

INCH-POUND

MIL-C-70781 (AR)
 AMENDMENT 6
 1 October 1998

 SUPERSEDING
 AMENDMENT 5
 30 March 1994

MILITARY SPECIFICATION

CARTRIDGE, 60MM, SMOKE, MARKING, M722 LOADING, ASSEMBLING AND PACKING

This amendment forms a part of Military Specification MIL-C-70781 (AR), dated 17 October 1988, and is approved for use by the U.S. Army Armament, Research, Development and Engineering Center, and is available for use by all Departments and Agencies of the Department of Defense.

PAGE 2

2.1.2, Change "15-12-345 - Cartridge, 60MM, Smoke, Marking, M722" to read "12902791 - Cartridge, 60MM: Smoke WP, M722 W/Fuze, PD, M745" and make this drawing number change wherever else it appears in the specification.

Delete the following drawings:

- "15-12-352 - Packing and Sealing for: 60MM Cartridge, Smoke, Marking, M722 with M745 Fuze
- 15-12-358 - Intermediate Packing and Marking
- 15-12-359 - Marking for Fiber Tube
- 15-12-361 - Marking for Shipping Container"

Add the following drawings:

- "9293439 - Packing and Marking for Container, Ammunition, Metal PA70, for 60MM Cartridge, HE, M720 and WP M722
- 9293287 - Packing and Marking Container: Ammunition, Fiber, PA78 for 60MM Cartridge, HE, M720 and M722"

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AMSC N/A

FSC 1310

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PAGE 2 (Cont'd)

Change the drawing title: "9293440 - Box, Wirebound, Packing, Ammunition for 60MM, Cartridge, HE, M720 W/Fuze, Packing and Marking" to read "9293440 - Box, Wirebound, Packing, Ammunition for 60MM Cartridge, HE, M720 and M722, Packing and Marking."

PAGE 5

3.1.3, Delete in its entirety.

PAGE 6

4.4.3.1.b, Change "five or more duds occur" to read "four or more duds occur."

PAGE 7

Ballistic test (Proving Ground), change "126" to "135".

Change drawing number "15-12-358" to read "9293439"

PAGE 10

4.4.2.2, Under Major category, add the new following:

"103 Seated burster protrudes less than minimum height above base of fuze booster cavity ... 100% ... 3.1.2 ... Gage"

PAGE 12

4.4.2.4, Under Major category, delete Critical defect 2 in its entirety.

PAGE 13

* 4.4.2.5, Under Critical category, delete Critical defect 1 in its entirety.

* 4.4.2.5, Under Major category, add the new following:

"103 Minimum distance from top of ignition cartridge assembly to edge of fin incorrect ... 100% ... 3.2 ... Gage"

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4.4.2.5, Change "90/56" to "135/56"

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PAGE 15

4.4.2.6, Change drawing number "15-12-352" to read "9293287" and next higher assembly "15-12-358" to read "9293439".

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4.4.2.7, Change drawing number "15-12-352/15-12-359" to read "9293287" and next higher assembly "15-12-358" to read "9293439".

Change Minor 201 "Marking, as specified on Drawing 15-12-359 incorrect or illegible" to read "Marking missing, misleading or unidentifiable."

PAGE 17

4.4.2.8, Major 101, 102, 103 and 104: Change requirement paragraph from "5.2" to "5.1".

Change drawing number "15-12-358" to read "9293439".

Add new Minor 201 as follows:

"201 Graphical firing scale not present in every metal container ... 0.65% ... 5.1 ... Visual."

PAGE 18

4.4.2.9, Change drawing number "15-12-358" to read "9293439".

Major 101 and Minor 202, change requirement paragraph from "5.2" to "5.1".

Minor 201, change requirement paragraph from "5.4.2" to "5.3".

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4.4.2.10, Change drawing number "9293440/15-12-361" to read "9293440".

Minor 201 and 202, Change requirement paragraph from "5.3" to "5.2".

Minor 203, Change requirement paragraph from "5.4" to "5.3".

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PAGE 20

4.4.3.1.1, Change "90" to "135".

4.4.3.1.1.b, Change "Two or more duds occur" to read "Four or more duds occur".

4.4.3.1.2, Change "90" to read "56".

4.4.3.1.2.b, Change "two or more duds occur" to read "three or more duds occur".

PAGE 21

4.5.2, Delete in its entirety.

* 4.5.3.2, Delete in its entirety and substitute the following:

"4.5.3.2 Production test. The cartridges for production lot acceptance shall be conditioned at 70 degrees F \pm 2.5 degrees F. The sample for this first three production lots (135) shall be separated into three equal groups; one group tested at Charge zero, one group tested at Charge two, and one group tested at Charge four. After three consecutive lots have complied with the acceptance requirements, the production lot sample (56) shall be separated into two groups; one group tested at Charge zero, and one group tested at Charge four. All cartridges from the ballistic sample shall be subjected to radiographic or fluoroscopic inspection prior to shipment to the ballistic test facility. Images generated during this inspection shall be held until final disposition of the tested lot is determined. Image record from acceptable lots may be discarded. The cartridge shall be fired from a standard 60MM Lightweight Company Mortar System (LWCMS) mortar at an elevation of 45 degrees from a hard mount (a solid base test fixture) within two minutes after removal from the conditioning chamber. The individual velocities, pressures, deflections, and ranges shall be recorded on the firing record. Observation shall be made for misfires and duds, and shall be recorded. Should a premature burst or metal parts separation occur, a photograph shall be taken of the evidence and attached to the firing record. The velocity and range standard deviations and arithmetic averages shall be calculated and recorded. Range probable error shall be calculated and recorded. Temperature of the day, weather and the time of firing shall also be recorded. Hawk radar shall be used to observe for metal parts separation, unobserved

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short rounds and unobserved duds. In these events, an analysis should be made of the radar data and should be noted on the firing record. This shall include a comparison of times of flight of the unobserved rounds with that of the normal rounds. Prints of the radar traces of these rounds, and prints of the preceding and succeeding rounds, shall be attached to the firing record. Data from ballistically acceptable lots may be discarded. A smear camera shall be used to photograph all test samples. The camera shall be positioned to pick up each round just outside the second velocity coil. Should an unobserved dud, short round or any other abnormal performance occur, a photo print of these rounds, and prints of all the other rounds in the particular charge zone, shall be attached to the firing record. Film from acceptable lots may be discarded."

PAGE 23

- * 4.5.5, Delete in its entirety and substitute the following:

"4.5.5 Radiographic or fluoroscopic examination. The ballistic sample cartridges (WP filled) shall be subjected to radiographic or fluoroscopic examination. The radiographic or imaging beam shall form a 90 degree angle with the longitudinal axis of the projectile. Beam intensity and penetration will be adjusted such that internal details of metal component interfaces are clearly discernible. Examination of the radiograph or the image produced shall be made to determine proper assembly. Inspection shall be for parts missing or improperly assembled, as well as cracks, foreign matter, or other material or workmanship defects. Radiographic equipment, operations and procedures shall be qualified in accordance with MIL-STD-453. In addition, the sensitivity of the radiographic technique shall be 2.0 percent, and the photographic density of the film used shall be no less than 1.25, as determined in accordance with 4.5.5.2. In the event an original radiograph or fluoroscopic image indicates doubt as to its acceptability, the cartridge shall be re-radiographed or re-imaged at an angle of 90 degrees from the original exposure and in the same plane."

PAGE 24

- 5.1, Change to read, "Packaging. Packaging shall be as specified on drawings (dwgs.) 9293287 and 9293439."

- 5.1.1, Delete in its entirety.

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PAGE 24 (Cont'd)

5.1.2, Delete in its entirety.

5.1.3, Delete in its entirety.

PAGE 25

5.2, Change to read "Packing. Packing shall be as specified on dwg. 9293440."

5.2.1, Delete in its entirety.

5.2.2, Delete in its entirety.

5.2.3, Delete in its entirety.

5.3, Change to read "Marking. Marking shall be as specified on dwgs. 9293287, 9293439 and 9293440."

5.3.1, Delete in its entirety.

5.3.2, Delete in its entirety.

5.3.3, Delete in its entirety.

6.3, Add "Commander, U.S. Army, AMCCOM, ATTN: AMSMC-QAC-M (A), Aberdeen, MD 21010-5423."

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