

MIL-C-3498B (AR)  
28 July 1986  
SUPERSEDING  
MIL-C-3498A (AR)  
19 April 1962

## MILITARY SPECIFICATION

### CARTRIDGES, DUMMY (FOR SMALL ARMS)

This specification is approved for use within the US Army Armament Munitions and Chemical Command, and is available for use by all Department and Agencies of the Department of Defense.

#### 1. SCOPE

1.1 Scope. This specification covers dummy cartridges used for training personnel and for inspecting and testing the mechanism of small arms.

1.2 Classification. The following cartridges are covered by this specification:

- a. Cartridge, Dummy, NATO, 7.62mm, M63.
- b. Cartridge, Dummy, Caliber .30, M40.
- c. Cartridge, Dummy, Carbine, Caliber .30, M13 and M13 Steel Case.
- d. Cartridge, Dummy, Caliber .45, M1921 and M1921 Steel Case.
- e. Cartridge, Dummy, Caliber .50, M2 and M2 Steel Case.
- f. Cartridge, 9mm, Dummy, XM917.

#### 2. APPLICABLE DOCUMENTS

##### 2.1 Government documents.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, U.S. Army Armament Research, Development and Engineering Center, Attn: AMSMC-QA, Dover, New Jersey 07801-5001 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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2.1.1 Specifications and standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation.

## SPECIFICATIONS

## MILITARY

MIL-A-48078 - Ammunition, Standard Quality Assurance Provisions, General Specification for

## STANDARDS

## MILITARY

MIL-STD-105 - Sampling Procedures and Table for Inspections of Attributes

MIL-STD-644 - Visual Inspection Standards and Inspection Procedures for Inspection of Packaging, Packing, and Marking of Small Arms Ammunition

2.1.2 Other Government documents, drawings and publications. The following other Government documents, drawings and publications form a part of this specification to the extent specified herein. Unless otherwise specified, the issues shall be those in effect on the date of the solicitation.

## DRAWINGS

## US ARMY ARMAMENT RESEARCH, DEVELOPMENT &amp; ENGINEERING CENTER (ARDEC)

7553706 - Cartridge, Dummy, NATO, 7.62mm, M63.  
 7553591 - Cartridge, Dummy, Caliber .30, M40.  
 6177513 - Cartridge, Dummy, Carbine, Caliber .30, M13.  
 7640521 - Cartridge, Dummy, Carbine, Caliber .30, M13 (Steel Case)

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- 6006253 - Cartridge, Dummy, Caliber .45 M1921
- 6006253A - Cartridge, Dummy, Caliber .45, M1921 (Steel Case)
- 5556579 - Cartridge, Dummy, Caliber .50, M2.
- 7670610 - Cartridge, Dummy, Caliber .50, M2 (Steel Case).
- 9386948 - Cartridge, 9MM, Dummy, XM917
- 7553708 - Packing and Marking for Cartridges, NATO, 7.62-mm; Cartons, Box, Ammunition M19A1; Box, Wirebound
- 7553747 - Packing and Marking for Cartridges, NATO, 7.62mm; Cartons, Box, Ammunition M2A1; Box, Wirebound.
- 7553807 - Packing and Marking for Cartridge, Caliber .30, Cartons; Box, Ammunition M2A1, Box, Wirebound.
- 7553902 - Packing and Marking for Cartridges, Carbine, Caliber .30 in Cartons, Box, Ammunition, M2A1, Box, Wirebound.
- 7553728 - Packing and Marking for Cartridges, Caliber .45, Cartons; Box, Ammunition, M2A1, Box, Wirebound.
- 7553346 - Packing and Marking for Cartridges, Caliber .50, Linked, Box Ammunition M2A1, Box, Wirebound
- 7553545 - Packing and Marking for Cartridges, Caliber .50, in Bulk; Box, Ammunition, M2A1, Box, Wirebound.
- 9396206 - Packing and Marking for Box, Wirebound, for Cartridges, Small Caliber.
- EL-6006253 - Inspection Equipment List for Assembled Cartridge, Caliber .45.
- EL-6006253A - Inspection Equipment List for Cartridge, Dummy, Caliber .45, M1921 (Steel Case).
- LI-7553706 - Inspection Equipment List for Assembled Cartridge, 7.62-mm.
- LI-7553591 - Inspection Equipment List for Assembled Cartridge, Caliber .30.
- LI-6177513 - Inspection Equipment List for Assembled Cartridge, Caliber .30 Carbine
- LI-5556579 - Inspection Equipment List for Assembled Cartridge, Caliber .50.
- LI-7640521 - Inspection Equipment List for Cartridges, Dummy, Carbine, Caliber .30, M13 (Steel Case).
- LI-9386948 - Index of Inspection Equipment Lists for Cartridge, 9mm, Dummy, XM917

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

2.2 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

### 3. REQUIREMENTS

3.1 First article inspection. When specified in the contract or purchase order, a sample shall be subjected to first article inspection in accordance with the technical provisions herein. (See 4.3)

3.2 Material. Materials shall be in accordance with the applicable drawings and specifications.

3.3 Parts. The parts shall comply with all requirements specified on Drawings 7553706, 7553591, 6177513, 7640521, 6006253, 6006253A, 5556579, 7670610 or 9386948 as specified by the contract, all associated drawings and with all requirements specified in applicable specifications.

3.4 Bullet extraction. The force necessary to extract the bullet from the cartridge case shall not be less than the following:

<u>CARTRIDGE</u>	<u>FORCE (POUNDS)</u>
Cartridge, Dummy, NATO 7.62mm, M63	175
Cartridge, Dummy, Caliber .30, M40	175
Cartridge, Dummy, Carbine, Caliber .30 M13 and M13 Steel Case	75
Cartridge, Dummy, Caliber .45, M1921 and M1921 Steel Case	75
Cartridge, Dummy, Caliber .50, M2 and M2 Steel Case	200
Cartridge, 9mm, Dummy, XM917	80

3.5 Residual stress. The cartridge case shall not split when subjected to one percent mercurous nitrate solution for 15 minutes.

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3.6 Workmanship. The requirements for workmanship are as specified on the applicable drawings, referenced specifications and the following:

3.6.1 Metal defects. The cartridge shall be free of folds, splits, wrinkles, deep draw scratches, scaly metal, dents and other defects.

3.6.2 Foreign matter. The cartridge shall be free of corrosion, stains, discoloration, dirt, oil, and smears of lacquer.

#### 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 as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to 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 prescribed requirements. The provisions of MIL-A-48078 shall apply.

4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. 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 assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of any defective material.

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

- a. First Article Inspection (See 4.3)
- b. Quality Conformance Inspection (See 4.4)

#### 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 the provisions of 4.3.2. The sample shall be manufactured using the same methods and processes proposed for use in manufacturing the production cartridges. The first article sample shall consist of the following items in sample quantities as indicated.

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<u>PART DESCRIPTION</u>	<u>DRAWING</u>	<u>QUANTITY</u>
Cartridge, Dummy	(as required by contract)	200

4.3.2 Inspections to be performed. See MIL-A-48078 and Table I herein.

4.3.3 Rejection. See MIL-A-48078.

TABLE I. First article inspection**CLASSIFICATION OF DEFECTS & TESTS**

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PARAGRAPH	TITLE	SHEET 1 OF 1		NO. OF SAMPLE UNITS	EXAMINATION OR TEST	AQL OR 100%	REQUIREMENT PARAGRAPH	DRAWING NUMBER As specified by contract NEXT HIGHER ASSEMBLY	
								PARAGRAPH REFERENCE / INSPECTION METHOD	
	Cartridges, Dummy (for Small Arms)								
CATEGORY									
	Examination for defects Bullet extraction Residual stress			* 50 20			3.3 3.4 3.5	4.4.2.1 4.5.2 4.5.3	
* All first article sample units shall be subjected to Examination for Defects prior to test.									

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4.4 Quality conformance inspection.

4.4.1 Quality conformance inspection. Inspection lots shall comply with the lot formation provisions of MIL-A-48078.

4.4.2 Examination. See MIL-A-48078.

a. Sampling plans. Unless otherwise specified in the Classification of Defects and Test Tables, sampling plans for major and minor defects shall be in accordance with MIL-STD-105, Inspection Level II.



## QUALITY CONFORMANCE INSPECTION

## CLASSIFICATION OF DEFECTS &amp; TESTS

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PARAGRAPH	TITLE	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	SHEET 1 of 1	DRAWING NUMBER as specified by contract	PARAGRAPH REFERENCE / INSPECTION METHOD
						NEXT HIGHIER ASSEMBLY	
4.4.2.1	Cartridges, Dummy (for Small Arms)						
<b>CATEGORY</b>							
<b>CRITICAL</b> 1.							
<b>MAJOR</b> 101. 102. 103.	Mixed ammunition  Split neck Total Length of cartridge, incorrect Cartridge profile failure *			100%  1.00%  2.50%		Visual  Visual Gage Gage	
<b>MINOR</b> 201. 202. 203.	Absence of hole or holes (where applicable) Absence of corrugation (where applicable) Workmanship					Visual  Visual Visual Visual	
<b>NOTES:</b>	* Classified as failure only if the weight required to insert the cartridge in the profile and alignment gage exceeds the following: Cartridge Caliber .30 20 Caliber .30, Carbine 20 Caliber .45 10 Caliber .50 80 7.62mm 20 9mm 20						

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4.4.3 Tests. The tests listed in Table II shall be conducted in accordance with the methods and procedures specified in 4.5.

4.4.3.1 Test samples. The quantities for the various tests shall be as specified in Table II. The test samples shall be selected from lots that have met the visual and dimensional inspection requirements.

TABLE II - Tests

<u>TEST</u>	<u>Number of Cartridges</u>
Bullet extraction	1/ 50
Residual Stress	1/ 20

1/ Failure of the cartridges to comply with the applicable requirement shall be cause for rejection of the lot, subject to testing of a second sample consisting of double the quantity of cartridges used in the first test. Failure of the cartridges in the second sample to comply with the applicable requirement shall be cause for rejection of the lot.

4.4.4 Packaging, packing, and marking. Inspection for packaging, packing and marking shall be in accordance with MIL-STD-644. During or immediately prior to the packaging operation, 100 percent examination of the cartridges shall be performed to ascertain that the cartridge type conforms to the drawing. Occurrence of any incorrect type shall be classified as a critical defect. All non-conforming cartridges shall be rejected.

4.4.5 Inspection equipment. The inspection equipment required to perform the examination and test prescribed herein is described in the Paragraph Reference/Inspection method column in the table 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 6.2 herein.

4.4.5.1 Index of inspection equipment lists. The examination and tests shall be made using equipment listed on LI7553706, LI7553591, LI6177513, EL6006253, LI5556579, LI7640521, EL6006253A or LI9386948 as applicable.

#### 4.5 Methods of inspection.

4.5.1 Bullet extraction. The bullet extraction test shall be conducted in accordance with Appendix A. The rate of travel of the test head shall not be less than three nor more than six inches per minute.

4.5.2 Residual stress. The residual stress test shall be conducted in accordance with Appendix B.

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## 5. PACKAGING

5.1 Packing. Level A (World Wide Shipment). The cartridges shall be packed in accordance with Drawing 7553708, 7553747, 7553807, 7553902, 7553728, 7553346, 7553545, or 9396206 as required by the contract.

5.2 Marking and labeling. Packing boxes shall be marked and labeled in accordance with the applicable drawings cited in 5.1.

## 6. NOTES

6.1 Ordering data. Procurement documents shall be in accordance with MIL-A-48078 and shall include the following:

a. Provisions for the supply, maintenance and disposition of mandatory test equipment for acceptance inspection purposes.

b. Provisions for the submission of acceptance inspection reports containing final inspection results for each lot of ammunition presented to the Government.

6.2 Submission of inspection equipment designs for approval. See MIL-A-48078. Submit equipment designs as required to Commander, ARDEC, Dover, NJ 07801-5001, ATTN: AMSMC-QAF-I(D).

6.3 Drawings. Drawing listed in Section 2 of this specification under the heading US Army Armament Research, Development & Engineering Center (ARDEC) may also include drawings prepared by, and identified as US Army Armament Research and Development Command (ARRADCOM), Edgewood Arsenal, Frankford Arsenal, Rock Island Arsenal or Picatinny Arsenal drawings. Technical data originally prepared by these activities is no under cognizance of ARDEC.

6.4 Changes from previous issue. Asterisks (or vertical lines) are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodian:  
Army-AR

Preparing Activity:  
Army-AR

(Project 1305-AB62)

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## APPENDIX A

## BULLET EXTRACTION TEST PROCEDURE

## 10 SCOPE

10.1 Scope. This appendix details the procedure for performance of the bullet extraction test on the dummy cartridges covered in this specification. This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

## 20 APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

## 30 PREPARATION

30.1 Calibration. The testing machine should be calibrated either weekly or prior to each occasion of use, whichever is less frequent. Calibration points shall include at least 30 pounds, 60 pounds, 100 pounds, 150 pounds and 250 pounds. If calibration errors exceed 3 pounds at scale readings below 200 pounds, or 6 pounds at scale readings of above 200 pounds, then the necessary corrective action shall be taken to reduce the errors below these limits before the bullet extraction test is conducted. The method of calibration shall be by calibrated proof rings or calibrated spring balances which shall yield values within  $\pm 1\%$  of true values over calibrating range.

30.2 Cartridges. The number of cartridges as prescribed by the applicable specification are placed in a recessed holding block which shall be placed at a point convenient to the technician.

## 40 CONDUCTING THE TEST

40.1 Procedure. The following procedure is repeated for each test cartridge.

a. The cartridge shall be inserted into the case holding block on the pulling head and aligned with the jaws on the pulling head. The jaws shall then be secured to the bullet just above the neck of the case.

b. The load shall be applied.

c. When the bullet has been extracted from the cartridge case, the machine shall be stopped. The force required to extract the bullet, indicated by the tensile indicator, shall be recorded.

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d. The case and bullet shall then be removed from the holding block and jaws.

e. The case should be placed upright in a recessed holding block and the extracted bullet placed point down in the mouth of the case.

50 RECORDING OF RESULTS

50.1 Data. The following data shall be recorded.

- a. Force required to extract each bullet.
- b. Average of the individual values.
- c. Minimum value.
- d. Maximum value.
- e. Testing machine data.

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## APPENDIX B

## RESIDUAL STRESS TEST PROCEDURE

## 10 SCOPE

10.1 Scope. This appendix details the procedure for performance of the residual stress test on the dummy cartridges covered by this specification. This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

## 20. APPLICABLE DOCUMENTS

This section is not applicable to this appendix

## 30 MANDATORY SAFETY REQUIREMENTS

a. Food shall not be stored or eaten in the vicinity in which these tests are conducted.

b. Acid resistant apron and gloves or the equivalent shall be worn by each test technician.

c. Face shield shall be worn at all times during the pouring or mixing of acids and water. Safety glasses shall be worn during other phases of this test.

d. Asbestos or heat insulating gloves shall be worn during the heat volatilization phase of the test to facilitate handling.

e. During the entire period of volatilization the oven door shall be closed.

f. Extreme care shall be exercised in the mixing of acid with water; this shall be accomplished by pouring the acid into the water.

g. Test shall be conducted under a canopy or hood having a forced draft ventilation system to remove noxious fumes. The disposition of tested components shall be governed by local regulations.

## 40 PREPARATION

40.1 Nitric-acid solution. Four hundred milliliters of nitric acid (of specific gravity 1.42) are dissolved in 500 milliliters of distilled water at room temperature. To this solution, distilled water is added to bring the volume of the resulting solution to one liter. (The resultant specific gravity will be 1.25).

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40.2 Mercurous nitrate solution. Ten grams of mercurous nitrate and 10 milliliters of nitric acid (of specific gravity 1.42) are dissolved in 400 milliliters of distilled water at room temperature. To this solution, distilled water is added to bring the volume of the resulting solution to one liter.

40.3 Test of Cartridges.

40.3.1 Cartridge position. The cartridges are positioned in both nitric acid and mercurous nitrate solutions in a vertical position, with the head of the case down. The depth of each solution is adjusted until it completely covers the mouth of the case.

40.3.2 Test procedure. One-half of the number of cartridges prescribed in the applicable specification for the mercurous nitrate test is submerged in the nitric acid solution. After 30 seconds the cartridges are withdrawn, rinsed in water and the excess water removed. The cartridges are then submerged for 15 minutes in the mercurous nitrate solution. Upon removal, the surface of the cartridge case is examined under a magnification (10 to 15 diameters) for splits and cracks. All splits and cracks found are reported.

40.4 Test of cartridge case.

40.4.1 Cartridge disassemble. The cases for this test are obtained by disassembling of cartridges. Cases shall be inspected prior to the test.

40.4.2 Case position. The cases are positioned in both nitric acid and mercurous nitrate solutions in a vertical position, with the head of the case down. The depth of each solution is adjusted until it completely covers the mouth of the case but does not rise more than one-half inch above the mouth of the case.

40.4.3 Test procedure. Cases from the remaining half of the number of cartridges prescribed in the applicable specification for the mercurous nitrate test (after the bullet has been removed) are submerged in nitric acid solution. After 30 seconds the cases are withdrawn, rinsed in water and the excess water removed. The cases are then submerged for 15 minutes in the mercurous nitrate solution. Upon removal, the mercury on the surface of the case is volatilized by the application of heat and the surface then examined under a magnification (10 to 15 diameters) for splits and cracks. All splits and cracks found are reported.

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NOTE: A split is defined as a separation of the metal entirely through the wall of the case. A crack is a surface condition and represents a separation of the metal partially through the wall. Cracks are not considered to be splits.

A suggested method for determining cracks and splits follows:

Splits in the cartridge case, after the mercury cracking test, are defined by filling the case with water (water temperature 70°F to 100°F) to the mouth until a convex meniscus condition exists and placing the thumb over the mouth of the case. If the case is split, this exerts sufficient pressure to force the water through the opening.

Splits in the assembled cartridge case, are not so easily detected unless the split is at the mouth of the case and the bullet metal is seen through the split. If the split is in the body, the only way to determine whether it is a split or crack is to disassemble and follow the procedure used for the case check.

## 50 RECORDING OF RESULTS

- a. Results of the test shall be recorded directly on the test sheet form.
- b. All splits and cracks and their location shall be reported.



**STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL***(See Instructions - Reverse Side)***1. DOCUMENT NUMBER**

MIL-C-3498B

**2. DOCUMENT TITLE**

CARTRIDGES, DUMMY (FOR SMALL ARMS)

**3a. NAME OF SUBMITTING ORGANIZATION****4. TYPE OF ORGANIZATION (Mark one)**☐

VENDOR

☐

USER

☐

MANUFACTURER

☐

OTHER (Specify): \_\_\_\_\_

**b. ADDRESS (Street, City, State, ZIP Code)****5. PROBLEM AREAS****a. Paragraph Number and Wording:****b. Recommended Wording:****c. Reason/Rationale for Recommendation:****6. REMARKS****7a. NAME OF SUBMITTER (Last, First, MI) - Optional****b. WORK TELEPHONE NUMBER (Include Area Code) - Optional****c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional****8. DATE OF SUBMISSION (YYMMDD)**