

MIL-C-1217C(MJ)  
**23 August 1966**  
 SUPERSEDING  
 MIL-C-1217B(ORD)  
 18 November 1954

MILITARY SPECIFICATION

CARTRIDGE, CALIBER .30, ARMOR PIERCING, M2.

1. SCOPE

1.1 This specification covers Cartridge, Caliber .30, Armor Piercing, M2 intended for use in Caliber .30 weapons.

2. APPLICABLE DOCUMENTS

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

STANDARDS

Military

- |             |   |
|-------------|---|
| MIL-STD-105 | - Sampling Procedures and Tables for Inspection by Attributes   |
| MIL-STD-109 | - Quality Assurance Terms and Definitions   |
| MIL-STD-636 | - Visual Inspection 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 |

DRAWINGS

U.S. Army Munitions Command

- |          |  |
|----------|--|
| B6138194 | - Cartridge, Caliber .30, Armor Piercing, M2   |
| D7553510 | - Packing and Marking; Cartridge, Cal. .30; Linked; Box, Ammunition, M19A1; Box, Wirebound                     |
| D7553698 | - Packing and Marking; Cartridges, Cal. .30; 8 Round Clips; Bandoleers; Box, Ammunition, M19A1; Box, Wirebound |
| D7553807 | - Packing and Marking; Cartridges, Cal. .30; Cartons; Box, Ammunition, M2A1 Box, Wirebound                     |
| D7553811 | - Packing and Marking; Cartridges, Cal. .30; 5 round Clips, Bandoleers, Box, Ammunition M19A1; Box, Wirebound  |

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DRAWINGS (Cont'd)

D7553887 - Packing and Marking; Cartridges, Cal. .30;  
5 Round Clips; Bandoleers; Box, Ammunition,  
M2A1, Box, Wirebound  
C7643674 - Classification of Cartridge Case Defects  
IEL-6138194 - Inspection Equipment List for Cartridge,  
Caliber .30, Armor Piercing, M2

PUBLICATIONS

U.S. Army Munitions Command

TECP 700-700  
Vol. III - Manual of Test Methods for Small Arms Ammunition  
AMCR 715-505  
Volume 3 - Ammunition Ballistic Acceptance Test Methods Volume  
3, Test Procedures for 7.62mm Cartridges.

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

3. REQUIREMENTS

3.1 General.- The cartridge shall comply with the requirements specified on Drawing B6138194, referenced specifications and the following:

3.2 First article sample.- Requirements for the submission of first article samples by the contractor shall be as specified in the contract.

3.3 Bullet extraction.- The force necessary to extract the bullet from the cartridge case shall be not less than 45 pounds.

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

3.5 Accuracy.- The average of the mean radii of all targets of the sample cartridges fired at 600 yards shall be not greater than 10 inches.

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

3.7 Velocity.- The average velocity of the sample cartridges, conditioned at 68° to 72° Fahrenheit (F), shall be 2715 feet per second (ft/sec) plus or minus 30 ft/sec at 78 feet from the muzzle. The standard deviation of the velocities shall not exceed 32 ft/sec.

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3.8 Waterproof.- The cartridge shall not release more than one bubble of air when subjected to a pressure differential of 5 pounds per square inch (psi) for 15 seconds.

3.9 Chamber pressure.- The average chamber pressure of the sample cartridges, conditioned at 68° to 72°F, shall not exceed 54000 psi.

3.10 Stripping.- The jacket of the bullet or any part thereof, shall not separate from the slug when the cartridge is fired.

3.11 Penetration.- The average depth of bullet core penetration of a 7/8 inch thick homogeneous armor plate, placed at 100 yards, shall be not less than 0.42 inches.

3.12 Function and casualty.- The cartridge shall function without casualty.

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

3.13.1 Metal defects.- The cartridge shall be free of deep draw scratches, scaly metal, dents and other defects.

3.13.2 Foreign matter.- The cartridge shall be free of corrosion, stains, discolorations, 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 supplier 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.

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 shall be submitted in accordance with contract requirements and shall consist of 2500 cartridges. The sample shall be manufactured using the same materials, equipment, processes and procedures as will be used in regular production. All parts and materials, including packaging and packing, shall be the same as used for regular production and shall be obtained from the same source of supply.

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4.2.1.1 Examination and test.- After inspection and provisional acceptance at source, the sample shall be inspected for all requirements of the drawings and specifications at a Government laboratory or such other facility specified in the contract.

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

#### 4.3 Inspection provisions.

##### 4.3.1 Lot.

4.3.1.1 Submission of product.- The product shall be submitted in accordance with MIL-STD-105.

4.3.1.2 Lot identification.- Each lot of ammunition shall be identified as to type, caliber and model, as well as with a lot number and the manufacturer's identification as assigned by the procuring agency. Each lot shall be further identified by a Federal Stock Number assigned by the procuring agency.

4.3.2 Examination.- One hundred percent examination shall be performed for all critical defects. Examination for major and minor defects shall be performed on a class basis in accordance with the classification of defects, Table I, using applicable sampling plans and acceptance criteria of MIL-STD-105. The acceptable quality level (AQL) for the major class shall be 0.25 percent and the AQL for the minor class shall be 1.50 percent. All non-conforming cartridges shall be rejected.

4.3.2.1 Classification of defects.- The classification of defects shall be as specified in Table I.

Table I

No.	Defect and Method of Inspection	Critical	Major	Major or	
				Minor	Minor
	<u>Visual 1/</u>				
	Cartridge				
1	Discolored, dirty, oily, smeared				X
2	Corroded, or stained if etched		X		
	Case				
4	Round head		X		
5	Dent				X
6	Split case				
	in K, L or M location	X			
	in I, S or J location		X		

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Table I (Cont'd)

No.	Defect and Method of Inspection	Critical	Major	Minor	Major or Minor
	Visual 1/				
7	Perforated case	X			
8	Draw scratch				X
9	Scratch			X	
10	Beveled underside of head		X		
11	Case mouth not crimped in cannelure		X		
12	Scaly metal				X
13	No chamfer on head (rim)		X		
14	Fold			X	
15	Wrinkle			X	
16	Buckle			X	
17	Bulge			X	
18	Illegible or missing head stamp			X	
19	Defective head			X	
20	Defective mouth			X	
21	No visible evidence of mouth anneal		X		
	Bullet				
22	Dent			X	
23	Scratch			X	
24	Split bullet jacket		X		
25	Loose bullet		X		
26	Missing cannelure		X		
27	Scaly metal (bullet)				X
28	Upset (crooked) point			X	
29	Exposed steel (clad jacket)			X	
30	Blunt point			X	
31	Defective cannelure			X	
	Primer				
32	No primer	X			
33	Cocked primer	X			
34	Inverted primer	X			
35	Loose primer		X		
36	Nicked or dented primer			X	
37	No waterproofing (primer pocket joint)			X	
38	Defective crimp			X	
	Gaging				
39	Total length		X		
40	Cartridge profile failure (requiring more than 20 pounds dead weight to insert in profile and alignment gage)		X		

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Table I (Cont'd)

No.	Defect and Method of Inspection	Critical	Major	Minor	Major or Minor
41	Diameter of extractor groove, max.		X		
42	Diameter of extractor groove, min.			X	
43	Diameter of head		X		
44	Thickness of head		X		
45	Length to shoulder datum, min.		X		
46	Depth of primer		X		

## Weighing

47	Weight, min. <u>2/</u>		X		
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1/ Refer to MIL-STD-636 for visual standards for defects 1 through 38.

2/ Each lightweight cartridge shall be disassembled and the propellant weighed. Each such cartridge found to contain less than 25 grains of propellant shall be classed as a critical defect.

4.3.3 Tests.- The tests listed in Table II shall be conducted in accordance with the methods and procedures specified in 4.4.

4.3.3.1 Test samples.- The quantities for the various tests shall be as specified in Table II. Only cartridges having met the visual, dimensional and weight 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. The cartridges selected shall be thoroughly mixed before being divided into samples for the various tests.

Table II

Test	Number of Cartridges	Requirement Paragraph
Bullet extraction <u>1/</u>	25	3.3
Residual stress (Mercurous Nitrate) <u>1/</u>	50	3.4
Accuracy <u>2/</u>	90	3.5
Action time <u>1/</u>	50	3.6
Velocity <u>2/</u>	20	3.7
Waterproof <u>5/</u>	20	3.8
Chamber pressure <u>2/</u>	20	3.9
Stripping <u>4/</u>		3.10
Penetration <u>4/</u>	20	3.11
Function and casualty <u>3/</u>		3.12
Gun, Machine, Cal. .30, M37 (Tank)		

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Table II (Cont'd)

Test	Number of Cartridges	Requirement Paragraph
or		
Alternate Gun, Machine Cal. .30, Browning, M1919A4	300	
Gun, Machine, Cal. .30 M1919A6	300	
Rifle, U.S. Cal. .30 M1	208	

- 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 initial test, a second sample consisting of double the number of cartridges in the first sample may be tested. If any defective cartridges are found in the second sample, the lot shall be rejected.
- 2/ Failure of the cartridges to comply to 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 initial test. Failure of the cartridges in the second sample to comply with the applicable requirement shall be cause for rejection of the lot.
- 3/ The lot shall be rejected when function and casualty defects plus all other firing defects exceed the acceptance number for the cumulative sample in Table III. If the number of defects found in the initial test exceeds the acceptance number for the first sample (Table III) but is equal to or less than the acceptance number for the cumulative sample (Table III), a second sample, consisting of double the quantities specified under function and casualty test, shall be fired in all the service weapons specified therefor. This procedure shall apply regardless of the weapon or weapons in which the firing defects occurred during the initial 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.
- 4/ This test shall be conducted on the initial production sample only. Determination of compliance with the bullet stripping requirement shall be made during the function and casualty test.
- 5/ Failure of nine or more cartridges to comply with the applicable requirements 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

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be rejected if, in the combined first and second sample, nine or more cartridges fail to comply with the applicable requirement.

4.3.3.2 Firing defects.— Firing defects and acceptance numbers shall be as specified in Table III.

Table III

Defects	Acceptance Number	
	First Sample	Cumulative (First & Second Sample)
1. Misfire	1	2
2. Bullet remaining in bore <u>1</u> /	0	-
3. Primer leak		
a. Perforation in firing pin indent in primer cup		
(1) Machine guns	12	28
(2) Rifles	1	2
b. Escape of gas through primer cup other than 3a.	1	2
c. Escape of gas around primer cup more than 50% of periphery	10	20
d. Blown primer or primer falls out pocket on retraction of bolt	0	1
e. Primer remains in pocket but is physically loose	3	6
4. Case Casualties		
a. Longitudinal split <u>2</u> /		
(1) Neck and shoulder (I & S)	20	42
(2) Body (J)	3	6
(3) Body (K)	1	2
(4) To head (L)	0	1
(5) Through head (M)	0	1
b. Circumferential rupture <u>2</u> /		
(1) Partial, shoulder or body (J & S)	1	2
(2) Partial, body (K)	0	1
(3) Partial, head (L)	0	1
(4) Complete	0	1
5. Failure to extract	0	1
6. Weapon stoppage <u>3</u> /	0	1

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



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- 2/ For location of defects indicated by letters in parentheses, see Drawing C7634674.
- 3/ All stoppages attributable to the ammunition, with the exception of misfire or complete rupture, observed in all tests shall be included.

4.3.4 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, blank or grenade 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.

4.3.5 Inspection equipment.- The examination and tests shall be made using the equipment listed on IEL-6138194, except as provided in 4.3. Simulated assessment of reference cartridges shall be made in accordance with TECP 700-700, Vol. III.

#### 4.4 Test methods and procedures.

4.4.1 Bullet extraction.- The cartridges shall be tested in an approved bullet extractor machine. The rate of travel of the test head shall be not less than three nor more than six inches per minute.

4.4.2 Residual stress (Mercurous nitrate).- Tests shall be conducted in accordance with TECP 700-700, Vol. III.

4.4.3 Accuracy.- The method of test and measurement of targets shall be as prescribed in TECP 700-700, Vol. III. The specified range may be shortened in decrements of 100 yards, to a minimum range of 200 yards. For ranges less than 600 yards the average mean radius shall be reduced in direct proportion to the reduction in range.

4.4.4 Action time.- The test shall be conducted in accordance with AMCR 715-505, Volume 3.

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

4.4.6 Waterproof.- The test shall be conducted in accordance with TECP 700-700, Vol. III.

4.4.7 Chamber pressure.- The cartridges shall be drilled, using the specified equipment and the drilled hole shall be covered with a half inch square of tape. The test shall be conducted in accordance with TECP 700-700, Vol. III.

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4.4.8 Penetration.- The test shall be conducted in accordance with TECP 700-700, Vol. III.

4.4.9 Function and casualty.- In these firings the weapon shall be at room temperature at the beginning of the test and the machine guns shall be cooled between bursts. The number of cartridges to be fired shall be as specified in Table II. The test shall be conducted in accordance with TECP 700-700, Vol. III and as indicated below:

a. Gun, Machine, Caliber .30, M37 (Tank) or alternate Gun, Machine, Caliber .30, Browning, M1919A4 - Fire in bursts of 100 cartridges.

b. Gun, Machine, Caliber .30, Browning, M1919A6 - Fire in bursts of 100 cartridges.

c. Rifle, U. S. Caliber .30, M1 - Fire 8 cartridges (one clip) rapid fire, with intervals of not more than 1/2 minute between clips. The weapon shall be cooled after firing the first 48 cartridges (6 clips). Two rifles shall be used and 104 cartridges shall be fired in each rifle.

4.4.10 Stripping.- The test shall be conducted in accordance with TECP 700-700, Vol. III simultaneously with the function and casualty test.

4.4.11 Defect penalty.- In any ballistic test, except function and casualty, in which the occurrence of a firing defect, listed in Table III 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 III.

## 5. PREPARATION FOR DELIVERY

5.1 Packing.- Level A (Worldwide shipment). The cartridges shall be packed in accordance with Drawings D7553510, D7553698, D7553807, D7553811 or D7553887.

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

## 6. NOTES

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

6.1.1 Title, number and date of this specification.

6.1.2 Type and level of packing.

6.1.3 Provision for supply, maintenance and disposition of the mandatory ballistic test equipment for acceptance inspection purposes.

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

6.1.5 Requirement for contractor to provide and maintain an inspection system in accordance with MIL-I-45208, Inspection System Requirements.

Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

Custodian:

Army - MU

Preparing activity:

Army - MU

User activity:

Air Force - 70

Project No. 1305-A377