

MIL-C-46930 (MU)

15 FEBRUARY 1963

MILITARY SPECIFICATION

CHARGE, PROPELLING, M45 FOR 120 MM GUN, M58 LOADING, ASSEMBLING AND PACKING

1. SCOPE

1.1 This specification covers the M45 propelling charge for use in the 120 MM Gun, M58.

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids, form a part of this specification to the extent specified herein.

SPECIFICATIONS**MILITARY**

- MIL-A-2550 —Ammunition and Special Weapons, General Specification for
- MIL-I-45208 —Inspection Requirements, General Specification for
- MIL-I-45607 —Inspection Equipment, Supply and Maintenance of
- MIL-P-46575 —Primer, Percussion-Electric, M67 Loading, Assembling and Packing

STANDARDS**MILITARY**

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

DRAWINGS**ORDNANCE CORPS**

- 7548593 —Ammunition Container, Fiber, 120 MM, M80A2 Assembly, Details and Packing
- 7548596 —Box, Packing Ammunition for 120 MM, Gun, M58. Ammunition in Fiber Containers. Assembly, Details and Packing
- 8822490 —Charge, Propelling 120-MM: M45, for 120MM Gun, M58.

PUBLICATIONS**ORDNANCE CORPS**

- ORD-M608-11 —Procedures and Tables for Continuous Sampling by Attributes.
- IEL-8822490 —Index of Inspection Equipment Lists.

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

3. REQUIREMENTS

3.1 **Material.** Materials shall be in accordance with applicable drawings and specifications.

3.2 **Propelling Charge.** The propelling charge shall comply with all requirements specified on Drawing (dwg). 8822490 and

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with all requirements specified in applicable specifications.

3.3 Assessed weight tolerance. The weight of the propellant shall not differ by more than 0.4 ounces avoirdupois from that designated by the loading authorization for the particular lot of propellant used.

3.4 Electrical resistance. The Cartridge Case and primer assembly shall have an electrical resistance between the center button of the primer and the base of the Cartridge Case of not less than 0.80 ohms and not more than 2.0 ohms.

3.5 Profile and alignment. The assembled charge shall freely enter a profile and alignment gage designed in such a manner as to comply with the maximum profile and alignment requirements specified on the applicable drawing.

3.6 Workmanship. All parts shall be free of chips, dirt, grease, rust and other foreign material. The cleaning methods used shall not be injurious to any of the parts nor shall the parts be contaminated by the cleaning agents used.

4. QUALITY ASSURANCE PROVISIONS

4.1 General quality assurance provisions. The supplier is responsible for the performance of all inspection requirements specified herein. Except as otherwise specified, the supplier may utilize his own or any other inspection facilities and services acceptable to the Government. Inspection records of the examinations and tests shall be kept complete and available to the Government as specified in the contract or order. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements. Reference shall be made to MIL-STD-109 in order to define terms used herein. The provisions of MIL-A-2550 shall apply.

4.1.1 Contractor quality assurance system. The contractor shall provide and maintain an effective quality assurance system in

compliance with the requirements of MIL-I-45208.

4.1.2 Submission of product. At the time the completed lot of product is submitted to the Government for acceptance the contractor shall supply the following information accompanied by a certificate which attests that the information provided is correct and applicable to the product being submitted:

- (a) A statement that the lot complies with all quality assurance provisions of the approved current written description of the system.
- (b) Number of units of product inspected.
- (c) Results obtained for all inspection performed.
- (d) Drawing, specification number and date, together with an identification and date of changes.
- (e) Certificates of analysis on all material procured directly by the contractor when such material is controlled by Government specifications referenced in any of the contractual documents.
- (f) Number of items in the lot.
- (g) Date submitted.

The certificate shall be signed by a responsible agent of the certifying organization. The initial certificate submitted shall be substantiated by evidence of the agent's authority to bind his principal. Substantiation of the agent's authority will not be required with subsequent certificates unless, during the course of the contract, this authority is vested in another agent of the certifying organization.

4.1.3 Government verification. Using the contractor's written quality assurance procedure, this detail specification, the applicable drawings and other contractual documents as a guide, the Government inspector shall verify at unscheduled intervals all quality assurance operations performed by the contractor. Verification will be in accordance with MIL-I-45208 and will be performed to the extent necessary to assure compliance

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with the contractual requirements. Severity of Government inspection of individual characteristics will be directly related to the seriousness of the classification assigned. In no instance will a characteristic classified "critical" be accepted solely on the basis of the contractor's records.

4.2 Inspection Provisions.

4.2.1 Lot formation. A lot shall consist of propelling charge assemblies loaded and produced by one manufacturer in one unchanged process, in accordance with the same drawing, same drawing revision, same specification, and same revision. Drawing, specification, and process changes not affecting safety, performance or fit, as determined by the Government shall not necessitate changing the lot number. Each lot shall contain:

- (a) Cartridge cases from not more than one lot.

- (b) Loaded primers of one interfix lot number from one manufacturer.
 (c) Propellant from not more than one lot.
 (d) Closing plugs of one interfix lot number.

4.2.2 Examination. Sampling plans and procedures for the following classifications of defects shall be in accordance with MIL-STD-105 except that inspection for critical defects, when listed, shall be 100 percent. Continuous sampling plans in accordance with Handbook ORD-M608-11 may be used if approved by the procuring activity. Also, at the option of the procuring activity, AQL's and sampling plans may be applied to the individual characteristics listed using an AQL of 0.40 percent for each minor defect. Equipment necessary for the performance of the inspections listed shall be in accordance with 4.2.4.

4.2.2.1 Primer. Prior to assembly with case. (see dwg. 8822490).

Categories	Defects	Method of inspection	Code No. (see 6.2)
Critical:			
	1. One or more flash holes missing	Visual	(01001)
Major:	None defined		
Minor:	None defined		

4.2.2.2 Bag charge loaded prior to assembly with case. (see dwg. 8863593 or 8822527 covering a detail dwg. of 8822490).

Categories	Defects	Method of inspection	Code No.
Critical:	None defined		
Major:	AQL 0.25 percent		
	101. Assembly damaged to the extent that propellant can escape	Visual	(02001)
Minor:	AQL 1.00 percent		
	201. Marking misleading or unidentifiable	Visual	(02002)
	202. Evidence of poor workmanship (see 3.6)	Visual	(02003)

4.2.2.3 Propelling charge prior to loading propellant (see dwg. 8822490).

Categories	Defects	Method of inspection	Code No.
Critical:			
	1. Primer above flush	Gage	(03001)
Major:	None defined		
Minor:			
	201. Foreign matter on interior of case (see 3.6)	Visual	(03001)

MIL-C-46930(MU)**4.2.2.4 Propelling charge assembly prior to assembling plug (see dwg. 8822490).**

<i>Categories</i>	<i>Defects</i>	<i>Method of inspection</i>	<i>Code No.</i>
Critical:	None defined		
Major:	AQL 0.25 percent		
	101. Any component missing or damaged	Visual	(04001)
Minor:	None defined		

4.2.2.5 Propelling charge assembly (see dwg. 8822490).

<i>Categories</i>	<i>Defects</i>	<i>Method of inspection</i>	<i>Code No.</i>
Critical:	None defined		
Major:	AQL 0.40 percent		
	101. Plug broken or distorted	Visual	(05001)
	102. Case cracked or distorted	Visual	(05002)
	103. Charge missing or obviously light	Manual	(05003)
Minor:	AQL 2.50 percent		
	201. Total length, maximum	Gage	(05004)
	202. Plug not firmly seated	Manual	(05005)
	203. Case dented	Visual	(05006)
	204. Evidence of poor workmanship (see 3.6)	Visual	(05007)
	205. Marking misleading or unidentifiable	Visual	(05008)

4.2.2.6 Unsealed fiber container (see dwg. 7548593).

<i>Categories</i>	<i>Defects</i>	<i>Method of inspection</i>	<i>Code No.</i>
Critical:	None defined		
Major:	AQL 0.25 percent		
	101. Any packing component missing	Visual	(06001)
Minor:	AQL 1.50 percent		
	201. Glue or asphalt on case	Visual	(06002)
	202. Improper container assembly	Visual	(06003)
	203. Container cap cannot be removed by hand	Visual	(06004)
	204. Charge cannot be removed by hand	Visual	(06005)

4.2.2.7 Sealed fiber container (see dwg. 7548593).

<i>Categories</i>	<i>Defects</i>	<i>Method of inspection</i>	<i>Code No.</i>
Critical:	None defined		
Major:	AQL 0.40 percent		
	101. Tape incomplete or badly wrinkled	Visual	(07001)
	102. Container cut or damaged through all impregnated layers	Visual	(07002)
	103. Metal end loose or distorted	Visual	(07003)
Minor:	AQL 2.50 percent		
	201. Tear tab length, minimum	Visual	(07004)
	202. Gap between cover and body of container exceeding 1/8 inch	Visual	(07005)
	203. Marking misleading or unidentifiable	Visual	(07006)
	204. Cuts, scuffs or gouges in outer layers	Visual	(07007)
	205. Contents loose	Manual	(07008)

4.2.2.8 Sealed wood packing box (see dwg. 7548596).

<i>Categories</i>	<i>Defects</i>	<i>Method of inspection</i>	<i>Code No.</i>
Critical:	None defined		
Major:	AQL 0.40 percent		
	101. Contents of box exposed or liable to become exposed	Visual	(08001)
	102. Strapping missing or loose	Visual	(08002)
	103. Hardware missing, broken or loose	Visual	(08003)

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Categories	Defects	Method of inspection	Code No.
Minor:	AQL 2.50 percent		
201.	Car seal missing, unsealed or improperly positioned	Visual	(08004)
202.	Marking misleading or unidentifiable	Visual	(08005)
203.	Hardware improperly engaged	Visual/ Manual	(08006)
204.	Strapping improperly assembled	Visual	(08007)
205.	Handle missing or insecure	Visual/ Manual	(08008)

4.2.3 Testing

4.2.3.1 *Propelling charge weight* (see 3.3), major defect. The propellant shall be weighed and check-weighed 100 percent. The check weighing shall be accomplished independently of the original weighing using a different balance from that used to make the original weighing and, if performed manually, shall be performed by another operator. Any propelling charge which fails to comply with the applicable requirements shall be classed defective and removed from the lot. Equipment shall be in accordance with 4.2.4 Code No. 09001.

4.2.3.2 *Electrical resistance, Major defect.* The sampling plan shall be in accordance with MIL-STD-105 using code letter L and AQL of 0.40 percent in table IVA Code No. 10001.

4.2.3.3 Check test for possible deterioration of primer (see MIL-P-46575). If the total elapsed time between original acceptance of the M67 primer lot and the assembly of that lot into the charges exceeds two years or if the M67 primers have been subjected to adverse conditions, however brief, at any time since previous testing, the applicable lot shall be subjected to and must satisfactorily pass the check test for deterioration specified in MIL-P-46575 immediately before the M67 primer lot is assembled into the charge. The test shall be performed by the contractor on assemblies selected by the Government inspector at the facility assembling the charge (see 6.4).

4.2.4 *Inspection equipment.* Index of Inspection Equipment Lists Number IEL-8822490 identifies the inspection equipment required to perform the examinations and tests prescribed in this section. The con-

tractor shall design inspection equipment in accordance with the instructions in paragraph 6.3.

4.2.4.1 *Government rights to documentation.* Inspection equipment drawings and lists provided and revised in accordance with the requirements of the IEL may be used by DOD activities for design, procurement, manufacture, testing, evaluation, production and receiving inspection, overhaul, shipping, storage, identification of stock, ordering and storage of replacement parts, inspection of items at overhaul, general maintenance of equipment, construction, survey and whatever inspection equipment drawings are needed.

4.2.4.2 *Supply and maintenance.* Supply and maintenance of the equipment listed on the IEL shall be in accordance with MIL-I-45607.

4.3 Test methods and procedures

4.3.1 *Electrical resistance.* After the primers are assembled into the cartridges case and before the propellant is loaded into the case this test shall be conducted. The charge shall be tested for electrical resistance by applying an electrical circuit which limits the current through the primer to not more than 20 milliamperes with the center button of the primer as one contact and the base of the cartridge case as the other.

5. PREPARATION FOR DELIVERY

5.1 Preservation and Packaging

5.1.1 *Level A.* The propelling charge shall be packaged in accordance with dwg. 7548593.

5.2 Packing

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5.2.1 Level A. The fiber containers shall be packed in accordance with dwg. 7548596.

5.3 Marking. Marking of the fiber containers and boxes shall be marked as shown on the applicable drawings.

5.4 Data Cards. Data Cards shall be prepared for each lot in accordance with the information specified in MIL-A-2550.

6. NOTES

6.1 Ordering data. Procurement documents should specify the title, number, and date of this specification.

6.2 Inspection code numbers. The five digit code numbers assigned to the inspection herein are to facilitate future data collection and analysis by the Government.

6.3 Inspection equipment. The contractor shall design inspection equipment as required by the referenced Inspection Equipment Lists in accordance with the instructions of paragraphs 6.3.1 through 6.3.7.

6.3.1 Inspection equipment lists. Inspection equipment lists (IEL) indicate the availability of inspection equipment design by showing in the "number" column of the list of inspection equipment (OO Form 1242-3) the numbers of drawings of existing equipment designs or codes indicating "commercial item" or "contractor design." Design action required of the contractor with respect to the different types of drawings that may be listed is described in paragraphs 6.3.2 and 6.3.3. Action required by the contractor with respect to "commercial item" inspection equipment is described in paragraph 6.3.4. The contractor will be required to prepare drawings for all the equipment coded as "contractor design" in the number column. The code will further indicate whether detailed or specification control drawings are required. These contractor designs must be approved by the Government prior to fabrication or procuring of the equipment. Designs shall be submitted for approval as specified in 6.3.7.

6.3.2 Ordnance Designs. Ordnance designs

are detailed drawings which completely depict all the information necessary for the fabrication of the item of inspection equipment. The contractor need provide no design when an Ordnance design is listed for an item of inspection equipment. Ordnance designs fall into two basic classifications; mandatory and nonmandatory. When an IEL references mandatory Ordnance designs, the contractor shall comply with, and use these designs accordingly. The contractor may, however, in connection with nonmandatory designs and with the approval of the Government, design alternate inspection equipment to facilitate his operations. Such contractor prepared designs must be approved by the Government prior to fabrication or procuring of the equipment. Designs shall be submitted for approval as specified in 6.3.7.

6.3.3 Specification control drawings. Specification control drawings depict the device in outline, descriptive, diagrammatic, or pictorial form only and specify the required performance or other characteristics. Contractors must prepare drawings of their designs in support of specification control drawings. The IEL code will indicate whether drawings must be detailed. These contractor prepared designs must be approved by the Government prior to the fabrication or procuring of the equipment. Commercial equipment meeting the requirements of specification control drawings may be approved if described in sufficient detail to permit identification and evaluation by the Government. Designs shall be submitted for approval as specified in 6.3.7.

6.3.4 Commercial items. Commercial item inspection equipment is equipment that has a universal application for a specific function. It is comprised of items commonly used by industry and government. Contractors are not required to furnish drawings of commercial item inspection equipment but a list of such equipment must be approved by the Government. Lists shall be submitted for approval to the inspection element of the agency administering the contract.

6.3.5 IEL codes. The inspection equipment

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referenced in paragraphs 6.3.1, 6.3.2, 6.3.3., and 6.3.4 will be designated in the IEL by the following codes:

- CDOF —Contractor's design responsibility on Ordnance format; ORDM-608-12.
- CDCF —Contractor design responsibility on contractor format.
- OD —Ordnance design.
- ODMU —Ordnance design, mandatory for use.
- CE —Commercial equipment.
- SCD —Specification control drawing.

6.3.6 Use of standard measuring equipment. If the contractor desires to use standard measuring equipment in lieu of government or contractor designed gages, diagrammatic sketches or other descriptions of the use of such equipment shall be submitted for approval as specified in 6.3.7.

6.3.7 Submission of contractor designs. Designs shall be submitted for approval to the Commanding Officer, Picatinny Arsenal, ATTN: SMUPA-ND. Design review will normally be accomplished within one month after receipt by Picatinny Arsenal. Partial submission of inspection equipment designs

is permissible. However, the Arsenal completion date for design review will be based on the date of the final submission of designs.

6.4. Cost of check tests. The contracting officer will arrange for the contractor to be reimbursed for the expense incurred in the performance of the check tests. The test shall be conducted at Government expense without cost to the contractor who loaded the primer on to the contractor assembling the charges, and shall not constitute a basis for rejection against either contractor, except where deterioration has occurred as a direct result of carelessness in handling, storage, etc., permitted while the primer lot was under the jurisdiction of either contractor.

Notice. When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

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