

DEPARTMENT OF THE ARMY SUPPLY BULLETIN

**CARTRIDGE, 40-MM: RIOT CONTROL, CS, M674
(1310-B537) AND CARTRIDGE, 40-MM: RED SMOKE,
RS, M675 (1310-B538)
AMMUNITION SURVEILLANCE PROCEDURES
HEADQUARTERS, DEPARTMENT OF THE ARMY,
WASHINGTON, DC**

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Section I. INTRODUCTION

1. Purpose and scope.

This bulletin, when used in conjunction with SB 742-1, provides a method for determining the serviceability of the subject cartridges.

a. The visual inspections and function testing criteria in this procedure will be accomplished under a centralized control program managed by

the U.S. Army Armament, Munitions and Chemical Command (AMCCOM), AMSMC-QAS, Rock Island, IL 61299-6000. This bulletin is to be used in the serviceability assessment of cartridge lots based on the inspection and test of individual cartridges only.

b. The provisions of this bulletin are mandatory

*This bulletin supersedes SB 742-1310-94-1, 13 August 1974.

for all Department of the Army organizations within the continental United States (CONUS) and outside the continental United States (OCONUS) with an ammunition receipt, storage, and/or distribution mission. This bulletin is not intended for use by organizations with stocks in basic loads.

c. SB 742-1 provides additional information pertaining to the frequency of test, sample selection, defect standards, and reports and records.

2. Item Description

a. This bulletin pertains to—

(1) Cartridge, 40-mm, Riot Control (CS), M674 (1310-B537).

(2) Cartridge, 40-mm, Red Smoke (RS), M675 (1310-B538).

b. The M674 40-mm riot control cartridge is intended primarily for use in controlling riots, dispersing mobs, and protecting law enforcement personnel. The M675 40-mm red smoke cartridge is used to train personnel in the use and handling of riot control cartridge, M674. While both models are designed to be launched by hand, both are also designed to be launched by the 40-mm grenade launcher or pyrotechnic pistol, AN-M8. Both models are identical except for filler and marking. Each cartridge consists of a cartridge barrel that houses a rubber body assembly, a launcher adapter, and a firing-cap assembly.

(1) The body assembly is the munition projectile and contains riot control agent filler (CS) for the M674 or red smoke filler for the M675.

(2) The surfaces of the cartridge barrel and firing-cap assembly are coated with pumice paint to provide for positive gripping during hand firing. The waterproof tape holds the firing-cap assembly in place. This assembly is used only for hand launching and fits over the muzzle end of the cartridge barrel.

(3) The detachable launcher adapter fits over the primer end of the cartridge and is used only when the round is fired from the grenade launcher. When the percussion primer ignites the black powder expelling charge, rapidly expanding gas forces the body assembly (projectile) out of the barrel while simultaneously igniting the delay and first-fire mixtures. The first-fire mixture then burns through the plastic cup seal and ignites the CS or red smoke pyrotechnic mixture in the rubber body assembly (projectile). Increased pressure bursts one or more of emission holes in the neck end of the body assembly and releases smoke from the burning CS pyrotechnic mixture or red smoke mixture, as applicable.

3. References

a. The following publications will provide more information on the surveillance of the subject

items. This list is not to be considered all inclusive.

(1) AR 75-1, Malfunctions Involving Ammunition and Explosives Reporting, Requirements Control Symbol DRC-132 (MIN).

(2) SB 742-1, Ammunition Surveillance Procedures.

(3) TM 3-1310-244-10, Operator's Manual, Cartridge, 40 Millimeter: Riot Control CS, M674, and Cartridge, 40 Millimeter: Red Smoke RS, M675.

(4) TM 9-1010-205-10, Operator's Manual, 40 Millimeter: Grenade Launcher M79.

(5) TM 9-1010-221-10, Operator's Manual, 40 Millimeter: Grenade Launcher, M203.

(6) TM 9-1005-249-10, Rifle, M16A1.

(7) TM 9-1095-201-15, Operator Organizational, Field and Depot Maintenance Manual; Ground Signal Projector M1A1; Hand Pyrotechnic Projector M9; and Pyrotechnic Pistol AN-M8, with Pyrotechnic Pistol Mount, M1.

b. Each item of ammunition peculiar equipment (APE) has an operational manual that should be consulted prior to and during the use of that item. The manual is titled with the APE number and nomenclature of the APE number and nomenclature of the APE item.

4. Safety

a. The visual examinations and surveillance function testing in this bulletin must be conducted according to the provisions set forth in the appropriate safety regulations and implementing instructions with special attention devoted to the technical manuals describing the item. These cartridges are filled with an irritant agent. All personnel must have a field protective mask immediately available when conducting an inspection or function test. A standing operating procedure (SOP) that specifies the safety requirements will be posted at the inspection and test site. Absence of a safety requirement in this or any other publication is not to be construed as meaning that precaution is unnecessary.

b. Function testing will be conducted during daylight hours only and only in an area that is clear of flammable material such as dry grass, weeds, etc. Testing will not be conducted during electrical, rain, or snow storms, or during any other conditions that might create a hazardous situation or adversely affect test results.

(1) The test site should be situated so that the prevailing wind blows away from the personnel shelter and so that the CS cloud dissipates before it reaches occupied areas. CS is an irritant and can cause dermatitis or skin burns.

(2) Protective measures should be taken to prevent CS contamination during inspection or

test. Work clothing made from closely woven smooth finish fabric such as standard fatigues or coveralls will provide adequate protection. Gloves should be worn.

(3) Personnel should stay in the shelter while the cartridge is emitting CS.

(4) Testing must be conducted according to any other applicable regulations, i.e., U.S. Environmental Protection Agency (EPA), local regulations, etc. Cartridges will not be fired when the wind velocity exceeds 15 mi/h.

c. Any concentration of smoke is potentially hazardous when inhaled. If it becomes necessary for personnel to be in concentrations of smoke, a protective mask must be worn. Visible evidence of smoke will require personnel to mask. Personnel experiencing breathing difficulties or discomfort will also serve as a signal for all similarly exposed personnel to mask. If smoke enters the shelter, personnel must remain masked until the smoke is removed. Precautions should be taken to ensure

that concentrations of smoke in the personnel shelter do not exceed the capability of a protective mask. Assistance should be sought from the local medical authority's industrial hygienist to determine potential in-shelter concentrations. Bathing and laundering of clothing following function test operations will eliminate the risk of skin irritation following exposure to smoke.

d. Dud cartridges will be recovered and destroyed according to all applicable safety regulations and an approved SOP including protective equipment such as heat-resistant gloves, full face-shield, heat-resistant clothing, etc. A waiting time of 15 minutes minimum will be observed before approaching dud cartridges.

5. Personnel

All visual inspections and function tests described herein will be conducted under direct control of a Quality Assurance Specialist (Ammunition Surveillance) (QASAS).

Section II. SURVEILLANCE

6. Sample size

Unless otherwise directed, a representative sample of 32 cartridges is required for a surveillance function test. To satisfy requirements of a periodic inspection prescribed in conjunction with the surveillance function test, additional sampling and inspection of inner and outer packing may be required according to SB 742-1.

7. Sample selection

Sample cartridges will be selected according to SB 742-1 except that no more than four cartridges may be selected from any one box. If samples are to be function tested at an installation other than one at which the parent lot is stored, packing boxes and containers that are not shipped will also be inspected. The appropriate part of DA Form 984 (Munitions Surveillance Report) will be completed prior to shipment. Samples to be shipped must be packed and marked as prescribed by SB 742-1. During selection, samples must be numbered 1 to 32.

8. Surveillance test equipment

The following equipment is to be used in testing signals according to this procedure:

- a. Launcher, grenade, 40-mm: M79 or M203.
- b. APE 1902, mount, combination gun, small arms ammunition testing.
- c. APE 1902-E004 kit, accessory holding, M79 or APE 1902-E006 kit, accessory holding, M203 launcher.
- d. APE 1937, shelter, personnel protection, or equivalent.

- e. Two stopwatches accurate to 1/10 second.
- f. Protective mask, M9 or M17, for each crew member and observer at the test site.
- g. APE 1901, tank, immersion.
- h. APE 1912, thermometer (or equivalent).
- i. Approved velocity measuring equipment.

NOTE

Pistol, pyrotechnic, AN-M8 with mount, may be used in lieu of grenade launchers.

9. Preparation for test

a. Cartridges numbered 1 to 16 should be submerged in water having a temperature of no more than 10 degrees F (5 C) above the temperature of the cartridge to a depth of 1 to 2 inches (2 to 5 centimeters) over the body of the cartridge for 35 +/- 5 minutes. Immersion tank, APE 1901, may be used for this purpose. At the end of the soaking period, the cartridge will be dried by wiping and functioned within 1 hour.

b. Install the grenade launcher on the holding fixture with adapter kit according to the APE operation and maintenance manual. Adjust launcher so that it will fire at an elevation of 22 +/- 2 degrees with the muzzle of the launcher at a height of 60 +/- 2 inches (152 +/- 5 centimeters) above level of the impact area located down range. (If AN-M8 pistol is used, a launch elevation of 45 +/- 2 degrees is required to obtain minimum range of 65 meters.)

c. Lock the firing lanyard in the lanyard control box of APE 1937.

d. Set up velocity measuring equipment according to the manufacturer's instructions.

10. Test procedures

NOTE

The person installing the cartridges into the launcher will carry the key to the control box at all times to prevent unauthorized access to the lanyard.

a. Place sample cartridge into the launcher, assure lanyard is properly attached to launcher, and return to the personnel shelter.

b. From inside the shelter, unlock lanyard box and pull on lanyard to function the launcher.

c. Note and record observations in paragraphs 11 and 15, below.

d. Function test the remaining samples as instructed above.

11. Observations

All observations of nonstandard conditions and malfunctions, especially those not included among the defects listed in paragraphs 14 and 15, below, or in SB 742-1 should be included whenever pertinent and practical. The following observations, as a minimum, must be reported:

a. Report any nonstandard marking or marking which is misleading, incomplete, or unidentifiable.

b. Describe and give location of any rust, corrosion, damage, or deterioration.

c. Report the range of cartridge, that is, the distance from the point of launch to the point of impact.

d. Record the type of launcher (pistol) used and the elevation it was fired from.

e. Record and report the functioning time in seconds.

f. Record and report the velocity of the projectile.

12. Definitions

a. *Lag time.* The interval between the initiation of launch and the start of smoke or CS emission under pressure.

b. *Smoke emission time.* The time during which smoke or agent is emitted under pressure (but does not include flaming time).

c. *Flaming time.* The interruption of CS or smoke emission by flame and/or black smoke with gross reduction of the desired CS or smoke.

d. *Misfire.* The cartridge fails to launch.

e. *Dud.* The CS or smoke mixture fails to ignite after an acceptable launch.

13. Classification of defects

Defects observed during inspection and testing will be classified according to paragraphs 14 and 15 below and SB 742-1. Any defects, malfunctions, or nonstandard conditions observed, that are not classified in this or other publications, will be described fully and reported with the recommenda-

tion of the QASAS as to classification.

14. Nonfunctioning defects

a. Critical—none defined.

b. Major—

(1) A component, such as the primer, firing cap, or launcher adapter is missing or improperly assembled (specify defect).

(2) The waterproof tape is missing or improperly applied so that the barrel and firing cap assembly is not sealed.

(3) Instruction sheet missing.

c. Minor—

(1) Marking is missing, incomplete, improper, or illegible.

(2) Cartridges are inadequately or improperly packed (describe).

(3) Barrier bag ruptured.

15. Functioning defects

a. Critical—none defined.

b. Major—

(1) Misfire (BC020) (Note on report if cartridge launches on second attempt.)

(2) Dud (BC021).

(3) Range is less than 60 meters as measured in a horizontal plane from the launcher to point of impact. (BC031)

(4) Lag time is less than 2 seconds (BC032) or more than 9 seconds (BC036).

(5) Smoke emission time of CS cartridge, M674, is less than 10 seconds (BC025) or more than 50 seconds (BC033). Smoke emission time of red smoke cartridge, M675, is less than 3 seconds (BC027) or more than 33 seconds (BC034).

(6) Total flaming time exceeds 25 percent (BC030) of smoke emission time for M674 cartridge and 30 percent (BC035) for M675 cartridge.

(7) Rubber body ruptured (other than port membrane). (BC029).

(8) Cartridge fails to chamber in launcher. (JA024)

c. Minor—

(1) Range is less than 65 meters (but not less than 60 meters). (BC050)

(2) Lag time is more than 7 seconds but not more than 9 seconds. (BC051)

(3) Smoke emission time of CS cartridge, M674, is more than 40 seconds but not more than 50 seconds (BC052). Smoke emission time of red smoke cartridge, M675, is more than 28 seconds but no more than 33 seconds. (BC053).

(4) Total flaming time exceeds 25 percent but not 30 percent of smoke emission time for M675 cartridge. (BC054)

NOTE

The code following each functioning defect is for use by testing personnel only.

16. Evaluation

a. An interim condition code will be assigned according to SB 742-1 utilizing the following criteria for functional and nonfunctional characteristics. A lot will be classified as condition code J and reported according to SB 742-1 if any critical defect is observed (functional or nonfunctional).

b. Nonfunctional characteristics.

(1) Serviceable for unrestricted issue and use.

A lot not classified as code J will qualify as serviceable for unrestricted issue and use if the following requirements are met on inspection of 32 cartridges by attribute:

(a) Not more than 1 major defective.

(b) Not more than 3 minor defectives.

(2) Priority of issue. A lot not classified as condition code J or as serviceable for unrestricted issue and use will qualify as serviceable for priority of issue if the following requirements are met on inspection of 32 items:

(a) Not more than 3 major defectives.

(b) Not more than 6 minor defectives.

(3) Unserviceable. A lot not classified as condition code J or serviceable for unrestricted issue and use or priority of issue will be classified as unserviceable.

c. Functional codes.

(1) *Code A*. A lot not classified as code J will qualify for code A if the following requirements are met in the test of 32 cartridges:

(a) Not more than 1 major defective.

(b) Not more than 3 minor defectives.

(2) *Code B*. A lot not classified as code J or code A will qualify for code B if the following requirements are met in the test of 32 cartridges:

(a) Not more than 3 major defectives.

(b) Not more than 6 minor defectives.

(3) *Code D*. A lot not classified as code J, code A, or code B will be classified as code D.

17. Records and reports

Inspection and function test results will be recorded and reported on DA Form 984 and other appropriate forms as outlined in SB 742-1.



By Order of the Secretary of the Army:

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DISTRIBUTION:

To be distributed in accordance with DA Form 12-34, requirements for Ammunition Surveillance Procedure Cartridges, 40MM(Star).

