

MIL-T-12492 (1953)

25 September 1973

SUPPLEMENTING

MIL-T-12492

11 April 1955

## MILITARY SPECIFICATION

### TANKS, CARTRIDGE, POWDER, ROCKET (ALUMINUM)

*This specification has been approved by the Naval Ordnance Systems Command  
Department of the Navy*

#### 1. SCOPE

1.1 Scope. This specification establishes the requirements for aluminum cartridge, powder, and rocket tanks.

1.2 Classification. The tanks shall be of the following types:

Type I	Cartridge tanks for fixed ammunition (cartridges with projectiles)
Type II	Cartridge tanks for cartridges of separated ammunition (without projectiles)
Type III	Powder tanks for propelling charges (powder in bags)
Type IV	Rocket tanks for rocket ammunition.

#### 2. APPLICABLE DOCUMENTS

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

#### SPECIFICATIONS

##### Federal

QQ-Z-325

Zinc Coating, Electrodeposited, Requirements  
for

(FSC 8140)

501 24330 (1)

Militarv

MIL-C-3541	Chemical Films and Chemical Film Materials for Aluminum and Aluminum Alloys
MIL-W 6858	Welding, Resistance, Aluminum, Magnesium, Non-Hardening Steels or Alloys, Nickel Alloys, Heat Resisting Alloys and Titanium Alloys; Spot and Seam
MIL-P-8585	Primer Coating, Zinc Chromate, Low-Moisture-Sensitivity
MIL-W-3604	Welding of Aluminum Alloys, Process for
MIL-E-16663	Enamel, Semi-Gloss (For Metal Surfaces of Ammunition and Ammunition Containers)
MIL-G-81322	Grease, Aircraft, General Purpose Wide Temperature Range

## STANDARDS

Federal

FED-STD-141 Paint, Varnish, Lacquer and Related Materials; Method of Inspection, Sampling and Testing

FED-STD-595 Colors (Requirements for Individual Color Chips (3 x 5 supplements) should be submitted to the Naval Supply Depot, Philadelphia, citing FED-STD-595 together with appropriate chip number as shown therein.)

## Military

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	Marking for Shipment and Storage
MIL-STD-248	Welding and Brazing Procedure and Performance Qualifications Publications

## DRAWINGS

Bureau of Naval Weapons

99085

Load Test for Ends of Tanks

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

## 3. REQUIREMENTS

3.1 General manufacture. Manufacture of all parts shall proceed in accordance with the requirements of contract, order or requisition, appropriate drawings, and this specification.

3.2 Materials. All materials used in the manufacture of these tanks shall conform to the specifications listed herein and to the specifications referred to on respective drawings, unless specific approval in writing, covering a departure therefrom, has been obtained from the Government prior to manufacture or use. When alternate materials or methods of manufacture are specified, the bidders selections shall be stated clearly in the proposal.

3.3 Conformance to drawings. All dimensions shall be accurate within the tolerances specified on the drawings or in the applicable specifications, unless otherwise stated in the contract, order, or requisition.

3.4 Surface. All parts shall be finished as prescribed on applicable drawings and specifications unless otherwise stated in the contract

3.5 Interchangeability. All parts shall be capable of interchangeable assembly without interferences, binding, or misalignment. All parts comprising a permanently joined unit (as by welding) and the unit thus formed shall be capable of interchangeable joining in the assembled unit and assembly.

3.6 Gages. The contractor shall provide whatever production gages are necessary and adequate to ensure complete interchangeability of all parts, and to determine that all dimensions are within the tolerances

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shown on the applicable drawings. If so stipulated in the procurement document, the Government will furnish drawings of pertinent Navy Final Inspection Gages for guidance in design of the contractor's inspection gages. Such procedure shall not serve to relieve the contractor of his responsibility in design and manufacture of other production gages as may be required for the satisfactory fulfillment of contract requirements.

3.7 Top ring. The top ring shall be assembled on the tank with its axis coincident with that of the tank body. The pressure or helical bearing surfaces of the top ring and the top of the cover ring, which serve to secure the cover to the tank, shall be a smooth true helix, with the axis coinciding with the axis of the tank. There shall be no tendency for the outside cylindrical surface of the cover ring to jam or bind with the opposing inside cylindrical surface of the top ring. All coincident axes shall be within tolerances specified on the applicable drawings.

3.8 Gasket and gasket bearing surface. The gasket shall be cemented in the cover with an adhesive cement approved by the Government, and the exposed bearing surface shall be coated with talc or graphite to prevent sticking to the bearing surface of the tank. The gasket bearing surface of the tank shall be formed, turned, or otherwise machined to produce a smooth continuous surface perpendicular to the axis of the tank within tolerances specified on the available drawings. Bearing surfaces shall not injure the gasket during closing and opening of the tank, and shall ensure proper seating of the gasket. The gasket shall provide sealing at closure of the cover. (See 3.15.)

3.9 Locking rings. For tanks fitted with tongue and groove locking rings, the tongues and grooves of the adjacent tanks shall so fit with each other that bearing between neighboring locking rings shall be on top of the tongues or ridges and on the bottom of the grooves. There shall be no tendency for tongues to wedge in grooves, nor shall bearing between the tanks take place on the outer cylindrical surface of the top ring between the top edge and the locking rings.

3.10 Cover ring. The axis of the cover ring shall be perpendicular to the surface of the cover which forms a seat for the gasket and shall be coincident with the axis of the helical bearing surface within tolerances specified on applicable drawings. The cover ring and cover, when in the unlocked position, shall be easily removed from the top ring at any of the positions in which it may be assembled to any tank.

3.11 Cover. The sheet aluminum cover shall be free to turn with respect to the cover ring after the cover has been rolled into the groove in the cover ring. At assembly, a thin continuous coating of rust inhibiting grease, in accordance with MIL-G-81322, shall be applied between all sliding surfaces of the cover.

3.12 Bottom. The axis of the outside cylindrical surface of the bottom shall coincide with axis of the tank body and the top ring within tolerance specified on the applicable drawings. The bottom surface shall be perpendicular to the tank axis and parallel to the top surface of the top ring within tolerances specified on the applicable drawings.

3.13 Interior fittings. The interior fittings shall be true to form and all surfaces and edges shall be smooth and free from projections, sharp edges, rough spots, and similar defects that would tend to damage the contents, interfere with the assembly or loading of the tanks, or injure personnel. All supporting and positioning fittings shall be concentric, and the bottom surface on which the fittings rest shall be perpendicular, within tolerances specified on the applicable drawings, to the axis of the fittings so that the contents will be properly aligned in the tank. Where multiple diaphragms are used, diaphragms shall be parallel and at right angles to the axis of the tank within tolerances specified on the applicable drawings. If an extractor is used in the cartridge tanks, the extractor shall slide freely between the tank body and the cartridge case to ensure easy withdrawal of the cartridge.

3.14 Cleaning, preparation of surfaces, and painting.

3.14.1 Aluminum surfaces. All aluminum surfaces to be painted shall have a chemical film applied by treatments and products in accordance with MIL-C-5541. The chemical films shall be produced by treatments controlled and operated to give a uniform product and shall be continuous and free from breaks, scratches, and other damage affecting the serviceability of the film.

3.14.2 Steel surfaces. Unless otherwise specified in applicable drawings, all steel surfaces shall be zinc plated in accordance with QQ-Z-325, type II, class 2.

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3.14.3 Faying surfaces. All faying surfaces which are not welded shall be coated with zinc chromate primer, MIL-P-8585, color y. Each surface shall be allowed to dry hard before assembly.

3.14.4 Painting. After assembly, the tank and the cover shall be painted on all exterior surfaces with primer, MIL-P-8585, color y, and enamel in accordance with MIL-E-16663, blue gray, color No. 26231 of FED-STD-595, so that the dry film thickness is 1.5 to 2.0 mils. The contacting surfaces between moving parts shall not be painted. (See 3.11.)

3.14.5 Corrosion resistance and paint adhesion. When tested in accordance with 4.6.5 the treated and painted tanks shall withstand exposure to salt spray test as specified in 4.6.5. The paint film shall show no evidence of wrinkling, blistering, cracking, powdering, or flaking in areas adjacent to the scribing, nor shall there be any evidence of corrosion on any other exposed surface of the tanks when tested in accordance with FED-STD-141, method 6061.

3.15 Airtightness. All tanks shall be capable of withstanding the internal air pressure tests of section 4.6.1 and 4.6.2 without evidence of any structural weakness or permanent deformation. Formation of air bubbles shall be sufficient evidence of leaks serious enough to reject the tank or cover.

3.16 Serviceability. While weight loaded and tested in accordance with 4.6.3, the covers of the tanks shall be easily tightened, loosened, applied, or removed, and the contents shall be easily removed from the tank. After removal of the loads, the tanks' top rings and bottoms shall show no permanent deformation.

3.17 Drop test. Upon completion of drop tests in accordance with 4.6.4, the airtightness (3.15) and serviceability (3.16) requirements shall apply.

3.18 Marking. All marking or stamping on the tanks shall be as shown on the applicable drawings. Stamped or embossed lettering on the cover, body, and interior fittings of the tank shall be legible after the tank has been completely finished.

3.19 Welding. All surfaces to be welded shall be thoroughly cleaned and shall be free from grease, paint, or other foreign substances. All aluminum welding shall conform to the requirements specified on the applicable drawings, MIL-W-6858, MIL-W-8604, and MIL-STD-248.

3.19.1 Butt welding. All aluminum welds of the butt type shall be completed from the outside of the tanks, and no backing strip shall be used. Welds shall be preformed in a manner that will give a slight but distinct continuous smooth bead or bulge on the inside of the tanks and will fill all crevices completely at the seams. The bead of filler metal on the outside shall be clean, free from porosity, smooth, and of neat appearance. After completion of welds, all traces of flux shall be thoroughly hammered or rolled so that the welds are smooth. Hammering or rolling shall be performed in a manner that will not cause incipient cracking in the welds during this operation. In no case shall a weld be reduced to a thickness less than that of the thinnest member in the joint or shall rolling or hammering be applied to a defective weld. Other methods of butt welding may be used if approved by the Government.

3.20 Workmanship. Workmanship shall be that required by best commercial practices consistent with quantity production of analogous parts, maintaining the dimensions, finishes, and tolerances specified herein and on the applicable drawings and specifications. All components shall be sound and free from defects which would deleteriously affect the strength and performance of the tank, and all joints and seams shall be tight and sound. All surfaces shall be free from rough spots, sharp edges and burrs, protrusions, dents, or similar defects which might interfere with the assembly of the tank components and loading of the tanks, interfere with stacking, cause injury to personnel, or damage contents during loading, handling, and shipping. The appearance of the tank shall be indicative of first class workmanship.

3.21 Preproduction sample. Unless otherwise specified in the contract or order, preproduction samples of the tanks shall be manufactured using the methods and procedures proposed for production. The sample shall be tested as specified in section 4 herein for the purpose of determining that, prior to production, the supplier's production methods are capable of yielding items that comply with the technical requirements of this specification and the contract or order.

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#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. 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 this specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

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

- (1) Preproduction inspection (see 4.4)
- (2) Quality conformance inspection (see 4.5).

#### 4.3 Sampling.

4.3.1 Lot size. The term "lot" shall mean "inspection lot," i.e., a collection of units of product submitted by a supplier for Government inspection. Sampling plans and procedures when applicable in the determination of the acceptability of the lots or products procured by the Government, unless otherwise specified, shall conform to the provisions of MIL-STD-105. Unless otherwise specified in the contract or order, the production lot shall consist of 1000 complete tanks plus those required for test purposes. Unless otherwise specified in the contract or order, all tanks submitted for inspection purposes shall be provided at the expense of the supplier.

4.3.2 Preproduction sample. A preproduction sample of 10 complete tanks, five painted and five unpainted, shall be submitted to a facility designated by the procuring activity for inspection and testing in accordance with table I to determine conformance to the technical requirements of the contract. Further production of the tank by the supplier, prior to approval of the preproduction sample, shall be at the supplier's risk.

4.3.3 Quality conformance inspection sampling. Samples shall be selected and inspected in accordance with table I to determine acceptability of the tank.



Table I  
PREPRODUCTION AND QUALITY CONFORMANCE INSPECTION AND SAMPLING

Test examination	Requirement para	Method para	Preproduction lot		Production lot		
			Number of units to be inspected	Number of defects allowed	Number of units to be inspected	Number of defects allowed	
						Accept	Reject
Airtightness	3.15	4.6.1	10	0	1		
Airtightness (when stacked)	3.15	4.6.2	10	0	1	15	0
Serviceability	3.16	4.6.3	10	0	1		
Drop test	3.17	4.6.4	10	0	1		
Paint test Paint brittleness, toughness, and tendency to ribbon	3.14.5	4.6.5	5	0	1	5 tanks from 10 lots	0
Salt spray	3.14.5	4.6.5	2	0	1	2	0
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4.4 Preproduction inspection. Preproduction inspection shall consist of all the examinations and tests as specified in table I.

4.5 Quality conformance inspection. Production quality conformance inspection shall consist of all the examinations and tests as specified in table I.

#### 4.6 Tests procedure (first article).

4.6.1 Airtightness. Each cover with its gasket shall be assembled with a master tank or its equivalent, and each tank shall be assembled with a master cover and gasket or their equivalent. The test tanks thus assembled shall be subjected to an internal air pressure of 5 pounds per square inch, for a minimum of 30 seconds while submerged in water containing one of the following wetting agents: Tween 20, Tween 40, Renex, Duponal G, or alkylsulfonate, used at a concentration of 1 to 2 percent. The master tank and master cover shall be supplied with means for applying air under pressure to the cover or tank to be tested. The tank shall be thoroughly examined for leaks. A tank which does not meet the requirements of 3.15 shall be considered defective.

4.6.2 Airtightness (when stacked). Each tank shall be assembled with a master cover and gasket, submerged, and weight loaded as indicated on Drawing 99085. Under these conditions the same requirements for airtightness shall apply as specified in 4.6.1.

4.6.3 Serviceability (when stacked). The same tanks, tested in accordance with 4.6.2, shall then be loaded with dummy ammunition, or as otherwise stated by the Government, and assembled with their own covers and weight loaded as shown on Drawing 99085. Dummy ammunition, if available, will be furnished to the contractor for this test and the test of 4.6.4 on receipt of a written request from the contractor. A tank which does not meet the requirements of 3.16 shall be considered defective.

4.6.4 Drop test. Five of the tanks tested in accordance with 4.6.1 shall then be assembled with their own covers and loaded with dummy ammunition or the equivalent to simulate the service load. Each of these inert loaded tanks shall be dropped a distance of 3 feet, four times, to a concrete or rigid steel surface so as to land initially on the bottom edge, top edge, top and bottom edges simultaneously, and the top and bottom edge simultaneously 180° from preceding position.

Each tank shall then be placed in a vertical position, top uppermost, and toppled over so as to land on a piece of lumber having a cross-section of 4 by 4 inches and to strike the tank approximately 10 inches from top. Upon completion of above drop tests, the airtightness and serviceability shall be assured by repeating the tests as specified in 4.6.2 and 4.6.3.

4.6.5 Paint test. Prior to performing the tests as specified in 4.6.1, 4.6.2, and 4.6.3, five painted, but otherwise untested tanks, shall be tested for paint film brittleness, toughness, and tendency to ribbon in accordance with FED-STD-141, method 6304.1, Knife Test. Two of the above tanks shall also be subjected to a 150-hour salt spray test in accordance with FED-STD-141, method 6061. Tanks which do not meet the requirements of 3.14.5 shall be considered defective.

4.6.6 Special tests. When specifically requested by the Government, the contractor shall furnish 10 additional tanks from the initial lot of production for special tests. In such cases the contractor shall ship these tanks to the naval activity specifically designated by the Government.

#### 4.7 Test procedures (production lots).

4.7.1 Material test. The inspector shall withdraw such samples of all ingredients, materials, and components entering into the completed tanks as may be required to determine complete compliance with requirements of appropriate drawings and specifications. The contractor shall furnish the inspector with such data as the inspector may require as to the lot or order number, manufacturer, test results, inspections, etc., of all parts entering into the completed tanks.

4.7.2 Acceptance tests. Each production lot shall be given the following acceptance tests. These tests shall be at the contractor's expense and shall be supervised by the inspector. Failure of one or more tanks shall constitute the basis for rejection of a lot.

4.7.3 Airtightness. After the contractor has completed airtightness test on a production lot, the inspector shall select a sample of 15 tanks for this test. Each cover with its gasket shall be assembled with a master cover and gasket or their equivalent. The master cover and master tank shall be fitted with a means for applying and maintaining air under pressure. These assemblies shall each be subjected to an internal air pressure of 5 pounds per square inch for a minimum

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of 30 seconds while submerged in water containing a wetting agent as specified in 4.6.1 and weight loaded in accordance with Drawing 99085. A tank which does not meet the requirements of 3.15 shall be considered defective.

4.7.4 Paint. Five painted tanks of each 10 lots shall be subjected to paint test as specified in 4.6.5. The five tanks should be selected at random from the 10 lots. Tanks which do not meet the requirements of 3.14.5 shall be considered defective.

## 5. PREPARATION FOR DELIVERY

### 5.1 Preservation and packaging.

#### 5.1.1 Level C.

5.1.1.1 Interior fittings packaging. Loose interior fittings may be separately packaged in lots as convenient for shipping, or may be contained within the tanks. Fittings packaged in a tank shall not exceed the number intended for use with that tank.

### 5.2 Packing.

#### 5.2.1 Level C.

5.2.1.1 Unit packs. The tanks with covers attached, but not tightened in place so as to excessively compress the gaskets, shall be packed in commercial containers or palletized in such a way as to be acceptable by a common carrier for safe transportation at the lowest rate to the point of delivery. The contractor shall replace immediately, and at his own expense, any tanks or parts thereof damaged in shipment. The proposed method of packing shall be submitted in detail to the Naval Ordnance Systems Command, Engineering Support Division, Packaging and Handling Branch, for approval prior to the initial shipment.

### 5.3 Markings.

5.3.1 Special markings. Any special markings required by the contract or order shall be provided.

5.3.2 Normal markings. In addition to marking required by the contract or order, each shipping container or pallet load shall be marked in accordance with the requirements of MIL-STD-129.

6.1 Intermed us these cartage, powder, and rocket tanks are designed to protect the contents during handling, shipping, and storage.

6.2 Ordering data. Procurement documents should specify the following:

- (a) Title, number, and date of this specification
- (b) Type required (see 1.2).

6.3 Information with bids. The contractor shall include a statement that there are no exceptions proposed to any specification requirement or a statement in detail, with illustrative drawings if necessary, of all proposed exceptions to the specification requirements.

6.4 Suggested contractual features to be included in the contract. The guaranty of the contract shall be in accordance with OP 400. The right is reserved by the Government to subject any tank to tests and requirements after delivery but before expiration of the guaranty period.

Preparing activity.  
Navy - OS  
(Project No. 8140-N028)

SPECIFICATION ANALYSIS SHEET		Form Approved Budget Bureau No 22-R255
<b>INSTRUCTIONS</b> This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.		
<b>SPECIFICATION</b> MIL-T-18492A (OS), Tanks, Cartridge, Powder, Rocket (Aluminum)		
<b>ORGANIZATION</b>		
CITY AND STATE	CONTRACT NUMBER	
<b>MATERIAL PROCURED UNDER A</b> <input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT		
<b>1 HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?</b> A. GIVE PARAGRAPH NUMBER AND WORDING		
<b>B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES</b>		
<b>2 COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID</b>		
<b>3 IS THE SPECIFICATION RESTRICTIVE?</b> <input type="checkbox"/> YES <input type="checkbox"/> NO (If "yes" in what way?)		
<b>4 REMARKS</b> (Attach any pertinent data which may be of aid in preparing specifications. If necessary, attach to form and place both in an envelope addressed to preparing activity.)		
<b>SUBMITTED BY</b> (Printed or typed name and activity - Optional)		<b>DATE</b>

DD FORM 1-126

REPLACES EDITION OF 1-64 WHICH MAY BE USED