

MIL-C-2440E (AR)  
 29 October 1979  
 SUPERSEDING  
 MIL-C-2440D (PA)  
 9 October 1969

MILITARY SPECIFICATION  
 CONTAINERS, METAL, FOR PROPELLING CHARGE

This specification is approved for use by the US Army Armament Research and Development Command, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope.- This specification covers one type of metal container used for packing propelling charges for separate loaded artillery ammunition.

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

FEDERAL

TT-C-490 -Cleaning and Preparation of Ferrous and Zinc Coated Surfaces for Organic Protective Coatings

MILITARY

MIL-A-2550 -Ammunition and Special Weapons General Specification For  
 MIL-W-12332 -Welding Resistance, Spot, Seam and Production, for Fabricating Assemblies of Low-Carbon Steel  
 MIL-I-45607 -Inspection Equipment, Supply and Maintenance of  
 MIL-A-48078 -Ammunition, Standard Quality Assurance Provisions, General Specification For

FSC: 8140

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, US Army Armament Research and Development Command, Attn. DRDAR-QA, Dover, New Jersey 07801 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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## STANDARDS

## MILITARY

MIL-STD-105	-Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-171	-Finishing of Metal and Wood Surfaces
MIL-STD-1188	-Commercial Packaging of Supplies and Equipment
MIL-STD-1261	-Welding Procedures for Constructional Steel

## DRAWINGS (See 6.2)

## US ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND (ARRADCOM)

7548965	-Semi-Auto Test Machine
8880527	-Container, Metal, Propelling Charge, M13A2
8880528	-Container, Metal, Propelling Charge, M14A2
8880529	-Container, Metal, Propelling Charge, M16A3
8880530	-Container, Metal, Propelling Charge, M18A2
8880531	-Container, Metal, Propelling Charge, M19A2
8880532	-Container, Metal, Propelling Charge, M460A2
8880533	-Container, Metal, Propelling Charge, M10A4
8880534	-Container, Metal, Propelling Charge, M20A3
8880535	-Container, Metal, Propelling Charge, M349A1
8880536	-Container, Metal, Propelling Charge, M350A1
8880541	-Rim
8880543	-Cover Assembly
8880552	-Plug
9234357	-Container, Metal, Propelling Charge, PA37A1
9271646	-Container, Ammunition, Metal: PA64
9275845	-Container, Metal Prop Charge: PA66
9278205	-Container, Ammunition, Metal: PA68
9293460	-Container, Metal Prop Charge: PA75
9332423	-Container, Ammunition, Metal: PA86

## PUBLICATIONS

## US ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND (ARRADCOM)

<u>List</u>	<u>Container Model No.</u>
ET-8880527	M13A2
ET-8880528	M14A2
ET-8880529	M16A3
ET-8880530	M18A2
ET-8880531	M19A2

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<u>List</u>	<u>Container Model No.</u>
ET-8880532	M460A2
ET-8880533	M10A4
ET-8880534	M20A3
ET-8880535	M349A1
ET-8880536	M350A1
ET-9234357	PA37A1
ET-9271646	PA64
ET-9275845	PA66
ET-9278205	PA68
ET-9293460	PA75
ET-9332423	PA86

(Copies of specifications, standards, drawings and publications required by contractors 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 document forms a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids shall apply.

AMERICAN SOCIETY FOR TESTING MATERIALS

ASTM-E8

-Tension Testing of Metallic Materials

(Copies may be purchased directly from the American Society for Testing Material, 1916 Race Street, Philadelphia, PA 19103)

3. REQUIREMENTS

3.1 Materials.- Materials and parts shall be in accordance with applicable drawings and specifications.

3.2 Containers.- The containers shall comply with all requirements specified on drawings (dwgs) 8880527 to 8880536, 9234357, 9271646, 9275845, 9278205, 9293460 and 9332423 inclusive and with all requirements specified in applicable specifications.

3.3 Welding.- The welding shall comply with the requirements of MIL-W-12332 or MIL-STD-1261.

3.3.1 Tensile strength.- The tensile strength of the longitudinal body weld shall not be less than 65 percent of the tensile strength of body material, when tested as specified in 4.5.1.

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3.4 Cover assembly.— Upon assembly of the body and cover, the arms of the completed clamping spider in the optimum clamping position shall freely engage in the slot.

3.4.1 Upon application of a torque of 250 ± 25 inch pounds to the cover when assembled to the body, there shall be no damage to the cover assembly or rim.

3.5 Painted surface.— The painted exterior surface of the container shall comply with the requirements of TT-C-490 except that the film thickness, and salt spray test requirements of TT-C-490 shall not apply to the interior surfaces and welded spots and sharp corners of the exterior surface of the containers.

3.6 Air pressure.— Each container body and each cover assembly, before painting shall withstand the internal air pressure test, without leakage, when tested as specified in 4.5.3.

3.6.1. Method one.— The container body and cover assembly must withstand an internal air pressure of three pounds per square inch (P.S.I.) for 15 seconds, without leakage occurring.

3.6.2 Method two.— The container body and cover assembly must withstand an internal air pressure of three PSI for 5 seconds under water, without leakage occurring.

3.6.3 Method three.— The container body and cover assembly must withstand an internal air pressure of three PSI for 5 seconds in accordance with dwg. 7548965, without leakage occurring.

3.7 First article inspection.— The specification makes provision for first article inspection. Requirements for the submission of first article samples by the contractor shall be as specified in the contract.

3.8 Workmanship.

3.8.1 Containers.— The containers shall be regular, smooth, and free from wrinkles, pin holes, cracks, rough spots, sharp edges, and any other defect that might affect the serviceability, durability, safety and appearance of the container.

3.8.2 Paint coating.— The paint coating shall be applied and shall comply as instructed in MIL-STD-171.

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3.8.3 Parts.- All parts shall be free of chips, dirt, grease, rust and foreign material. The cleaning method used shall not be injurious to any of the parts nor shall any of the parts be contaminated by the cleaning agents used.

#### 4. QUALITY ASSURANCE PROVISIONS.

4.1 Responsibility for inspection and standard quality assurance provisions.- Unless otherwise specified herein or in the contract, the provisions of MIL-A-48078 shall apply and are hereby made a part of this detail specification.

4.2 Classification of inspections.- The following types of inspection shall be conducted on this item:

- a. First article inspection
- b. Quality conformance inspection

#### 4.3 First article inspection.

4.3.1 Submission.- The contractor shall submit a first article sample as designated by the Contracting Officer for evaluation in accordance with provisions of 4.3.2. The first article sample shall consist of five (5) assemblies painted, 5 assemblies unpainted and 5 each of every component.

4.3.2 Inspections to be performed.- See MIL-A-48078.

4.3.3 Rejection.- See MIL-A-48078.

#### 4.4 Quality conformance inspection.

4.4.1 Inspection lot formation.- Inspection lots shall comply with the lot formation provision of MIL-A-48078.

4.4.2 Examination.- Unless otherwise specified in the Classification of Defects and Test tables, sampling plans and procedures for major and minor defects shall be in accordance with MIL-STD-105, Inspection Level II (see MIL-A-48078).

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**CLASSIFICATION OF DEFECTS & TESTS**

PARAGRAPH	TITLE	SHEET 1 OF 1		NO. OF SAMPLE UNITS	EXAMINATION OR TEST	AQL OR 100%	REQUIREMENT PARAGRAPH	DRAWING NUMBER
								88 80537
CATEGORY								NEXT HIGHER ASSEMBLY
4.4.2.1	Body Assembly, prior to painting							
<b>CRITICAL</b>	None defined							
<u>Major</u> 101.	Any weld of the ring, rim, or bottom to the body that is incomplete or inadequate	0.40%	3.1					Visual Manual
102.	Location of rim relative to body end	0.40%	3.1					Gage Gage
103.	Outside diameter, maximum (max.)	0.40%	3.1					
<u>MINOR</u> 201.	Location of rings	0.65%	3.1					Gage
202.	Drain hole in rim or ring missing	0.65%	3.1					Visual
203.	Evidence of poor workmanship	0.65%	3.8					Visual

NOTES:

DRDAR-QA Form 160 Jul 77 Replaces SARPA-QA Form 2567 Feb 74 Which is Obsolete

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## CLASSIFICATION OF DEFECTS &amp; TESTS

PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	SHEET 1 OF 1		DRAWING NUMBER
				AQL OR 100%	REQUIREMENT PARAGRAPH	
4.4.2.2	Plug					8880552
CATEGORY						NEXT HIGHER ASSEMBLY
						PARAGRAPH REFERENCE / INSPECTION METHOD
<u>CRITICAL</u>	None Defined.					
<u>MAJOR</u>	Major diameter of threads			0.40%	3.1	Gage
101.	Pitch diameter of threads			0.40%	3.1	Gage
102.						
<u>MINOR</u>	Total length			0.65%	3.1	Gage
201.	Distance slot end to shoulder			0.65%	3.1	Gage
202.	Distance from thread to shoulder			0.65%	3.1	Gage
203.	Width of slot			0.65%	3.1	Gage
204.	Depth of slot			0.65%	3.1	Gage
205.	Diameter of plug			0.65%	3.1	Gage
206.	Diameter of knob of plug			0.65%	3.1	Gage
207.	Finish			0.65%	3.1	Gage
208.	Evidence of poor workmanship			0.65%	3.1	Gage
209.				0.65%	3.8	Visual
NOTES:						

DRDAR-QA Form 160 Jul 77 Replaces SARPA-QA Form 2567 Feb 74 Which is Obsolete

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**CLASSIFICATION OF DEFECTS & TESTS**

PARAGRAPH	TITLE	SHEET 1 OF 1		NO. OF SAMPLE UNITS	EXAMINATION OR TEST	AQL OR 100%	REQUIREMENT PARAGRAPH	DRAWING NUMBER 8880536 to 8880536, 9271646, 9275845, 9278205  9293460 or 9332423 as applicable	PARAGRAPH REFERENCE / INSPECTION METHOD
4.4.2.3	Assemblies								
<u>CRITICAL</u>									
MAJOR									
101.	None defined.								
102.	Inside diameter, minimum (min.)	0.40%	3.1					Gage	
103.	Inside depth, min. Total length, max.	0.40%	3.1					Gage	
MINOR									
201.	Protective coating damaged, bare spots exposing bare metal render the assembly defective	0.65%	3.1					Visual	
202.	Marking misleading or unidentifiable	0.65%	3.1					Visual	
203.	Evidence of poor workmanship	0.65%	3.8					Visual	
NOTES:									

DRDAR-QA Form 160 Jul 77 Replaces SARPA-QA Form 2567 Feb 74 Which is Obsolete



**CLASSIFICATION OF DEFECTS & TESTS** MIL-C-2440E (AR)

PARAGRAPH	TITLE	SHEET 1 OF 1		NO. OF SAMPLE UNITS	EXAMINATION OR TEST	AQL OR 100%	REQUIREMENT PARAGRAPH	DRAWING NUMBER	PARAGRAPH REFERENCE / INSPECTION METHOD
		NEXT HIGHER ASSEMBLY							
4.4.2.4	Rim							8880 541	
<b>CATEGORY</b>									
<u>CRITICAL</u>	None defined								
<u>MAJOR</u>	Inside diameter of bayonet circle, max.	0.40%	3.1					Gage	
101.	Location of recesses (slots)	0.40%	3.1					Gage	
102.	Height of recess	0.40%	3.1					Gage	
103.	Width of recess	0.40%	3.1					Gage	
104.									
<u>MINOR</u>	Evidence of poor workmanship	0.65%	3.8					Visual	
201.									
<b>NOTES:</b>									

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4.4.3 Testing.

4.4.3.1 Tensile strength (see 3.3 and dwg. 8880538)- Major defect.- Five (5) bodies shall be randomly selected for this test. Four specimens, approximately equally spaced along the axis, shall be taken from each body at right angles to the weld. If one or more specimens fail to comply with the requirement, that sample shall be classed defective. If two or more samples are classed defective, the lot shall be rejected.

4.4.3.2 Cover assembly (see 3.4)- Major defect.- Thirty (30) of the cover assemblies shall be selected for this test. If any of the cover assemblies fail to comply with the requirement, the lot shall be rejected.

4.4.3.3 Air pressure (see 3.6)- Major defect.- The container bodies and cover assemblies shall be checked 100 percent. If any container body or cover assembly fails to comply with the requirement, the container body or cover assembly, as applicable, shall be rejected.

4.4.3.4 Weld of stud to cover (see dwg. 8880543)- Major defect.- Ten (10) cover assemblies shall be selected for this test. If two or more cover assemblies fail to comply with the applicable requirement, the lot shall be rejected. If only one defect is found, a second sample of 20 cover assemblies shall be tested. If a combined number of defectives in both the first and second sample is two or more, the lot shall be rejected.

4.4.3.5 Crimp of handle to sleeve (see 8880545)- Major defect.- The assemblies selected in 4.4.3.4 shall be subjected to this test. If any sample fails to comply with the requirement, the lot shall be rejected.

4.4.3.6 Weld of rim to body (see dwg. 8880537)- Major defect.- Ten (10) body assemblies shall be selected for this test. If any sample fails to comply with the requirements, the lot shall be rejected.

4.4.3.7 Weld of nut to spider (see dwg. 8880554)- Major defect.- Ten (10) assemblies shall be selected for this test. If two or more cover assemblies fail to comply with the applicable requirement, the lot shall be rejected. If only one defect is found, a second sample of twenty (20) assemblies shall be tested. If a combined number of defectives in both the first and second sample is two or more, the lot shall be rejected.

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4.4.3.8 Crimp of nut to spider (see dwg. 8880554)- Major defect.- Ten (10) assemblies shall be selected for this test. If two or more assemblies fail to comply with the applicable requirement, the lot shall be rejected. If only one defect is found, a second sample of 20 assemblies shall be tested. If a combined number of defectives in both the first and second sample is two or more, the lot shall be rejected.

4.4.4 Inspection equipment.- The inspection equipment required to perform the examinations and tests prescribed herein is described in the 'Paragraph Reference/Inspection Method' columns in the tables starting with paragraph 4.4.2.1. The contractor shall submit for approval inspection equipment designs in accordance with the terms of the contract. See Section 6 of MIL-A-48078 and 6.3 herein.

#### 4.5 Test methods and procedures.

4.5.1 Tensile strength.- This test shall be performed in accordance with ASTM-E8.

4.5.2 Cover assembly.- Assemble the body and cover in the optimum clamping position and determine compliance with 3.4. Then, apply the required torque and determine compliance with 3.4.1.

4.5.3 Air pressure test.- The cover assembly and container body shall be subjected, before painting, to the internal air pressure specified in 3.6. Test the container body by applying pressure to the container body after assembling it to a master cover and gasket or equivalent. Test the cover assembly by applying pressure to the cover assembly without gasket after assembling it to a master container equipped with a gasket, or its equivalent. The master cover or equivalent and the master container or equivalent shall be provided with satisfactory means for applying and maintaining the pressure during the test and for showing evidence of any leakage.

4.5.4 Weld of stud to cover.- The test shall be determined on a testing machine complying with ASTM-E8. A load of 2,000 pounds minimum shall be applied.

4.5.5 Crimp of handle to sleeve.- The test shall be determined on a testing machine complying with ASTM-E8. A load of 2,000 pounds minimum shall be applied.

4.5.6 Weld of rim to body.- The test shall be determined on a testing machine complying with ASTM-E8.

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4.5.7 Weld of nut to spider.— The test shall be determined on a testing machine complying with ASTM-E8.

4.5.8 Crimp of nut to spider.— The test shall be determined on a testing machine complying with ASTM-E8.

5. PACKAGING.

5.1 Packaging level- commercial.— Propelling charge containers shall be prepared for shipment in accordance with MIL-STD-1188.

5.2 Marking.— Marking shall comply with MIL-STD-1188 and the following additional instructions. No shipping marking shall be placed directly on the containers. Commercial shipping tags attached with wire shall be used unless otherwise specified. The following information shall be shown: Item name and model number, part number and revision, contract number, lot number and date, name and address of manufacturer. If containers are bundled, boxed or palletized, the gross weight and quantity shall be included. The above information may be placed on pallets or boxes by labeling or stenciling.

6. NOTES.

6.1 Ordering data.— See MIL-A-48078.

6.2 Drawings.— Drawings listed in Section 2 of this specification under the heading US Army Armament Research and Development Command (ARRADCOM) may also include drawings prepared by, and identified as, Edgewood Arsenal, Frankford Arsenal, Rock Island Arsenal or Picatinny Arsenal drawings. Technical data originally prepared by these activities is now under the cognizance of ARRADCOM.

6.3 Inspection equipment.— The contractor shall design inspection equipment as required by the inspection Equipment Lists (EL) referenced on the applicable ET in accordance with the instructions of paragraphs 6.3.1 through 6.3.5. These code numbers are used to correlate the characteristics cited on Equipment Lists with the inspection tested in this specification. They should also be cited as references on drawings of equipment designs submitted by the contractor (see.6.3.5).

6.3.1 Inspection equipment lists (EL).— Inspection equipment lists indicate the availability of inspection equipment designs by showing in the "number" column of the list of inspection equipment (Form SMUPA 1010) the numbers of drawings or Federal Stock Numbers of existing equipment designs, or codes as

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indicated in paragraph 6.3.2. Design action required of the contractor is described in paragraphs 6.3.3 and 6.3.4. The contractor will be required to prepare detailed drawings in accordance with 6.3.4 for all the equipment coded as "Contractor Design" in the number column. These contractor designs must be approved by the Government prior to fabrication or procuring of the equipment. Designs shall be submitted for approval as specified in 6.3.5.

6.3.2 Inspection equipment list codes.- The inspection equipment as defined in 6.3.3 and 6.3.4 will be designated in the EL by the following codes:

- CD - Contractor design on controlled contractor format and/or commercial equipment.
- MU - Army design, mandatory for use.

6.3.3 Army designs.- Army designs are reflected on detailed drawings which completely depict all the information necessary for the fabrication of the item of inspection equipment. The contractor need provide no design when an Army design is listed for an item of inspection equipment. Army designs fall into two basic classifications; mandatory (designated "MU") and non-mandatory (indicated by drawing or Federal Stock Number". When an inspection equipment list references mandatory Army designs, the contractor shall comply with, and use these designs accordingly. The contractor may, however, in connection with non-mandatory designs, and with the approval of the Government design alternate inspection equipment or use comparable commercial equipment to facilitate his operations. Such contractor prepared designs or commercial equipment selections must be approved by the Government prior to fabrication or procuring of the equipment. Designs shall be submitted for approval as specified in 6.3.5.

6.3.4 Contractor designs.- Contractor designs are designs of inspection equipment for which the Government has assigned design responsibility to the contractor. Contractor designs shall be supported by detailed drawings which depict all information necessary to completely fabricate, calibrate and operate an item of inspection equipment. This requires that the necessary views, dimensions, materials, finish, notes, operating and calibration instructions be properly depicted in accordance with approved practices to the extent that further calculation or clarification will not be required. Unless otherwise specified, contractor designs may be developed on the format the contractor normally employs in his equipment design procedure provided such format reflects the detail and information specified above,

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subject to the following controls: All submitted contractor design shall conform to MIL-D-1000, Category E, Form 2. Legibility and reproducibility shall permit conventional making of clearly understandable, high contrast reproductions. Contractors shall submit three copies of final design as a flat set. Designs shall be submitted for approval as specified in 6.3.5.

6.3.5 Submission of inspection equipment for design approvals.- Submit designs as required to: Commander, US Army Armament Research and Development Command, ATTN: DRDAR-QAR-I, Dover, New Jersey 07801.

Custodian:  
Army-AR

Preparing Activity:  
Army-AR

Project Number: 8140-A534

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## APPENDIX

## QUALITY ASSURANCE PROVISIONS FOR RENOVATION

10. SCOPE

10.1 Scope.- This appendix provides the Quality Assurance Provisions for the renovation of Containers, Metal, for Propelling Charge.

20. RENOVATION

20.1 Dents.- Dents shall be removed as required to allow compliance with 30.1.

20.2 Cleaning.- All paint and rust shall be removed.

20.3 Rims and/or Rings.- Rim and/or rings shall be straightened and welded by fillet welding where required.

20.4 Seams.- Seams shall be welded where required.

20.5 Refinish.- The parts shall be finished in accordance with the applicable body or cover drawing.

20.6 Gaskets.- The gaskets on the cover and in the test plug shall be replaced with new gaskets.

30. REQUIREMENTS

30.1 Dents.- Dents which do not preclude good stenciling and/or do not affect the function of the container or hinder proper packing of the charge shall be acceptable.

30.2 Protective coating.- The protective coating shall not be damaged or contain bare spots exposing base metal.

30.3 Welds.- Welds shall be in conformance with good commercial practices.

30.4 Air pressure test of body (see 3.6).

30.5 Workmanship.- All parts shall be free of chips, burrs, dirt, grease, rust and foreign material. The cleaning method used shall not be injurious to any of the parts nor shall any of the parts be contaminated by the cleaning agents used.

40. INSPECTION

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40.1 Examination.- All defects shall be classified as major and inspected on an individual basis using an AQL of 0.40 percent.

- |        |                              |                   |
|--------|------------------------------|-------------------|
| 40.1.1 | Body prior to painting       |                   |
| 1.     | Workmanship (see 30.5)       | Visual            |
| 2.     | Dents (see 30.1)             | Visual            |
| 3.     | Rim or rings weld (see 30.3) | Visual            |
| 40.1.2 | Body after painting          |                   |
| 1.     | Primer (see 30.2)            | Visual            |
| 2.     | Paint (see 30.2)             | Visual            |
| 3.     | Air pressure (see 30.4)      | Test, 100 percent |
| 40.1.3 | Cover prior to painting      |                   |
| 1.     | Workmanship (see 30.5)       | Visual            |
| 2.     | Dents (see 30.1)             | Visual            |
| 40.1.4 | Cover after painting         |                   |
| 1.     | Primer (see 30.2)            | Visual            |
| 2.     | Paint (see 30.2)             | Visual            |
| 3.     | Gasket missing or improper   | Visual            |



