

DEPARTMENT OF THE ARMY SUPPLY BULLETIN

GRENADE, HAND, RIOT, CS-1 M25A2
GRENADE, HAND, RIOT, CS, M47
GRENADE, HAND, RED SMOKE, M48
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 subject items.

a. The visual inspection and function testing criteria in this procedure will be accomplished under a centralized control program managed by U.S. Army Armament, Munitions and Chemical Command (AMCCOM), AMSMC-QAS, Rock Island, IL 61299-6000.

b. This procedure is to be used in serviceability assessment of specified lots based on inspection and testing of individual items.

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

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

2. Item description. *a.* Grenade, hand, riot control, CS, M47, (DODIC) 1330-G922.

*This bulletin supersedes SB 742-1330-94-13, dated November 1978.

SB 742-1330-94-323

(1) The M47 grenade is a special-purpose, burning-type munition used for the control of riots and counter-insurgencies. This grenade is a nonlethal, incapacitating type munition that contains nonpersistent CS agent.

(2) The M47 grenade consists of a rubber body assembly, an M227 fuze, and a filling of CS pyrotechnic mixture. Grenade weighs 410 grams (approximately 1 lb) and is 3-1/2 inches in diameter. The top half of the grenade contains the fuze, and bottom half contains the filling hole and exhaust port. The grenade is filled with approximately 185 grams of CS pyrotechnics granulated mix.

b. Grenade, hand, red smoke, M48 (DODIC) 1330-G932.

(1) The M48 grenade is a nonlethal, special-purpose, burning type munition used as a training aid for the M47 grenade.

(2) The M48 grenade consists of rubber body assembly, an M227 fuze, and a filler of red smoke (RS) mixture. The grenade weighs 390 grams (approximately 1 lb) and is 3-1/2 inches in diameter. The gray grenade body is made of two rubber hemispheres vulcanized together. The top half of the grenade contains the fuze and the bottom half contains the filling hole and exhaust port. The grenade is filled with approximately 165 grams of RS mixture.

c. Grenade, hand, riot control, CS-i, M25A2, (DODIC) 1330-G924.

(1) Grenade, hand, riot control, CS-1, ABC-M25A2 is a bursting type riot control agent grenade and may be used to simulate casualty agents during training. The grenade has a powerful lachrymal effect and is irritating to the upper respiratory passages, causing coughing, difficulty in breathing, and chest tightness. Heavy concentration will cause nausea and vomiting as well. The onset of incapacitation is from 15 to 30 minutes up to several hours depending upon dosage and concentration.

(2) The grenade body is spherical and is made of two plastic hemispheres cemented together. The fuze is a pyrotechnic delay-detonating type and is integral to the grenade body. The fuze consists of an arming sleeve, arming pin, firing spring slider assembly, firing pin, safety pin and pull ring.

3. References. *a.* The following publications will provide more information on the surveillance of subject items. This list is not to be considered all inclusive.

(1) AR 75-1, Malfunctions Involving Ammunition and Explosives.

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

(3) AMC-R 385-104, Safety Criteria for Processing, Handling, and Decontamination of Agent CS.

(4) TM 43-0001-29, Army Ammunition Sheets for Grenades.

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

4. Safety. *a.* Visual examinations and surveillance function testing in this bulletin must be conducted according to the provisions set forth in appropriate safety regulations and implementing instructions with special attention devoted to the technical manuals describing the item. These grenades are filled with CS or smoke.

(1) All personnel must have a field protective mask immediately available when conducting an inspection or function test.

(2) A standing operating procedure (SOP) which specifies safety requirements will be posted at the inspection and test site.

(3) 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, $\frac{3}{4}$ 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 the CS or smoke cloud dissipates before reaching occupied areas. CS/smoke is an irritant and can cause dermatitis or skin burns.

(2) Protective measures should be taken to prevent contamination during inspection or test. Work clothing made from closely woven, smooth finish fabric such as standard fatigues or coveralls will provide adequate protection.

(3) Gloves should be worn. Personnel should stay in the shelter while the grenade is emitting filler. Testing must be conducted according to any other applicable regulations, e.g., U.S. Environmental Protection Agency (EPA), local regulations, etc. Grenades will not be fired when wind velocity exceeds 15 miles mi/h.

c. Any concentration of CS or smoke is potentially hazardous when inhaled. If personnel must be in concentrations of CS or smoke, a protective mask must be worn. Visible evidence of smoke will require personnel to mask.

(1) Personnel experiencing breathing difficul-

ties 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 smoke is removed.

(2) Precautions should be taken to ensure that concentrations of smoke in the personnel shelter do not exceed the capability of the protective mask.

(3) Assistance should be sought from the local medical authority's industrial hygienist to determine potential in-shelter concentrations.

(4) Bathing and laundering of clothing following function test operations will eliminate the risk of skin irritation following exposure to smoke.

d. Dud cartridges shall 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, flame-resistant clothing, etc. A waiting time of 15 minutes minimum shall be observed before approaching dud cartridges. M25A2 grenades will not be picked up but will be destroyed in place.

e. Before removing any grenade from a container a thorough visual inspection must be performed to assure safety pin is in place, undamaged, and that prongs of safety pin are spread approximately 45 degrees or diamond crimped.

f. Grenades should never be lifted or handled by the safety pin pull.

5. Personnel. Visual examination and function testing will be conducted under the direct control of a Quality Assurance Specialist (Ammunition Surveillance) (QASAS).

Section II. SURVEILLANCE

6. Sample size. Unless otherwise directed, a representative sample size of 32 items is required for surveillance function test. To satisfy the requirements of a periodic inspection performed in conjunction with the test, additional sampling of item, inner and outer packing may be required per SB 742-1.

7. Sample selection. Sample items will be selected according to the provisions of SB 742-1, except that no more than six items may be selected from any one box.

a. If samples are to be function tested at an installation other than one at which parent lot is stored, packing boxes and containers which are not shipped will also be inspected. The appropriate parts of DA Form 984 (Munitions Surveillance Report) will be completed prior to shipment.

b. Samples which are shipped must be packed and marked per SB 742-1. During sample selection, number items 1 through 32.

8. Surveillance test equipment. The following equipment is to be used in testing items in accordance with this procedure:

- a. Launcher, pneumatic, APE 1922M1.
- b. Tank, immersion, APE 1901.
- c. Thermometer.
- d. Accessory kit, support APE1922M1-

EOO1.

e. Cup, holding, for M25 grenade series (DWG #1922M1-E004).

f Cup, holding, for M47 and 48 grenades. (DWG #1922-E008).

g. Stop watches (2 each minimum).

9. Preparation for test. a. Grenade, M47 and M48 (only). Immerse sample grenades numbered 1 through 16 in water for 30 +/- 5 minutes to a

depth of 2 inches (5 cm) measured from the top of grenade fuze. The temperature of the water will be equal to but no greater than 10 degrees F (6 degrees C) above the temperature of the grenades at time of immersion. Remove grenades from the water, wipe dry, and function test within 1 hour.

Grenades numbered 17 through 32 will be tested without immersion in water.

b. M25A2 CS grenades will receive no conditioning prior to the test.

c. Set up the pneumatic grenade launcher as instructed in the APE 1922M1 Operational Manual and regulate air pressure to obtain the desired trajectory of the grenade. Lock firing lanyard in lanyard control box in the personnel shelter. The person who installs the grenades in the launcher will carry the key to the control box at all times to prevent unauthorized access to the lanyard. Assure that the M47 and M48 grenades are functioned onto a concrete, asphalt, or equally hard, level, noncombustible surface free of obstructions (which would inhibit grenade skittering).

10. Test procedures. a. The following procedure applies to M47 and M48 grenades only:

(1) Remove tape from the emission ports.

(2) Disconnect the lanyard from the quickrelease valve and position grenade in adapter cup of APE 1922M1. Attach pull gage to safety pull ring of grenade. Assure pull gage is set on zero and with a slow steady pull remove the grenade safety pin. Record pin pull.

(3) While holding the top of grenade firmly in adapter the cup, push the safety latch to the release position. Attach lanyard to the quick release valve and return to the personnel shelter.

(4) From inside the shelter, unlock the control box and pull on the lanyard attached to the

quick-release valve until the grenade is launched, then lock the control box and record the functioning times (paragraph 12).

(5) Function test the remaining sample grenades as instructed above and record the appropriate observations for each sample as instructed in paragraphs 12 and 16 below.

b. The following procedures apply to M25A2 grenade:

(1) Position the sample grenade in adapter cup of the APE 1922M1 and attach the lanyards as outlined in APE the 1922M1 Operational Manual.

(2) From inside the shelter unlock the control box and pull on the lanyard attached to the pull gage until the safety pin is withdrawn. Observe the grenade from the shelter to assure that the safety pin has been withdrawn. Continue pulling on the lanyard to open the quick-release valve and launch the grenade. Lock the control box and record functioning times (paragraph 12). Record the pin pull and reset the gage to zero.

(3) Function test the remaining samples as instructed above and record the appropriate observations for each sample as instructed in paragraphs 12 and 16 below.

11. Observations. All observations of nonstandard conditions and malfunctions, especially those not included among defects listed in paragraphs 15 and 16 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 markings which are incorrect, misleading, incomplete, or unidentifiable.

b. Give the location and extent of any rust, corrosion, damage, or deterioration.

c. Observe the grenade for dud, fuze primer function, deflagration, skittering time (M47 and M48 only), and smoke or CS. Time and record the lag time, skittering time, burning time, and any flaming time (to nearest tenth of a second).

d. Record the resistance to withdraw the fuze safety pin to the nearest half pound.

12. Definitions. a. Burning time. The period of time which begins with CS or smoke emission under pressure and ends when emission under pressure ceases.

b. Deflagration. A sudden and violent increase in the rate of burning which causes violent expulsion of the filler mixture or parts of the grenade.

c. Lag time. The time from the audible functioning of the fuze primer to the start of emission of the filler mixture under pressure.

d. Dud. A grenade in which the filler mixture fails to ignite for any reason.

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

f. Hangfire. Functioning of fuze primer after the grenade has impacted the ground.

g. Delay time. The time measured from the visual release of the arming sleeve to the bursting of the grenade body.

h. Skitter time. The length of time the grenade moves (skitters) on the ground during emission of CS or smoke under pressure.

13. Classification of defects. Defects observed during inspection and testing will be classified and reported per paragraphs 15 and 16 and SB 742-1. Any defects or nonstandard conditions observed which are not listed below or in SB 742-1 will be described fully and reported with the recommendations of the QASAS as to classification.

14. Nonfunctioning defects. a. Critical

(1) Safety pin missing (all).

(2) Safety pin not spread (all).

b. Major

(1) Emission port tape missing, loose, or not completely covering emission port (M47 and M48 only).

(2) Cracked or leaking body (M25A2).

(3) Missing or loose firing pin closure plug (M25A2).

(4) Missing or loose filler plug (M25A2).

(5) Marking missing, illegible, or incorrect to the extent that it precludes the identification of the type of round.

(6) Major corrosion on metal parts (all).

(7) Safety latch missing (M47 and M48).

c. Minor-minor corrosion (all).

15. Functioning defects. a. Critical

(1) Deflagration (all) (CF001).

(2) Delay time less than 0.5 seconds (M25A2) (JA021).

b. Major

(1) Hangfire (all) (CC021).

(2) Delay time greater than 0.5 seconds but less than 1.4 seconds (M25A2) (JA022).

(3) Lagtime less than 0.5 seconds (M47 and M48) (CG021).

(4) Lagtime more than 5 seconds (M47 and M48) (CG022).

(5) Burning time less than 5 seconds (M47 and M48) (CG024).

(6) Flaming time greater than 10 percent of burning time (M47 and M48) (CG026).

(7) Skitters less than fifty percent of burning time (M47 and M48) (CG027).

(8) Dud (all) (BC021).

(9) Delay time greater than 3.5 seconds (M25A2) (JA023).

c. *Minor*-burning time greater than 25 seconds (M47 and M48) (CG051).

Note

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

16. Evaluation. Using the following criteria and considering the nonfunctional characteristics and functional codes separately, an interim condition code will be assigned in accordance with SB 742-1.

A lot will be classified condition code J and reported per SB 742-1 if any critical defect is observed.

a. Nonfunctional characteristics.

(1) Serviceable for unrestricted issue and use. A lot not classified as condition code J shall qualify as serviceable for unrestricted issue and use if the following requirements are met on the inspection of 32 items.

(a) Not more than 2 major defectives.

(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 the inspection of 32 items:

(a) Not more than 3 major defectives.

(b) Not more than 7 minor defectives.

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

b. Functional codes:

(1) Code A. A lot not classified as condition code J shall qualify for functional code A if the following requirements are met in the test of 32 items:

(a) Not more than 2 major defectives.

(b) Not more than 3 minor defectives.

(2) Code B. A lot not classified as condition code J or functional code A shall qualify for functional code B if the following requirements are met in the test of 32 items.

(a) Not more than 3 major defectives.

(b) Not more than 7 minor defectives.

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

SB 742-1330-94-323

By Order of the Secretary of the Army:

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