200	1250	315	125	116	73	53	42	35	23	18	13
3201 to 10000	1250	315	192	116	86	68	50	38	29	22	15
10001 to 35000	1250	315	294	135	108	77	60	46	35	29	15
35001 to 150000	1250	490	294	170	123	96	74	56	40	29	15
150001 to 500000	1250	715	345	200	156	119	90	64	40	29	15
500001 and over	1250	715	435	244	189	143	102	64	40	29	15

*Indicates one hundred percent inspection. If sample size exceeds lot size, perform one hundred percent inspection.
Accept the lot represented on zero nonconforming characteristics and reject the lot represented on one or more nonconforming characteristics for all inspection levels.

4.2.4 Inspection characteristics. Critical characteristics are characteristics whose nonconformance to specified requirements is likely to result in hazardous or unsafe conditions for individuals using, maintaining, or depending upon the product or whose nonconformance to specified requirements is likely to prevent performance of the tactical function of a major end item. Major characteristics are characteristics whose nonconformance to specified requirements is likely to result in failure or to reduce materially the usability of the item for its intended purpose. Minor characteristics are characteristics whose nonconformance to specified requirements is not likely to reduce materially the operation or usability of the item for its intended purpose.

4.2.5 Classification of characteristics. Quality conformance examinations and tests shall be as specified in the following classification of characteristics paragraphs. When specified herein, accept on 0 and reject on 1 attributes sampling inspection shall be performed on the designated characteristics using the stated levels in table VIII for selection of sample sizes.

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH	TITLE		DRAWING NUMBER
4.2.5(a)	Preservation	SHEET 1 OF 1	NEXT HIGHER ASSY

CATEGORY	CHARACTERISTIC	SAMPLING AND ACCEPTANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD
Critical	None defined			
Major				
101	Unit container clean and uncontaminated	Table VIII, level VII	3.2.1 & 3.3.1	VI
102	Unit container leak free	Table VIII, level VII	3.2.1 & 3.3.1	VI
103	Unit container type and class as specified	Table VIII, level VIII	3.2.1 & 3.3.1	VI
104	Sufficient outage	Table VIII, level VIII	3.1.3	VI & CE
105	Quantity per unit container as specified	Table VIII, level VIII	3.2.1 & 3.3.1	VI
106	Closure and sealing as specified	Table VIII, level VIII	3.2 & 3.3	VI
107	Enclosure as specified (when required)	Table VIII, level VIII	3.2 & 3.3	VI
108	Intermediate container as specified (when required)	Table VIII, level VIII	3.2.2 & 3.3.2	VI
109	Unit and intermediate configuration correct	Table VIII, level VIII	3.2 & 3.3	VI
110	Partitions, filler, spacers, and cushioning adequate and as specified	Table VIII, level VIII	3.2 & 3.3	VI
111	Intermediate container closure as specified	Table VIII, level VIII	3.2.2 & 3.3.2	VI
112	Appropriate container POP tested and certified	Table VIII, level VIII	3.3	VI & CE
113	Marking correct	Table VIII, level VIII	3.4	VI
114	Workmanship	Table VIII, level VIII	3.1.5	VI

NOTES:

CE − Commercial inspection equipment
VI − Visual inspection

CLASSIFICATION OF CHARACTERISTICS

PARAGRAPH	TITLE	SHEET 1 OF 1	DRAWING NUMBER / NEXT HIGHER ASSY
4.2.5(b)	Packing		

CATEGORY	CHARACTERISTIC	SAMPLING AND ACCEPTANCE CRITERIA	REQUIREMENT PARAGRAPH	INSPECTION METHOD
Critical	None defined			
Major				
101	Gross weight of container does not exceed 70 pounds (31.8 kilograms) (when applicable)	Table VIII, level X	3.2 & 3.3	CE
102	Shipping container as specified	Table VIII, level X	3.2 & 3.3	VI
103	Filler and pads sufficient and as specified	Table VIII, level X	3.2 & 3.3	VI
104	Closure as specified	Table VIII, level X	3.2 & 3.3	VI
105	Palletization as specified	Table VIII, level X	3.5	VI
106	Appropriate container POP tested and certified	Table VIII, level X	3.3	VI & CE
107	Marking correct	Table VIII, level X	3.4	VI
108	Workmanship	Table VIII, level X	3.1.5	VI

NOTES:
CE − Commercial inspection equipment
VI − Visual inspection

5. PACKAGING

This section is not applicable to this specification.

6. NOTES

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

6.1 Intended use. It is intended that this specification be used for direct reference in contracts and in the packaging sections of chemical specifications.

6.2 Acquisition requirements. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

(a) Title, number, and date of this specification
(b) Type and class of unit container required as defined in this specification (see 1.2)
(c) Classification selection (such as type, group, class, variety, grade, style, size, capacity, moisture vapor barrier grade, and closure) from referenced container specifications when selection is not made in this specification
(d) Unit quantity of chemical (see 3.2 and 3.3).
(e) Level of preservation and packing required (see 3.2)
(f) At least one container (unit pack, intermediate pack, or shipping container) shall comply with POP requirements (see 3.3)
(g) Type of enclosure required for type I, class 1 containers (see 3.2.1.1.1 and 3.3.1.1)
(h) Special requirements for type II, class 2 containers, if required (see 3.2.1.1.4 and 3.3.1.4)
(i) If palletization is required (see 3.5)
(j) If preservative treatment for pallets is required (see 3.5)

6.3 Submission of alternative inspection provisions. Proposed alternative inspection provisions should be submitted by the contractor to the procuring contracting officer for evaluation and approval by the technical activity responsible for preparation of this specification.

6.4 Outage. Outage (also called “vacant space,” “voids,” “ullage,” and “head space”) in the unit container depends on the coefficient of expansion of the contents and the changes in temperature to which the container is exposed during transit and storage. Outage should be calculated to the total capacity of the container.

6.5 Secondary closure. Commercial products similar to Thatcher “Celon” and Minnesota Mining and Manufacturing Company Tape No. 471 have been found to be acceptable self−shrinking tapes for the secondary closure specified in 3.2.1.1.1 and 3.3.1.1.

6.6 Environmental considerations. Environment pollution prevention measures (EPPM) should be sought in the packaging material specifications referenced herein. Refer to material specifications, the applicable CFR (e.g. 40 CFR 262 to 263), or preparing activities for recommended disposal methods.

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

MILITARY INTERESTS:

Custodians:

Army − EA
Navy − SH
Air Force − 68

Review activities:

Army − MD, ME, SM
Navy − AS, SA, YD
Air Force − 99
DLA − DH, GS

User activities:

Army − AR
Navy − OS

CIVIL AGENCY COORDINATING ACTIVITIES:

COM−NIST
GSA−FSS (9FTE−10)
USDA−APS
USPS

Preparing activity:

Army − EA

Project No. PACK−0991