

INCH-POUND
MIL-S-50312 (AR)
w/AMENDMENT 2
28 May 2012

SUPERSEDING
MIL-S-50312 (AR)
AMENDMENT 1
15 FEBRUARY 1991

MILITARY SPECIFICATION

SHIPPING AND STORAGE CONTAINER, CARTRIDGE, 30 MILLIMETER - XM592

1. SCOPE

1.1 This specification covers one model steel container for shipping and storing ammunition.

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

Federal

TT-C-00490 - Cleaning Methods and Pretreatment of Ferrous Surfaces for Organic Coatings

Comments, suggestions, or questions on this document should be addressed to: Commander, U.S. Army ARDEC, ATTN: RDAR-QES-E, Picatinny Arsenal, New Jersey 07806-5000 or e-mailed to ardecstdzn@conus.army.mil. Since contact information can change, you may want to verify the currency of this information using ASSIST Online database at <https://assist.dla.mil>.

AMSC N/A

FSC 8140

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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Military

MIL-L-19896 - Labels and Label Tape, Pressure Sensitive
Adhesive, Paper, Water, Resistant

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM B117 - Standard Practice for Opening Salt (Fog)
Apparatus
ASTM D1654 - Standard Test Method for Evaluation of Painted
or Coated Specimens Subjected to Corrosive
Environments

STANDARDS

Federal

Federal Test Method Standard No. 141 – Paint, Varnish, Lacquer, and
Related Materials; Methods of Inspection, Sampling and Testing

Military

MIL-STD-105 - Sampling Procedures and Tables for Inspection by
Attributes
MIL-STD-109 - Quality Assurance Terms and Definitions
MIL-STD-406 - Visual Inspection Terms and Definitions and Steel
Boxes Used in Small Arms Ammunition
Packaging
MIL-STD- 414 - Sampling Procedures and Tables for Inspection by
Variables for Percent Defectives
MIL-STD-1235 - Single and Multilevel Continuous Sampling
Procedures and Tables for Inspection by Attributes

(Copies of these documents are available online at <https://assist.dla.mil/quicksearch/> or
from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D,
Philadelphia, PA 19111-5094.)

DRAWINGS

Munitions Command

F10542565 - Shipping and Storage Container, Cartridge,
30MM: M592
12998172 - Coatings, High Performance (For Ammunition
Containers)
F10542566 - Body Assembly
F10542569 - Cover Assembly

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IEL10542565 - Shipping and Storage Container, Cartridge,
30MM: M592

(Copies of these drawings may be requested online at pica.drawing.request@conus.army.mil or from U.S. Army ARDEC, ATTN: RDAR-AIS-TD, Picatinny Arsenal, NJ 07806-5000.)

3. REQUIREMENTS

3.1 General.- The container shall comply with the requirements of Drawing F10542565, referenced specification, and other requirements specified herein.

3.2 Protective coating.

3.2.1 Phosphate.- The cleaning method and pretreatment process used shall comply with the requirements of Drawings F10542566 and F10542569. The phosphate coating shall comply with the requirements of TT-C-00490 for appearance and minimum weight, as applicable to the type of phosphate used.

3.2.2 Paint.- The paint coating shall comply with the requirements of Drawings F10542566 and F10542569. In addition, the coating shall be smooth, unbroken and free of blisters, runs, thin spots and foreign matter. Adhesion of the paint to the pretreated surfaces shall comply with applicable requirements of TT-C-00490.

3.2.3 Corrosion resistance.- The exterior surface of the box shall show no visible evidence of paint blistering, creepage (loss of adhesion), or corrosion of base metal in excess of 1/8 inch on either side of the score marks, or rusting of parts of the hardware subject to pressure of abrasion in normal use or exceeding the standards permissible in MIL-STD-406, or more than five (5) scattered blisters or corrosion spots having individual diameters greater than 3/16" in diameter in any 4 X 12 inch flat area, excluding score marks, after exposure to a 5% solution of salt spray for 96 hours.

3.3 Concavity and convexity.

3.3.1 Cover assembly.- The cover assembly shall meet the requirements of Dwg. F10542569.

3.3.2 Body assembly.- The top edges of the body assembly shall meet the requirements of Dwg. F10542566.

3.4 Gasket compression.- The gasket compression of the container shall be as specified by Dwg. F12542565.

3.5 Airtightness of container assembly.- The assembled container shall withstand without leakage, an air pressure differential of three pounds per square inch (psi).

3.6 Functioning.

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3.6.1 Cover assembly. - The locking hardware shall be operable manually. The cover assembly shall be removable manually without the use of undue force. The gasket shall remain secure in the correct position within the cover upon removal of the cover assembly. The gasket shall not stick to or be cut or split by contact against the top edge of the body assembly.

3.6.2 Hasp and latch. - Mating parts of the body hasp and the latches shall engage without requiring deformation of any container part, and the latches shall close and open freely. When closed the latches of the assembled container shall remain closed until manually opened.

3.6.3 Elevated temperature storage. - Following storage of the container in its closed position at an air temperature of 163 degrees Fahrenheit (F) minimum for a period of 24 hours minimum and subsequent return to ambient temperature, the container shall function as required in 3.6.1 and 3.6.2.

3.7 Weld security.

3.7.1 Hasp assembly. - Each hasp of the body assembly shall comply with the security requirement of Drawing F10542566 without permanent deformation or failure of a weld.

3.7.2 Handle assembly. - The handles of the body assembly shall withstand a pull of 600 pounds without permanent deformation of a component or failure of a weld.

3.7.3 Latch assembly. - The latch assemblies of the cover assembly shall comply with the security requirements of Drawing F10542569 without breakage or permanent deformation of any of the components or welds.

3.8 Workmanship. - The requirements for workmanship are as specified by applicable drawings, reference specifications and the following:

3.8.1 Processing Defects. - The containers shall be free of cracks, splits, sharp edges, slivers, burrs, severe dents, cuts, and scratches, missing or defective welds and components and other forms of substandard workmanship.

3.8.2 Cleanliness. - The painted container shall be free of all foreign matter.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility of inspection. - Unless otherwise specified in the contract of 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 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 inspections set forth in the specification

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where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Quality assurance terms and definitions. - Reference shall be made to MIL-STD-109 for definition of quality assurance terms.

4.2 First article sample.

4.2.1 Initial production sample. - At the beginning of regular production, a sample representing the approved process shall be submitted in accordance with contract requirements and shall consist of 10 painted containers and 2 sets of unassembled component parts. The sample shall be manufactured using the same materials, equipment processes and procedures as will be used in regular production.

4.2.1.1 Examination and test. - After inspection and provisional acceptance at source, as directed by the contracting officer, the sample will be inspected for all requirements of the drawing and specifications at a government laboratory or such other facility specified by the contract.

4.2.1.2 Initial production sample failure. - Failure of the sample to comply with requirements of the drawings and specifications will result in sample disapproval.

4.3 Inspection provisions.

4.3.1 Submission of product. - The product shall be submitted in accordance with MIL-STD 105 or MIL-STD-1235, as applicable.

4.3.1.1 Lot. - A lot shall consist of assembled containers produced by one manufacturer in one unchanged process, in accordance with the same drawings and drawing revisions, and same specification and specification revision.

4.3.1.2 Lot identification. - The body and cover assemblies of each container of the lot shall be identified as specified by Drawings F10542566 and F10542569, supplemented as directed by the procuring agency.

4.3.2 Examination. - Examination for major and minor defects shall be performed as specified herein. Each assembly found to be defective shall be rejected.

4.3.2.1 Sampling plans. - The sampling plans of either MIL-STD-105 or MIL-STD-1235 shall apply to the option of the contractor. To determine product acceptability, major and minor defects as listed herein may be considered on a class basis, or they may be considered individually. (See 6.3). However, when three or less defect characteristics are listed in a classification, acceptability shall be determined on an individual basis for major defects. (See 6.3)

4.3.2.2 AQL's. - The following AQL's are assigned:

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a. Individual defects

Major defects	0.25%
Minor defects	0.40%

b. Class basis

Major defects	1.50%
Minor defects	2.50%

4.3.3 Classification of defects (see 6.4).- The classification of defects shall be as follows:

4.3.3.1 Body (see Dwg. F10542567 a detail of Deg. D10543566).

<u>Categories and Defects</u>	<u>Inspection Method</u>
Critical	
None defined	
Major	
101. Thickness, metal	Gage
Minor	
201. Height of body seam	Gage

4.3.3.2 Bottom (see Dwg F10542568 a detail of Dwg. F10542566).

<u>Categories and Defects</u>	<u>Inspection Method</u>
Critical	
None defined	
Major	
101. Thickness, metal	Gage
102. Length	Gage
103. Width	Gage
Minor	
None defined	

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4.3.3.3 Cover (see Dwg F10542570 a detail of Dwg. F10542569).

<u>Categories and Defects</u>	<u>Inspection Method</u>
Critical	
None defined	
Major	
101. Thickness, metal	Gage
102. Width, inside cover (2 plates)	Gage
Minor	
None defined	

4.3.3.4 Shipping and storage container, painted (see Dwg. F10542565, F10542566, F10542569 as applicable).

<u>Categories and Defects</u>	<u>Inspection Method</u>
Critical	
None defined	
Major	
101. Inside width, body assembly, min	Gage
102. Inside length, body assembly, min	Gage
103. Inside depth, body assembly, min	Gage
104. Interior or exterior paint inadequate	Visual <u>1/</u>
105. Corrosion	Visual
106. Cracked or split component	Visual
107. Missing, incomplete, broken or mislocated metal component	Visual
108. Missing welds	Visual
109. Mutilated metal component	Visual <u>2/</u>
110. Steel silver burr or sharp edge	Visual-Feel <u>3/</u>
111. Missing, inverted, loose, misaligned or defective gasket	Visual-Manual <u>4/</u>
Minor	
101. Outside height	Gage
102. Outside length	Gage
103. Outside width	Gage
104. Marking incorrect, incomplete, illegible or missing	Visual

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105. Foreign matter, except corrosion

Visual

1/ MIL-STD-406 shall be used as a guide to classify paint defects. In the standard defects classified as incidental shall be considered permissible; defects classified as minor shall be considered major. Missing, damaged, or incomplete paint shall be classified a defect. Bare spots on any subassembly which do not accumulate to exceed 1/2 square inch in area, or scratches which do not penetrate to the phosphate coating shall be disregarded.

2/ If the body or cover is severely dented or malformed, or the carrying of locking hardware is bent or otherwise distorted to cause a functional failure or become a personnel hazard, the sample unit shall be classed defective.

3/ If a steel silver, burr or sharp edge which could injure unprotected hands is found on a ferrule, the bottom edge of a latch or cover skirt, or on the top or bottom edges of the body, the sample unit shall be classed defective.

4/ If the gasket is missing, inverted, broken, split or torn, contains a gross defect in texture or fit, or can be shifted horizontally within the gasket retainer by finger pressure or manual shake of the cover assembly, the sample unit shall be classed defective.

4.4.4 Tests. - The tests listed in Table I shall be performed on each lot in compliance with the test methods and procedures specified by 4.5. The sampling plans for the various tests shall be as specified by Table I. For acceptance, the results of each test shall apply with the applicable requirement(s).

Table I

<u>Test</u>	<u>Sample Size</u>	<u>Item</u>	<u>Retirement</u>	
Phosphate coating <u>1/</u>	3	Standard panels, TT-C-00490	3.2.1	
Paint adhesion <u>2/</u>	3	Containers	3.2.2	
Corrosion resistance <u>3/</u>	2	Containers	3.2.3	
Flatness <u>4/</u>	50	Containers		
		Cover assemblies	3.3.1	
		Body assemblies	3.3.2	
Gasket compression <u>5/</u>	10	Containers	3.4	
Airtightness <u>6/</u>	50	Containers	3.5	
Functioning <u>7/</u>	8	Containers	3.6	
Weld Security <u>8/</u>	8	Containers		
		Hasp	Body assemblies	3.7.1
		Handle	Body assemblies	3.7.2
		Latch	Cover assemblies	3.7.3

1/ Failure of the phosphate coating on the standard panels to comply with the applicable requirements for appearance and minimum weight, shall be cause for rejection of all container subassemblies phosphate since the preceding test.

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2/ Failure of one or more units of the sample to comply with the requirements for paint adhesion shall be cause for rejection of the lot.

3/ Failure of one or more units of the sample to comply with the requirements for corrosion resistance shall be cause for rejection of the lot.

4/ Failure of four or more units of the sample to comply with the requirements for flatness or straightness shall be cause for rejection of the lot. If two or three units of the sample fail to comply with the requirement, a second sample consisting of the same number as specified for the first sample shall be tested. If, in the accumulated samples, five or more units fail to comply with the requirement the lot shall be rejected. The sampling plan shall apply independently to cover and body assemblies.

5 / A variables inspection plan from MIL-STD-414, Table B-3, and AQL of 1.50 percent shall be used to determine lot acceptability, applying the method of calculation as shown in Example B-3. Failure of the sample to meet the acceptability criterion shall be cause for rejection of the lot.

6 / Failure of four or more units of the sample to comply with the requirement of airtightness shall be cause for rejection of the lot. If two or three units of the sample fail to comply with the requirement, a second sample consisting of the same number of units as specified for the first sample shall be tested. If, in the accumulated samples, five or more units fail to comply with the requirement, the lot shall be rejected. A stream or recurring succession of bubbles from any surface, seam or gasket junction shall be evidence of a defective container.

7 / Failure of two or more units of the sample to comply with the specified functioning requirements shall be cause for rejection of the lot. If one unit fails to comply with the requirements, a second sample consisting of the same number as specified for the first sample shall be tested. If, in the accumulated samples, two or more units fail to comply with the requirements for functioning, the lot shall be rejected.

8 / Failure of one or more units of the sample to comply with the specified requirements for weld security of hasp assemblies, latch assemblies or handle assemblies shall be cause for rejection of the lot.

4.4.5 Packaging, packing and marking inspection.- There are no packaging or packing requirements applicable to this item.

4.4.6 Inspection equipment.- Index of Inspection Equipment List No. IEL 10542565 identifies the inspection equipment required to perform the examination and tests prescribed herein. Equipment design shall be in accordance with code designation on the applicable IEL. (Reference is made to Inspection Equipment List for definition of coding format).

4.5 Test methods and procedures.

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4.5.1 Phosphate coating.- The method of test shall comply with the requirements of TT-C-00490, as applicable to the type of phosphate used. The prescribed panels shall be processed with the cover of body assemblies to be represented, beginning with the start of daily production and at 4 hour intervals, maximum, thereafter. Appearance and weight of the phosphate coating on the panels shall be recorded against the batch of cover or body assemblies represented.

4.5.2 Paint adhesion.- The method of test shall comply with applicable requirements of TT-C-00490. The test shall be performed on three randomly selected surfaces of each unit of the sample.

4.5.3 Corrosion resistance.- The method of test shall be as specified in ASTM B117 - Standard Practice for Operating Salt Spray (FOG) Apparatus. Using a sharp instrument (machinist scribe or equivalent), the painted specimens shall be scribed in a vertical direction approximately 6 to 7 inches long on the flat portion of each side, the bottom, the hinge end, and the cover. The sample shall be positioned so that the hinged edge of the assembled box is elevated approximately 15 degrees from the horizontal and rests upon a wooden support while the cover face is parallel to the principal direction of horizontal flow of fog through the chamber. Traces of paint blistering or corrosion spots on component edges or sharp corners shall not be classed as protective coating failure. After salt spray testing, the scribe shall be evaluated according to ASTM D1654, Procedure A, Methods 1 or 2

4.5.4 Flatness.

4.5.4.1 Cover assembly.- The flatness shall be measured on the sample cover assemblies along the length over cover at gasket position, the width adjacent to the latch retainer on the flat surface of the cover, utilizing the test fixture. (see D8648467, a detail of IEL 10542565).

4.5.4.2 Body assembly.- The flatness shall be measured on the sample by assemblies along the length and width on the hemmed edge of the body utilizing the test fixture. (See D8648466, a detail of IEL 10542565).

4.5.5 Gasket compression.

4.5.5.1 Compressed gasket and cover measurements.- The container shall be positioned in a suitable fixture so that it cannot be moved. Four points, two on each side, four inches from each end, shall be located (by scribing and numbering 1, 2, 3 and 4) on both the body and the cover. With the container fully closed, a measurement at each of the four locations, with a precision measurement device, shall be recorded. The cover shall then be removed and height to the hemmed edge of the body at the same point shall be recorded. Subtraction of the second reading from the first reading gives the value of the compressed gasket and cover.

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4.5.5.2 Uncompressed gasket and cover measurements.- The cover and uncompressed gasket shall be measured at each of the four locations with a precision measurement device and readings recorded. Care must be exercised so that the surface of the measuring device does not rest in the groove of the compression set. These readings are the uncompressed gasket and cover values.

4.5.5.3 Average gasket compression value.- The compressed gasket and cover readings (see 4.4.5.1) shall be subtracted from the uncompressed gasket and cover readings (see 4.4.5.2) at the corresponding location points. The sum of the resulting values for the four location points divided by four shall be considered the average gasket compression value. The average value for each container of the test sample shall be used in the calculations in accordance with MIL-STD-414 to determine compliance with the drawing requirements.

4.5.6 Airtightness.- The container shall be conditioned to ambient temperature and pressure prior to testing. The containers shall be tested in accordance with 4.5.6.1 or with permission of the procurement agency with 4.5.6.2. A wetting agent may be used to minimize air bubbles clinging to the exterior surface.

4.5.6.1 Vacuum method.- The container shall be tested for leakage by immersing the closed container in the inverted position under water in a vacuum vessel and lower the pressure in the vessel to three pounds per square inch below ambient pressure. Observations for leakage of air from the container interior shall be made for a minimum of 30 seconds after reduction of pressure.

4.5.6.2 Hot water method.- The container shall be tested for leakage by immersing the closed container, in the inverted position, to a depth of one inch below the surface of the water. The temperature of the water and the length of time of immersion shall be sufficient to assure an increase in pressure to 3 psi above ambient pressure. Observations for air leakage from the container interior shall be made during the period of pressure buildup and for 30 seconds after the 3 psi pressure differential has been reached.

4.5.7 Functioning.- The container shall be inspected to assure compliance with the requirements of 3.6 through the following procedures:

- a. Unlock and lock the cover assembly hardware by hand leverage. Note the locking and unlocking action for effectiveness and ease of operation.
- b. Remove and replace the cover assembly. Note any misfit or bind with the body assembly.
- c. Remove all cover assemblies. Inspect the gaskets for fit, security, cuts, and splits.
- d. Note any sticking of gaskets to the top edges of the body assemblies.
- e. Environmentally condition the container as specified in 3.6.3. After conditioning re-inspect the container in accordance with a, b, c, and d above.

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4.5.8 Weld security.

4.5.8.1 Hasp assembly.- The sample body assembly resting on their bottoms shall be clamped in a suitable device. The specified tensional force, utilizing the test fixture (see Dwg. D11075104, a detail of the IEL10542565) for hasp weld security, shall be slowly applied perpendicular to the bottom and against the underside of the offset of the hasp. The force shall be applied at a rate of .125 to .25 inch per minute and held for one minute. After removal of the force, examine the hasp for distortion and weld failure.

4.5.8.2 Handle assembly.- With the sample body assembly resting on its bottom or on end, attach the test fixture (see Dwg. D11075103, a detail of IEL 10542565) for end handle security to each end handle. With one test fixture securely held, apply the specified tensional force through the other test fixture parallel to the container bottom against the ferrule of each handle. The force shall be applied at a rate of .125 to .25 inch per minute and held for one minute. After removal of the force, examine the handle and hasp for distortion and weld failure.

4.5.8.3 Latch assembly.- Attach test fixture (see Dwg. 11075102, a detail of IEL 10542565) for latch assembly security to each latch on the cover assembly. Secure one test fixture and slowly apply a tensional force to the other parallel, to the face of the cover. The force shall be applied at a rate of .125 to .25 inch per minute and held for one minute. The test fixture applies the force against the surface of the latch links exposed on the underside of each latch. After removal of the force, examine the latches, latch links, latch link retainers and cover for distortion and weld failure.

5. PREPARATION FOR DELIVERY

5.1 Packaging and packing.- There are no packing requirements for this item

5.2 Marking.-Each container shall be marked on the welded end with a label containing the following information:

- a. Consignee
- b. Manufacturer
- c. Item nomenclature
- d. Lot number
- e. Contract number

Marking will not be required where shipment is in full carload or full truckload moving to a single consignee.

5.2.1 Labels.- The labels shall conform with MIL-L-19896 and shall be four inches square, approximately. The labels shall be marked with letters and figures ¼ inch high, minimum.

6. NOTES

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6.1 Ordering data.- Invitational for bids and contracts or orders will specify the following:

6.1.1 Title, number and date of this Military specification

6.1.2 Place of inspection, if not place of manufacture.

6.1.3 First article sample requirements. (see 4.2)

6.2 First article sample.- The procurement agency may waive the requirement for a first article sample if the contractor has recently demonstrated his ability to produce this item. (see 4.2)

6.3 AQL's.- The optional use of AQL values for either individual defects or classes of defects or classes of defects is intended to minimize inspection agency administrative burden which might result from an exclusive assignment of individual defect AQL's. The option also permits flexibility where sampling inspection for acceptance is integrated into the manufacturing process.

6.4 Intermediate point inspection.- The classification of defects identifies the defects characteristics (among other things) for acceptance inspection. It may be necessary to modify the sequence of inspection stations to best suit the manufacturing process. Inspection for defect characteristics which will be hidden or altered by subsequent processing operations (including unrelated operations), should be scheduled to prevent premature acceptance which could be detrimental to the attainment of optimum product quality in the end item.

6.5 Measurement of gasket compression.- Three point contact of the container resting on blocks may be used to overcome any rocking motion which might be encountered with the container resting on the surface plate. However, since the measurement technique relies upon relative distances, care should be taken to assure that there is no displacement on the referenced surfaces between the readings.

6.6 Key word listing.

Ammunition
Packaging

6.7 Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

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Custodian:
Army – AR

Preparing Activity:
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