

MIL-D-13901A(MU)
3 July 1968
SUPERSEDING
MIL-D-13901(Cm1C)
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MILITARY SPECIFICATION

DRUM, METAL, 8-GALLON

(DECONTAMINATING AGENT)

1. SCOPE

1.1 This specification covers an 8-gallon metal drum with a removable head.

2. APPLICABLE DOCUMENTS

2.1 Government documents. 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.

SPECIFICATIONS

FEDERAL

O-C-114 - Calcium Hypochlorite, Technical, and Chlorinated
Lime, Technical.
TT-E-485 - Enamel, Semi-Gloss, Rust-Inhibiting.

MILITARY

MIL-P-15011 - Pallets, Material Handling, Wood, Post Construction, 4-Way Entry.

FSC 8110

STANDARDS

FEDERAL

Fed Std No. 595 - Colors.

Fed Test Method Std No. 101 - Preservation, Packaging and Packing
Materials: Test Procedures.

MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by
Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-147 - Palletized and Containerized Unit Loads, 40" x 48"
4-Way (Partial) Pallet Skids, Runners, or Pallet-
Type Base.

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

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

CODE OF FEDERAL REGULATIONS

- 49 CFR 171-179 - Department of Transportation Rules and Regulations
for the Transportation of Explosives and Other
Dangerous Articles.

(The Department of Transportation regulations are a part of the Code of
Federal Regulations available from the Superintendent of Documents, Govern-
ment Printing Office, Washington, D. C. 20402. Orders for the above
publications should cite "49 CFR 171-179.")

UNIFORM CLASSIFICATION COMMITTEE

Uniform Freight Classification

(Application for copies of these ratings, rules and regulations should
be addressed to Uniform Classification Committee, 202 Union Station, 516
West Jackson Boulevard, Chicago, Illinois 60606.)

3. REQUIREMENTS

3.1 Materials.

3.1.1 Steel.

3.1.1.1 For drum body, and top and bottom heads. Number 22 U.S. Manufacturers Standard gauge sheet steel shall be used for the drum body and top and bottom heads.

3.1.1.2 For closure. The bolt and nut on the drum closure shall be composed of galvanized or cadmium-plated steel or other noncorrosive metal.

3.1.2 For gasket. The gasket shall be composed of material resistant to chlorine and to oxidizing compounds containing chlorine (see 6.3).

3.1.3 For protective enamel. The baked enamel shall have a phenol formaldehyde or vinyl-resin base and shall contain no compound of iron. The enamel shall neither affect nor be affected by chlorine or oxidizing compounds containing chlorine (see 6.4).

3.1.4 For camouflage enamel. The camouflage enamel shall conform to TT-E-485, and shall be color number 24064 of Fed Std 595, unless otherwise specified (see 6.2).

3.1.5 For wax. The wax shall be chemically inert and water resistant (see 6.5).

3.2 Design and construction. The drum shall comply with requirements for a fully-removable head drum of specification 37A of the Department of Transportation and with the requirements specified herein. Each drum shall be provided with a bolted locking-ring closure. The diameter of the bolt shall be no less than 1/4-inch. The gasket shall be flowed into the underside of the outside edge of the removable drum head, making an air-tight seal. The drum shall not leak when tested as specified in 4.4.4.3.

3.2.1 Capacity. The drum shall have a rated capacity of 8 U.S. gallons.

3.2.2 Nesting. The bottom diameter of the drum shall be necked down to permit nesting when the assembled, closed drums are stacked in an upright position.

3.2.3 Seams. The drum body and bottom shall be joined by double seaming. When tested as specified in 4.4.4.1, the side and bottom

seams shall withstand an internal air pressure of 5 pounds per square inch, gage, (p.s.i.g.) with no evidence of leakage.

3.3 Finish.

3.3.1 Precleaning. All interior and exterior surfaces of the drum and closure shall be free of dust, oil, grease, and foreign matter before the enamels are applied. Burrs and sharp projections shall be removed prior to coating.

3.3.2 Protective enamel.

3.3.2.1 Application. All surfaces of the drum and closure shall be uniformly covered with two coats of baked enamel conforming to 3.1.3. The drum body and bottom shall be coated and baked once before assembly and a second time after assembly.

3.3.2.2 Film thickness. The film thickness, the baking time, and the temperature recommended by the enamel manufacturer shall be used. The film thickness shall be tested as specified in 4.4.4.2.

3.3.2.3 Adhesion. The exterior protective enamel coating shall show no flaking, cracking, chipping, peeling, separation, or other defect in adhesion when tested as specified in 4.3.3.

3.3.2.4 Chlorine resistance. The interior protective enamel coating shall show no rusting, blistering, checking, blushing, cracking, softening, crazing, pronounced discoloration, or any other sign of failure or deterioration as a result of exposure to chlorine when tested as specified in 4.3.3.

3.3.3. Camouflage enamel.

3.3.3.1 Application. After two coats of protective baked enamel have been applied, all exterior surfaces of the drum and closure shall be given one coat of camouflage enamel conforming to 3.1.4. The coating shall be continuous and shall be free of pinholes or other defects.

3.3.3.2 Film thickness. The camouflage enamel shall be applied in a film no less than 0.8 mil thick when tested as specified in 4.4.4.2.

3.3.4 Waxing. Wax conforming to 3.1.5 shall be applied to all interior and exterior seams of the drum, over the protective or camouflage coating. The wax shall cover the seams and extend 1 inch on either side of the seams. In addition, wax shall be applied to the top lip of the drum, extending downward 1 inch + 1/2-inch on the inside of the drum and 1 inch + 1/2-inch on the outside of the drum. Wax shall be applied to the gasket and to the coated metal on either side of the gasket in a strip no less than 1 inch wide.

3.4 Leakage. The finished drum shall not leak when tested as specified in 4.4.4.3.

3.5 Preproduction. Prior to the start of regular production, a preproduction lot of drums shall be produced in accordance with this specification (see 4.3).

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection.

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

4.1.2 Objective evidence. The supplier shall provide objective evidence acceptable to the contracting officer that the requirements of 3.1 and section 5 for which specific inspection has not been provided in this specification have been satisfied.

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

- (a) Preproduction inspection (see 4.3)
- (b) Quality conformance inspection (see 4.4)

4.3 Preproduction inspection.

4.3.1 Sample. A preproduction sample of 25 drums shall be manufactured using the same methods, materials, equipment, and processes as will be used during regular production.

4.3.2 Inspection procedure.

4.3.2.1 For examination. All sample drums shall be examined in accordance with the classification of defects (4.4.3.3). The acceptable quality levels in the classification of defects shall not apply.

4.3.2.2 For tests. Twenty drums shall be tested for leakage in accordance with 4.4.4.3. Five drums shall be tested for chlorine resistance and coating adhesion in accordance with 4.3.3, and then for a determination of film thickness in accordance with 4.4.4.2.

4.3.3 Chlorine-resistance and coating adhesion. Fill the protective enamel coated (but not camouflage coated or waxed) drum three-quarters full with chlorinated lime having an available chlorine content of five to six percent and conforming to type II, grade B of O-C-114. Close the drum securely. Place in an oven heated to $140^{\circ} \pm 5^{\circ}$ F for seven days. Remove and empty the container. Wash with water and dry. Examine for defects or deterioration, respectively, as described in 3.3.2.3 and 3.3.2.4.

4.3.4 Acceptance/rejection criteria. Failure of any sample drum to meet the requirements of any test shall result in rejection of the preproduction sample. No Major A defects will be permitted; however, the preproduction lot is acceptable if one or no Major defects are found during inspection.

4.4 Quality conformance inspection.

4.4.1 Lotting. A lot shall consist of drums produced by one manufacturer under essentially the same manufacturing conditions, and coated with protective enamel produced by one manufacturer.

4.4.2 Sampling.

4.4.2.1 For examination. Sampling shall be conducted in accordance with MIL-STD-105.

4.4.2.2 For tests. Sampling shall be conducted in accordance with table I.

Table I. Sampling for test

Number of drums in lot	Sample size
2-25	2
26-150	3
151-1,200	5
1,201-7,000	8
7,001-20,000	10
over 20,000	20

4.4.3 Inspection procedure.

4.4.3.1 For examination. Sample drums and level A preparation for delivery thereof shall be examined and tested in accordance with the classification of defects and with MIL-STD-105.

4.4.3.2 For tests. Each drum in the sample shall be tested as specified in 4.4.4.2 and 4.4.4.3. Failure of any sample drum to meet the test requirements shall result in rejection of the lot represented.

4.4.3.3 Classification of defects.

(a) Drum, metal, 8-gallon.

<u>Categories</u>	<u>Defects</u>	<u>Acceptance standards</u>
<u>Critical:</u>	None defined	
<u>Major:</u>	AQL 0.10 percent defective	
101	Shell leakage (in-process test)	4.4.4.1
	AQL 1.5 percent defective	
102	Closure ring missing or incorrect	
103	Gasket missing or incorrect	
104	Capacity incorrect	
105	Containers do not nest	
106	Protective enamel coating missing, inadequate, or incorrect	
107	Camouflage enamel coating missing, inadequate or incorrect	
108	Waxing missing or incorrect	
109	Drum damaged	
110	Foreign matter present	
111	Marking missing, illegible, or incorrect	
112	Palletization incorrect	

4.4.4 Tests. Tests shall be conducted as follows:

4.4.4.1 Shell seam leakage. After the drum body and bottom head have been welded and given the second application of baked enamel, cover the open end of the shell with a suitable fixture to make an air-tight joint. Cover the outside of the seams with a water solution of soap or totally submerge the shell in water containing a suitable wetting agent. Subject the interior of the shell to an air pressure of 5 p.s.i.g. for 5 minutes. Check for air bubbles as evidence of leakage.

4.4.4.2 Film thickness. Determine the film thickness of the protective and camouflage enamel coatings on the drum body, bottom and closure by first standardizing a suitable instrument (see 6.6) on the

same surface as that to which the enamels have applied. Measure the film thickness. Compare to the film thickness recommended by the protective enamel manufacturer, or specified for the camouflage enamel in 3.3.3.2.

4.4.4.3 Container leakage. Fill the drum with chlorinated lime conforming to type II, grade B of O-C-114. Seal and test for leakage, using the submersion technique of Method 241 of Fed Test Method Std No. 101.

5. PREPARATION FOR DELIVERY

5.1 Packing. Packing of the drums shall be level A or C, as specified (see 6.2).

5.1.1 Level A. Closures shall be secured to the drums by the bolted locking rings in such a manner as to insure protection of the coatings and waxing during shipment. The assembled drums shall be palletized as specified (see 5.2).

5.1.2 Level C. Closures shall be secured to the drums as specified in 5.1.1. The drums shall be shipped loose, or shall be packed to provide adequate protection against corrosion, deterioration, and damage, and to assure carrier acceptance and safe delivery to the first domestic destination. When applicable, drums, pallets or shipments shall comply to the Uniform Freight Classification Rules or to the regulations of other common carriers applicable to the mode of transportation.

5.2 Pallets. When specified in the contract or order (see 6.2), drums shall be palletized in accordance with MIL-STD-147, using load type III. Pallets shall conform to MIL-P-15011 and shall be strapped with galvanized strapping no less than 1-1/2 inches wide and 0.035 inch thick. When level A packing is specified, overall height of pallet and load shall not exceed 52 inches.

5.3 Marking. In addition to any special marking required by the contract or order (see 6.2), drums and shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The 8-gallon metal drum of this specification is intended for use as a container for dry decontaminating agents such as supertropical bleach and chlorinated lime.

6.2 Ordering data. Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Level of packing required.
- (c) Design or material other than that specified.
- (d) Camouflage color, if other than specified.
- (e) Palletization, if required.
- (f) Marking, if other than specified.

6.3 Gasket material. The following materials have been found suitable for gaskets: reclaimed rubber composition, asbestos composition, and chlorine-resistant synthetics such as, or equal to: Detroit Gasket Company, No. 77-E-1, Neoprene; and Dewey and Almy, Darex 41, Darex 49, Darex 50, Darex 52, or No. 22 (puffed) gasket material.

6.4 Approved enamels. The following protective enamels have been found suitable for coating the drums: Vita Var Corporation, No. 8440; Stoner-Mudge Division of Mobil Finishes Company, No. S-692-801; Pittsburgh Plate Glass, Paint Division, No. UC-31078 and No. UC-10549.

6.5 Wax. The following types of wax have been found suitable for waxing drum seams: Zophar Mills, Wax No. 1340; and Mobil Oil Company, Cerice AA Wax.

6.6 Film thickness measurement. The following instruments for measuring film thickness have been found to be satisfactory: American Instrument Company, Amico-Brenner Magnogages; General Electric Company, G.E. Gage; and Lea Manufacturing Company, Lea Gage.

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Army - MU(EA)

Preparing activity:

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