Downloaded from http://www.everyspec.com

MIL-C-10190D
3 April 1985
SUPERSEDING
MIL-C-10190C
7 June 1967

MILITARY SPECIFICATION

CARTRIDGE, CALIBER .50, BALL, M33

This specification is approved for use all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers quality assurance provisions and preparation for delivery for Cartridge, Caliber .50, Ball, M33.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. Unless otherwise specified (see 6.1), the following specifications and standards of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation, form a part of this specification to the extent specified herein.

SPECIFICATION

MILITARY

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

STANDARDS

MILITARY

MIL-STD-105	-	Sampling Procedures and Table For Inspection by Attributes.
MIL-STD-109	-	Quality Assurance Terms and Definitions

FSC 1305

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 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.

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

Downloaded from http://www.everyspec.com

MIL-STD-636	-	Visual Standards for Small Arms Ammunition Through Caliber .50
MIL-STD-644	-	Visual Inspection Standards and Inspection Procedures for Inspection of Packaging, Packing and Marking of Small Arms Ammunition
MIL-STD-1168	-	Lot Numbering of 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.

DRAWINGS (See 6.6)

US ARMY ARMAMENT RESEARCH AND DEVELOPMENT CENTER (ARDC)

PRODUCT AND PACKING DRAWINGS

7553097	-	Cartridge, Caliber .50, Ball, M33
7553346	-	Packing and Marking, Cartridges, Cal .50, Linked, Box, Amunition, M2A1, Box, Wirebound
7553544	-	Packing and Marking, Cartridges, Cal .50, Bulk, Box, Ammunition, M2A1, Box, Wirebound
7643674	-	Classification of Cartridge Case Defects
8596993	-	Packing and Marking Cartridges, Cal .50, Linked, Box, Ammunition, M2A1, Box, Wirebound

INSPECTION EQUIPMENT DRAWINGS

LI-7553097	-	Inspection Equipment List for Cartridges, Caliber .50, Ball, M33

PUBLICATIONS (See 6.6)

DEPARTMENT OF DEFENSE

SCATP-7.62	-	Ammunition Ballistic Acceptance Test Methods, Test Procedures for 7.62mm Cartridges

ARMY MATERIEL COMMAND REGULATION

TECP 700-700, Vol. III	-	Test Methods for Small Arms Ammunition

Downloaded from http://www.everyspec.com

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

2.1.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 Cartridge. The cartridge shall comply with all requirements specified on Drawing (Dwg) 7553097, all associated drawings and with all requirements specified in applicable specifications and standards.

3.2 Bullet extraction. The force required to separate the bullet from the cartridge case shall be not less than 200 pounds when tested as specified in 4.5.1.

3.3 Residual stress. The cartridge shall not split or crack when subjected to a 1% mercurous nitrate solution for 15 minutes when tested as specified in 4.5.2.

3.4 Waterproof. The cartridge shall not release more than one bubble of air when subjected to a pressure differential of 7.5 pounds per square inch (psi) for 30 seconds when tested as specified in 4.5.3.

3.5 Accuracy. The average of the mean radii of all targets of the sample cartridges, fired at 600 yards, shall not exceed 12.0 inches when tested as specified in 4.5.4.

3.6 Action time. The action time (overall primer ignition, propellant burning and bullet-barrel time) of the cartridge shall not exceed 4 milliseconds when tested as specified in 4.5.5.

3.7 Velocity. The average velocity of the sample cartridge, conditioned at 70° Fahrenheit (F), shall be 2910 feet per sec (ft/sec) plus or minus 30 ft/sec, at 78 feet from the muzzle of the weapon. The standard deviation of the velocities shall not exceed 36 ft/sec when tested as specified in 4.5.6 and 4.5.10.

3.8 Chamber pressure. The average chamber pressure of the sample cartridges, conditioned at 70°F, shall not exceed 55,000 psi when tested as specified in 4.5.7 and 4.5.10.

Downloaded from http://www.everyspec.com

3.9 Function and casualty. The cartridge shall function without casualty. In addition, the average cyclic rate of the test weapons shall be 450 to 600 shots per minute for the Gun, Machine, Caliber .50, Browning, M2, Heavy Barrel (Turret Type) and Gun, Machine, Caliber .50, Browning M2, Heavy Barrel (Flexible) and 400 to 500 shots per minute (low rate) for the Gun, Machine, Caliber .50, M85. The test shall be performed as specified in 4.5.8.

3.10 Stripping. The jacket of the bullet or any part thereof, shall not separate from the core when tested as specified in 4.5.9.

3.11 Workmanship. The metal parts of the cartridge shall be free of cracks, splits, perforations, burrs and foreign matter. The cleaning method used shall not be injurious to any part, nor shall the parts be contaminated by any cleaning agent. All parts and assemblies shall be fabricated, loaded and assembled in a thorough and workmanlike manner. In addition, the cartridge shall comply with the standards specified in the .50 Caliber section of MIL-STD-636. Extreme care should be exercised to avoid contamination of primers or propellant by oil, grease or other foreign matter.

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 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.

4.1.1 Quality assurance terms and definitions. Reference shall be made to MIL-STD-109 to define quality assurance terms used.

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).

Downloaded from http://www.everyspec.com

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 the following items in sample quantities as indicated below:

Part Description	Drawings	Quantity
Ctg, Cal .50, Ball, M33	7553097	1880
Case	5502646	5/machine or tool
Core	6171991	5/machine or tool
Jacket	6174992	5/machine or tool
Bullet	7553098	5/machine or tool

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

4.3.3 Rejection. See MIL-A-48078 and Tables I and II specified herein.

4.3.3.1 Function and casualty. The sample shall be rejected if any defect from function and casualty testing plus firing defects observed in all other firing tests exceeds the acceptance numbers specified in Table I.

TABLE I. (First article) function and casualty accept-reject criteria.

DEFECT	ACCEPTANCE NUMBER	REJECTION NUMBER
1. Misfire	0	1
2. Bullet remaining in bore	0	1
3. Primer defects:		
a. Perforation in firing pin indent in primer cup	23	24
b. Escape of gas through primer cup other than 3a.	6	7
c. Escape of gas around primer cup for more than 50% of periphery	13	14
d. Blown primer or primer falls out of pocket on retraction of bolt.	0	1

Downloaded from http://www.everyspec.com

4. Case Casualties: 1/		
a. Longitudinal Split		
(1) Neck or shoulder (I or S)	26	27
(2) Body (J)	6	7
(3) Body (K)	0	1
(4) To head (L)	0	1
(5) Through head (M)	0	1
b. Circumferential rupture		
(1) Partial, shoulder, or body (J, K or S)	1	2
(2) Partial, head (L)	0	1
(3) Complete	0	1
5. Failure to extract	0	1
6. Weapon stoppage	0	1
7. Bullet stripping	0	1

1/ For location of defects indicated by letters in parentheses, see Dwg 7643674.

TABLE II. First article inspection

CLASSIFICATION OF DEFECTS & TESTS

MIL-C-10190D

PARAGRAPH	TITLE				DRAWING NUMBER
	Cartridge, Caliber .50, Ball, M33		SHEET 1 OF 2		See Below
					NEXT HIGHER ASSEMBLY
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
	Case (Dwg 5502646) Examination for defects	5	Acc-0 Rej-1	3.1, 3.11	Gage 1/
	Core (Dwg 6171991) Examination for defects	5	Acc-0 Rej-1	3.1, 3.11	Gage 1/
	Jacket (Dwg 6174492) Examination for defects	5	Acc-0 Rej-1	3.1, 3.11	Gage 1/
	Bullet (Dwg 7553098) Examination for defects	5	Acc-0 Rej-1	3.1, 3.11	Gage 1/
	Ctg, Cal .50, Ball, M33 (Dwg 7553097) Examination for defects	1880	Acc-0 Rej-1	3.1, 3.11	4.4.2.1

NOTES: 1/ To be inspected for all mandatory drawing requirements using standard measuring and test equipment (except for workmanship which is inspected for visually).

DRSMC-OA (D) Form 160, Aug 83 replaces edition of 1 Jul 77 which may be used until exhausted.

Downloaded from http://www.everyspec.com

TABLE II. First article inspection

CLASSIFICATION OF DEFECTS & TESTS

MIL-C-10190D

PARAGRAPH	TITLE		SHEET 2 OF 2		DRAWING NUMBER
	Cartridge, Caliber .50, Ball, M33				See Below
					NEXT HIGHER ASSEMBLY
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
	Bullet extraction	50	Acc-1 Rej-2	3.2	4.5.1
	Residual stress	50	Acc-0 Rej-1	3.3	4.5.2
	Waterproof	50	Acc-5 Rej-6	3.4	4.5.3
	Accuracy	150	1/	3.5	4.5.4
	Action time	80	Acc-1 Rej-2	3.6	4.5.5
	Velocity	50	1/	3.7	4.5.6 and 4.5.10
	Chamber pressure	50	1/	3.8	4.5.7 and 4.5.10
	Function and casualty		Table I	3.9	
	Gun, Machine, Cal .50, Browning M2, Heavy Barrel (Turret type)	400			4.5.8
	Gun, Machine, Cal .50, Browning M2, Heavy Barrel (Flexible)	400			4.5.8
	Gun, Machine, Cal .50, Tank, M85	400			4.5.8
	Stripping test	2/	Table I	3.10	4.5.9

NOTES: 1/ Failure of the cartridges to comply with the applicable requirement shall result in rejection of the first article sample.
2/ To be performed concurrently with function and casualty testing.

DRSMC-OA (D) Form 160, 1 Aug 83 replaces edition of 1 Jul 77 which may be used until exhausted.

Downloaded from http://www.everyspec.com

Downloaded from http://www.everyspec.com

4.4 Quality conformance inspection.

4.4.1 Lot formation. In accordance with MIL-A-48078.

4.4.1.1 Lot submission. The cartridge shall be submitted in accordance with MIL-STD-105, Inspection Level II.

4.4.1.2 Component parts. Unless otherwise specified, component parts shall be homogeneous and of a size convenient to the contractor and inspected, tested and accepted by the contractor. The cartridge lot shall contain:

a. Cartridge cases from one lot interfix number from one manufacturer.

b. Bullets from one lot interfix number from one manufacturer.

c. Primers. from one lot interfix number from one manufacturer.

d. Propellant from one lot number from one manufacturer.

4.4.1.3 Lot identification. Each lot of ammunition shall be identified as to type, caliber and model, lot number in accordance with MIL-STD-1168 and the supplier's identification as assigned by the procuring activity.

4.4.2 Examination for defects.

a. Major and minor defects. Examination for major and minor defects shall be performed on a class basis in accordance with classification of defects (see 4.4.2.1), using applicable sampling plans and acceptance criteria of MIL-STD-105. All nonconforming cartridges shall be rejected.

b. Critical defects. Unless otherwise specified, one hundred percent examination shall be performed for all critical defects. If a visual critical defect is found in a sample either just prior to a firing test or after a firing test (and the defect is not due to the firing), the lot shall be rejected. The lot shall then be rescreened and resubmitted for visual inspection of critical defects. If a critical defect is found during packing, the portion of the lot that has been packed or is in the process of being packed shall be rejected. In addition, the portion of the lot remaining to be packed shall be rejected. The lot shall then be rescreened and resubmitted for visual inspection of critical defects.

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF DEFECTS & TESTS

MIL-C-10190D

PARAGRAPH	TITLE				DRAWING NUMBER
4.4.2.1	Cartridge, Caliber .50, Ball, M33		SHEET 1 OF 4		7553097
					NEXT HIGHER ASSEMBLY N/A
CATEGORY	EXAMINATION OR TEST 1/	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE 2/ /INSPECTION METHOD
Critical					
1.	Case split in K, L or M location (6)		100%	3.1	Visual
2.	Case split in I, S or J location (6) when loss of powder occurs		100%	3.1	Visual
3.	Perforated case (7)		100%	3.1	Visual
4.	Primer missing (32)		100%	3.1	Visual
5.	Primer cocked (33)		100%	3.1	Visual
6.	Primer inverted (34)		100%	3.1	Visual
7.	Weight, under min 3/		100%	3.1	Balance
MAJOR	(Class AQL - 0.25%) (except Major 101)				
101.	Case split in I, S or J location (6) with no loss of powder		100%	3.1	Visual
102.	Corroded or stained cartridge, if etched (2)			3.1	Visual
103.	Round head, (case) (4)			3.1	Visual

NOTES: 1/ Numbers after defect descriptions refer to visual defect standards in MIL-STD-636 (Caliber .50 Section).

2/ Refer to MIL-STD-636 (Caliber .50 Section) for visual defect standards. In the event of a conflict between 4.4.2.1 of this specification and MIL-STD-636 as to defect classification the classification specified in 4.4.2.1 shall apply.

3/ Each lightweight cartridge shall be disassembled and the propellant weighed. Any cartridge containing less than 100 grains of propellant shall be classed as a critical defect. Any cartridge containing 100 grains or more of propellant shall be classed as a major defect.

DRDAR-QA Form 160a, 1 Jun 83

Downloaded from http://www.everyspec.com

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF DEFECTS & TESTS

MIL-C-10190D

PARAGRAPH	TITLE				DRAWING NUMBER
4.4.2.1	Cartridge, Caliber .50, Ball, M33		SHEET 2 OF 4		7553097
					NEXT HIGHER ASSEMBLY N/A
CATEGORY	EXAMINATION OR TEST 1/	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE 2/ /INSPECTION METHOD
104.	Dented case (5)			3.1	Visual
105.	Draw scratch (case) (8)			3.1	Visual
106.	Beveled underside of head (case) (10)			3.1	Visual
107.	Case mouth not crimped in cannelure (11)			3.1	Visual
108.	Scaly metal (case) (12)			3.1	Visual
109.	No chamfer on head (rim) (case) (13)			3.1	Visual
110.	No visible evidence of mouth anneal (case) (21)			3.1	Visual
111.	Split bullet jacket (24)			3.1	Visual
112.	Loose bullet (25)			3.1	Visual/Manual
113.	Missing cannelure (26)			3.1	Visual
114.	Scaly metal (bullet) (27)			3.1	Visual
115.	Loose primer (35)			3.1	Visual/Manual
116.	Total length			3.1	Gage
117.	Cartridge profile failure requiring more than 80 lbs dead weight to insert in profile and alignment gage			3.1	Gage
118.	Diameter of extractor groove, max			3.1	Gage
119.	Diameter of head			3.1	Gage
120.	Thickness of head			3.1	Gage
121.	Length to shoulder datum			3.1	Gage
122.	Depth of primer			3.1	Gage

NOTES:

DRSMC-OA (D) Form 160, 1 Aug 83 replaces edition of 1 Jul 77 which may be used until exhausted.

Downloaded from http://www.everyspec.com

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF DEFECTS & TESTS

MIL-C-10190D

PARAGRAPH	TITLE				DRAWING NUMBER
4.4.2.1	Cartridge, Caliber .50, Ball, M33		SHEET 3 OF 4		7553097
					NEXT HIGHER ASSEMBLY N/A
CATEGORY	EXAMINATION OR TEST 1/	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE 2/ /INSPECTION METHOD
MINOR	(Class AQL - 1.5%)				
201.	Discolored, dirty, oily or smeared (waterproofing) (1)			3.1	Visual
202.	Dented case (5)			3.1	Visual
203.	Draw scratch (case) (8)			3.1	Visual
204.	Scratch (case) (9)			3.1	Visual
205.	Scaly metal (case) (12)			3.1	Visual
206.	Fold, wrinkle, buckle or bulge (case) (14, 15, 16, 17)			3.1	Visual
207.	Head stamp missing or illegible (case) (18)			3.1	Visual
208.	Defective head (case) (19)			3.1	Visual
209.	Defective mouth (case) (20)			3.1	Visual
210.	Dented bullet (22)			3.1	Visual
211.	Bullet scratched (23)			3.1	Visual
212.	Scaly metal (bullet) (27)			3.1	Visual
213.	Upset (crooked) point (28)			3.1	Visual
214.	Exposed steel (clad jacket) (bullet) (29)			3.1	Visual
215.	Blunt point (bullet) (30)			3.1	Visual
216.	Defective cannelure (31)			3.1	Visual
217.	Nicked or dented primer (36)			3.1	Visual

NOTES:

DRSMC-OA (D) Form 160, 1 Aug 83 replaces edition of 1 Jul 77 which may be used until exhausted.

Downloaded from http://www.everyspec.com

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF DEFECTS & TESTS

MIL-C-10190D

PARAGRAPH	TITLE				DRAWING NUMBER
4.4.2.1	Cartridge, Caliber .50, Ball, M33		SHEET 4 OF 4		7553097
					NEXT HIGHER ASSEMBLY N/A
CATEGORY	EXAMINATION OR TEST 1/	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE 2/ /INSPECTION METHOD
218.	No waterproofing material (primer pocket joint) (37)			3.1	Visual
219.	Defective crimp (38)			3.1	Visual
220.	Diameter of extractor groove, min.			3.1	Gage
221.	Evidence of poor workmanship 4/			3.11	Visual

NOTES:

4/ Defects other than those listed in MIL-STD-636 (Caliber .50 Section).

DRSMC-QA (D) Form 160, 1 Aug 83 replaces edition of 1 Jul 77 which may be used until exhausted.

Downloaded from http://www.everyspec.com

Downloaded from http://www.everyspec.com

4.4.3 Testing. Testing is described in 4.4.3.1. Testing shall be conducted in accordance with the methods and procedures specified in 4.5.

a. Test samples. The quantities for the various tests shall be as specified in 4.4.3.1. Only cartridges having met the visual and dimensional requirements shall be used in the ballistic tests, and shall have been selected in such a manner that the sample is representative of the entire lot. Sufficient cartridges shall be selected such that all testing (including testing of second samples where applicable) can be performed. The cartridges shall be thoroughly mixed before being divided into samples for the various tests.

b. Firing defects and associated acceptance-rejection criteria are specified in Table III.

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF DEFECTS & TESTS

MIL-C-10190D

PARAGRAPH	TITLE				DRAWING NUMBER
4.4.3.1	Cartridge, Caliber .50, Ball, M33		SHEET 1 OF 2		7553097
					NEXT HIGHER ASSEMBLY N/A
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD
	TEST				
	Bullet Extraction	25	1/	3.2	4.5.1
	Residual stress	50	1/	3.3	4.5.2
	Waterproof	20	2/	3.4	4.5.3
	Accuracy	90	3/	3.5	4.5.4
	Action time	50	1/	3.6	4.5.5
	Velocity	20	3/	3.7	4.5.6 & 4.5.10
	Chamber pressure	20	3/	3.8	4.5.7 & 4.5.10
	Function and casualty		4/	3.9	4.5.8
	Gun, Machine, Cal .50 Browining M2, Heavy Barrel (turret type)	400			
	Gun, Machine, Cal .50 Browining M2, Heavy Barrel (flexible)	400			
	Gun, Machine, Cal .50, Tank, M85	400			

NOTES:

AMSMC Form 1570, 1 Feb 85

Replaces DRSMC-QA (D) Form 160, 1 Aug 83, which may not be us

Downloaded from http://www.everyspec.com

QUALITY CONFORMANCE INSPECTION

CLASSIFICATION OF DEFECTS & TESTS

MIL-C-10190D

PARAGRAPH	TITLE				DRAWING NUMBER
4.4.3.1	Cartridge, Caliber .50, Ball, M33		SHEET 2 OF 2		7553097
					NEXT HIGHER ASSEMBLY N/A
CATEGORY	EXAMINATION OR TEST	NO. OF SAMPLE UNITS	AQL OR 100%	REQUIREMENT PARAGRAPH	PARAGRAPH REFERENCE /INSPECTION METHOD

1/ Failure of two or more cartridges to comply with the applicable requirement shall be cause for rejection of the lot. If one cartridge fails in the first test, a second sample consisting of double the number of cartridges in the first sample shall be tested. If any failing cartridges are found in the second sample, the lot shall be rejected.

2/ Failure of nine or more cartridges to comply with the applicable requirement shall be cause for rejection of the lot. If more than four but less than nine cartridges fail in the first test, a second sample consisting of double the number of cartridges in the first sample shall be tested. The lot shall be rejected if in the combined first and second sample, nine or more cartridges fail to comply with the applicable requirement.

3/ 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/ The lot shall be rejected when function and casualty defects plus firing defects observed in all other firing tests exceed the acceptance number for the cumulative sample in Table III. If the number of defects found in the first tests exceeds the acceptance number for the first sample, but is equal to or less than the acceptance number for the cumulative sample, a second sample consisting of double the quantities specified under function and casualty shall be fired in all the service weapons in which the firing defects occurred in the first test. If the total number of defects in the combined first and second sample exceeds the acceptance number for the cumulative sample, the lot shall be rejected. If, in testing a second sample, defects other than those for which the second sample is being tested should occur to the extent that they exceed the acceptance number for the cumulative sample, the lot shall be rejected.

NOTE:

Downloaded from http://www.everyspec.com

Downloaded from http://www.everyspec.com

TABLE III. (Quality conformance inspection) function and casualty firing defect classification and accept-reject criteria.

DEFECT CLASS	ACCEPTANCE NUMBERS FIRST SAMPLE	CUMULATIVE SAMPLE	DEFECT CLASSIFICATION
1. Bullet in bore	0	1/	CRITICAL
2. Misfire-Vent hole missing or blocked	0	1/	CRITICAL
3. Misfire (excluding 2 above)	1	2	MAJOR
4. Primer defects			
a. Escape of gas through primer cap other than d. below	7	15	MAJOR
b. Escape of gas around primer cap for more than 50% of periphery	14	30	MAJOR
c. Blown primer or dropped primer on retraction of bolt 2/	0	1	MAJOR
d. Perforation in firing pin indent in primer cup	24	60	MINOR
5. Case Casualties 3/			
a. Longitudinal Split			
(1) Body (J)	7	15	MAJOR
(2) Body (K)	1	2	MAJOR
(3) To head (L)	0	1	MAJOR
(4) Through head (M)	0	1	MAJOR
(5) Neck or shoulder (I or S)	27	65	MINOR
b. Circumferential Rupture			
(1) Partial, shoulder, or body (J, K or S)	2	4	MAJOR
(2) Partial, head (L)	0	1	MAJOR
(3) Complete	0	1	MAJOR
6. Failure to extract	0	1	MAJOR
7. Weapon stoppage 4/	0	1	MAJOR

Downloaded from http://www.everyspec.com

NOTES:

1/ No second sample permitted. Lot shall be rejected.

2/ Primer defects:

a. Blown primer. A primer, which, when the cartridge is fired, is separated completely from the head of the cartridge case, and both the head of the case and the primer pocket are grossly distorted and deformed. The severity of this condition is such that it is readily detectable by visual examination.

b. Dropped primer. A primer which falls from the primer pocket after the cartridge is fired.

3/ For location of defects indicated by letters in parentheses, see Dwg 7643674.

4/ All stoppages attributable to the ammunition, with the exception of misfire, complete rupture or failure to extract, observed in all tests shall be included.

4.4.4 Packaging, packing and marking inspection. 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 a high pressure test, dummy or blank cartridge shall be classed as a critical defect. Occurrence of any incorrect type other than those listed shall be classed as a major defect. All non-conforming cartridges shall be rejected. Inspection for packaging, packing and marking shall be in accordance with MIL-STD-644 as applicable to the drawing.

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 tables starting with Table II, specified herein. 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.

4.4.6 Inspection equipment list. The examination and tests shall be made using equipment listed on LI-7553097, except as specified in 4.5.

4.5 Methods of inspection.

4.5.1 Bullet extraction. The cartridge shall be tested in an approved bullet extractor machine. The rate of travel of the test head shall be not less than three or more than six inches per minute.

Downloaded from http://www.everyspec.com

4.5.2 Residual stress (mercurous nitrate). The test shall be conducted in accordance with SCATP 7.62.

4.5.3 Waterproof. The ammunition to be tested (not to exceed five cartridges at one time) shall be placed horizontally on a perforated tray. The tray shall be placed in a desiccator containing a sufficient quantity of freshly boiled water to maintain a head of 2 to 2-1/2 inches. The desiccator shall be evacuated to a pressure of 7-1/2 pounds per square inch (15 inches of mercury) below atmospheric pressure and held at that pressure for 30 seconds. The number of bubbles liberated from the mouth or primer of each cartridge shall be observed.

4.5.4 Accuracy. The test shall be conducted in accordance with TECP 700-700, Vol. III.

4.5.5 Action time. The test shall be conducted in accordance with SCATP-7.62.

4.5.6 Velocity. The test shall be conducted in accordance with TECP 700-700, Vol. III.

4.5.7 Chamber pressure. The test shall be conducted in accordance with TECP 700-700, Vol. III.

4.5.8 Function and casualty. In these firings, the weapons shall be at room temperature at the beginning of the test and shall be cooled between bursts. The test shall be conducted in accordance with TECP 700-700, Vol. III and as indicated below:

a. Gun, Machine, Cal .50, Browning, M2, Heavy Barrel (Turret type) - Fire in bursts of 100 cartridges.

b. Gun, Machine, Cal .50, Browning, M2, Heavy Barrel (Flexible) - Fire in bursts of 100 cartridges.

c. Gun, Machine, Cal .50, M85 - Fire in bursts of 100 cartridges.

Observation for compliance with Table I and Table III, as applicable, and the cyclic rate of each test weapon shall be made. Cyclic rate of each weapon shall be recorded.

NOTE: Ammunition links shall not be reused.

Downloaded from http://www.everyspec.com

4.5.9 Stripping. The test shall be conducted simultaneously with the function and casualty test of the first article sample. The size of the paper screen shall be 6' x 6'. The paper screen (6' x 6') shall be placed 50 feet from the muzzle of the gun, so that the bullets will pass through the screen near its center. After each weapon is fired for function and casualty, the screen shall be examined for evidence of stripping bullet jackets. The screen shall be recovered or replaced as necessary to facilitate observation. Any evidence of stripping indicated by any irregular perforations on the paper screens, and the weapon(s) in which stripping occurred shall be reported.

4.5.10 Temperature test. The test sample shall be conditioned at 70°F, plus or minus 2 degrees F, for 2 hours minimum and fired at that temperature.

4.5.11 Defect penalty. In any ballistic test, except function and casualty, in which the occurrence of a firing defect prevents the obtaining of a reliable result for the characteristic being tested, an additional shot shall be fired. That particular test shall not be penalized, but the acceptance sample shall be penalized for such defects in accordance with Table I or III, as applicable.

5. PACKAGING

5.1 Level A (worldwide shipment). See 5.2.1.

5.2 Packing.

5.2.1 Level A (worldwide shipment). The cartridges shall be packed in accordance with Dwg. 7553346, 7553544 or 8596993.

5.3 Marking and labeling. Marking and labeling of the packed cartridges shall be in accordance with Dwg. 7553346, 7553544 or 8596993.

6. NOTES

6.1 Intended use. The cartridges covered by this specification are intended for use in .50 caliber weapons.

6.2 Ordering data.

a. Title, number and date of this specification.

b. Type and level of packing for the cartridges.

Downloaded from http://www.everyspec.com

c. Provisions for the submission of Inspection Equipment Designs (DI-R-10054) (see 6.3).

d. Provisions for the submission of acceptance inspection reports containing final inspection results for each lot of ammunition presented to the Government (see 6.4).

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

6.4 Submission of test data. In addition to the normal distribution of records, when the cartridge is procured by the US ARDC, one (1) copy of all ballistic data and the ammunition data card for each lot shall be forwarded to: Commander, ARDC, ATTN: AMSMC-QAF-S(D), Dover, NJ 07801-5001.

6.5 Hazard notice. The cartridge described herein and some of its components are flammable and explosive and consequently present hazards in manufacture, handling, storage and shipment. The contractor should recognize these hazards and take appropriate measures to prevent fire, explosion, adverse environment, rough handling, corrosive atmosphere, and electrically induced incidents. Such measures shall include the employment of an effective safety program that addresses the inherent hazards associated with the cartridge.

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

6.7 Changes from previous issues. Asterisks are not used in this revision to identify changes with respect to the previous issues due to the extensiveness of the changes.

Custodian:
Army-AR
Air Force-70

Review activities:
Army-AR
Air Force-70

Preparing activity:
Army-AR

(Project 1305-0B32)

Downloaded from http://www.everyspec.com

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE
MIL-C-10190D	CARTRIDGE, CALIBER .50, BALL, M33

3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
b. ADDRESS *(Street, City, State, ZIP Code)*	☐ VENDOR ☐ USER ☐ MANUFACTURER ☐ OTHER *(Specify)*:

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)*

DD FORM 82 MAR 1426 PREVIOUS EDITION IS OBSOLETE.