

NOTE: The document identifier and heading has been changed on this page to reflect that this is a performance specification. There are no other changes to this document. The document identifier on subsequent pages has not been changed, but will be changed the next time this document is revised.

METRIC

MIL-PRF-82537A(OS)
 25 April 1988
 SUPERSEDING
 MIL-C-82537(OS)
 25 September 1969

PERFORMANCE SPECIFICATION

CASE, CARTRIDGE, STEEL, SPIRAL-WRAPPED 40 MILLIMETER (MM) AND LARGER CALIBERS, GENERAL SPECIFICATION FOR

This specification is approved for use within the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the general requirements for spiral-wrapped steel cartridge cases, 40 millimeter (mm) and larger. Specific requirements for a particular caliber, Mark and Mod spiral-wrapped cartridge are covered by the applicable detail specifications.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and Standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

SPECIFICATIONS MILITARY

MIL-P-116	Preservation, Methods of
-----------	--------------------------

STANDARDS

FEDERAL

FED-STD-H28	Screw Thread Standards for Federal Services
-------------	---

MILITARY

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
-------------	---

MIL-STD-129	Marking for Shipment and Storage
-------------	----------------------------------

MIL-STD-1167	Ammunition Data Card
--------------	----------------------

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commanding Officer, Naval Ordnance Station, Standardization Branch (3730), Indian Head, Maryland 20640-5000, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter
--

AMSC No 4386

FSC 1310

CONTROLLED DOCUMENT. Approved for public release; distribution is unlimited.

MIL-C-82537A(OS)

MIL-STD-1168 Ammunition Lot Numbering

DOD-STD-2101 Classification of Characteristics

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

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS shall be the issue of the nongovernment documents which is current on the date of the solicitation.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM-E-18 Standard Method - Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials, Tests for

ASTM B-117 Standard Method of Salt Spray (Fog) Testing

ASTM B-487 Standard Method for Measurement of Metal and Oxide Coating Thickness by Microscopical Examination of a Cross Section

ASTM B-499 Standard Test Method for Measurement of Coating Thickness by the Magnetic Method: Non-Magnetic Coatings on Magnetic Basis Metals

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

UNIFORM FREIGHT CLASSIFICATION AGENT

Uniform Freight Classification Ratings, Rules and Regulations

(Application for copies should be addressed to the Uniform Classification Committee Agent, Tariff Publication Officer, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

(Nongovernment standards and other publications are normally available from the organizations which prepare or distribute the documents. These documents also may be available through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 General requirements. The complete requirements for acquiring these cartridge cases shall be as specified herein and in accordance with the applicable detail specifications (see 6.2.1).

3.2 First article. When specified in the contract or purchase order, a sample shall be subjected to first article inspection (see 4.7 and 6.2.1). A first article sample shall be submitted when:

- a. Particular model of case is being manufactured for the first time by a manufacturer.
- b. There has been a lapse of over a year since the case was last produced.
- c. Major changes have been made in the method of manufacture.

3.3 Material (M101). When specified in the contract or order, a chemical analysis report of the material represented in each lot, including first article sample, shall be prepared by the manufacturer to the contracting activity (see 6.2.2).

MIL-C-82537A(OS)

3.4 Design. Each cartridge case shall be in accordance with the design requirements specified in the applicable detail specification and drawings.

3.5 Hardness. Hardness requirements shall conform to the values and regions as specified in the respective tables and figures of applicable detail specification (see 4.9.1).

3.6 Tension and elongation. The cartridge case shall meet the elongation and yield strength requirements specified in the applicable detail specification (see 4.9.2).

3.7 Protective coating (M102). The protective coating shall be in accordance with the design requirements of the applicable detail specification (see 4.9.3).

3.8 Threads. Those cartridge cases having primer threads, the threads shall conform to the applicable drawings and FED-STD-H28 (see 4.9.4).

3.9 Chamber gage (M103). Each cartridge case shall fully chamber in a Navy approved chamber gage (see 4.9.5).

3.10 Ballistics (M104). The cartridge case shall meet the ballistic requirements specified in the applicable detail specification (see 4.9.6).

3.10.1 Case extraction (M105). Cartridge cases tested under automatic and semiautomatic action shall be ejected and in no way cause the weapon to cease firing. When fired in the single shot mode, the cartridge case shall be capable of being extracted by manual operation of the extraction system (see 4.9.6).

3.11 Item identification. Item identification marking of all cartridge cases shall be in accordance with the contract and the applicable documentation.

3.12 Packaging and marking (M106). Packing, packaging, and marking shall be as specified in section 5 of this specification and the applicable detail specification (see 4.9.7).

3.13 Ammunition data card. When specified in the contract or order, an ammunition data card shall be prepared for each case lot in accordance with MIL-STD-1167 (see 6.2.2).

3.14 Workmanship (M107) MAJOR 107 [C1]; CRITICAL 1 (see 4.1.1.2). The cartridge case shall be produced in such a manner as to ensure compliance with all the requirements of this specification and the applicable detail specification. There shall be no burrs, gouges, (cracks, tears), or other imperfections of manufacture which, in the opinion of the Government inspector, may adversely affect either the assembly, functioning, or handling of the product. All cases shall be free from injurious seams, folds, or other imperfections on all surfaces and shall be smooth in appearance (see 4.9.8).

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by 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 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

MIL-C-82537A(OS)

4.1.1.1 Government inspection. The government inspector will, during the process of manufacture, perform, witness, or participate in such inspections and tests as are required by inspection instructions issued by the contracting activity.

4.1.1.1.1 Gaging. Gaging inspection of the cartridge cases shall determine their conformance with the dimensional requirements of the applicable drawings after the application of the protective coating. Cases may be sectioned by the Government inspector to check required thicknesses and other measurements.

4.1.1.1.2 Gages. Gages shall be furnished by the Government or by the contractor as indicated by the contract. If the gages are furnished by the contractor, the design shall be approved by the contracting activity. When specified in the contract (see 6.2.1), the contractor shall submit data disclosing the design of such gages to the contracting activity. Inspection gages shall be checked by the contracting activity for conformance to design dimensions.

4.1.1.1.3 Surface. Cases may be sectioned by the Government inspector to explore surface defects and examine interior surfaces.

4.1.1.2 Classification of characteristics. The requirements verified by the tests and examinations specified herein are classified as critical, major or minor in accordance with DOD-STD-2101. Requirements that are critical characteristics are identified by the symbol (C), and major characteristics, by the symbol (M). The number following the classification symbol indicates the serial number of the characteristics. Requirements which are not annotated with a classification code are classified minor.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.7).
- b. Quality conformance inspection (see 4.8).

4.3 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified in 4.9.

4.4 Sampling. Unless otherwise specified in the detail specification or contract (see 6.2.1), the Government inspector shall use sampling plans and procedures conforming to the provisions of MIL-STD-105 in the determinations of acceptability of steel cartridge cases submitted by the contractor for Government inspection and testing.

4.5 Samples. Samples shall be selected, tested, and inspected in accordance with table I to determine acceptability of the lot.

4.6 Lots.

4.6.1 First article sample. Unless otherwise specified by the contracting activity, the first article sample shall consist of 158 cases.

4.6.2 Production lot. The production lot shall consist of cartridge cases which are all the same size, mark, mod, and caliber manufactured under the same conditions using the process resulting from the approval of the first article sample and submitted for Government acceptance at one time.

4.6.2.1 Lot size. The quantity of cartridge cases in a production lot shall be as specified in the applicable detail specification. The production lot shall consist of the quantity of cartridge cases specified in the detail specification plus the sample cartridge cases selected for inspection and tests. Unless otherwise specified in the contract (see 6.2.1), all cartridge cases submitted for inspection and test purposes shall be provided at the expense of the contractor.

MIL-C-82537A(OS)

TABLE I. Preproduction and quality conformance inspection and sampling.

Test or examination	Requirement paragraph	Method paragraph	Preproduction			Quality conformance inspection		
			Number of units to be inspected	Number of defects allowed		Number of units to be inspected	Number of defects allowed	
				Accept	Reject		Accept	Reject
Hardness	3.5	4.9.1	4	0	1	MIL-STD-105 Inspection Level S-1	AQL=2.5%	
Tension and elongation	3.6	4.9.2	See applicable detail specification			See applicable detail specification		
Protective coating	3.7	4.9.3						
(a) Thickness			4	0	1	5	0	1 ¹
(b) Corrosion			3	0	1	3	0	2
Chamber gage	3.9	4.9.5	158	0	1	100%	All defective cases shall be rejected	
Ballistic and case extraction	3.10	4.9.6	See applicable detail specification			See applicable detail specification		
Packaging and marking	3.12	4.9.7	158	0	1	MIL-STD-105 Inspection Level S-3	AQL=1.0%	
Workmanship	3.14	4.9.8	158	0	1	100%	All defective cases shall be rejected	

¹Nonconformance of one sample to meet the corrosion code requirements shall require testing of an additional three samples. Failure of any of the additional samples to meet the corrosion code requirement shall be cause for rejection of the lot.

4.6.2.2 Test quantity. The specified quantity of cartridge cases selected by the Government inspector for hardness, tensile strength, protective coating, and ballistic testing shall be submitted to a facility designated by the contracting activity to determine conformance to the technical requirements of the contract (see 6.2.1).

4.6.2.3 Test site. The contracting activity may authorize the contractor to perform hardness, elongation, tension, and protective coating tests on the cases selected from the production lot at the place of manufacture and/or at another testing laboratory, provided that the places and testing equipment have been approved by the contracting activity, and provided such testing shall be at no expense to the contracting activity. If the hardness, elongation, tension, and protective coating tests are performed by the contractor, they shall be witnessed by the Government inspector. All cases submitted to the Government for testing shall become the property of the Government.

4.7 First article inspection. First article inspection shall consist of all the examinations and tests as specified in table I.

4.8 Quality conformance inspection. Quality conformance inspection shall consist of all the examinations and tests as specified in table I.

4.9 Methods of inspection.

4.9.1 Hardness. Cartridge cases shall be prepared and tested in accordance with ASTM E18 to determine conformance to the requirements of the applicable detail specification. The hardness shall be checked at the locations specified in the applicable detail specification. Sufficient tests shall be performed to assure hardness values are representative of the respective test areas. Sampling and acceptance shall be in accordance with table I.

MIL-C-82537A(OS)

4.9.2 Tension and elongation. The cartridge case shall be prepared and tested as specified in the applicable detail specification. Sampling and acceptance shall be in accordance with table I.

4.9.3 Protective coating. Unless otherwise specified in the contract (see 6.2.1) or applicable drawings, nondestructive measuring of coating thickness shall be made using the procedure specified in ASTM B499 and destructive measuring of coating thicknesses shall be made using the procedure specified in ASTM B487. For referee tests, the procedure of ASTM B487 shall be used. Unless otherwise specified in the contract (see 6.2.1) or applicable drawings, the protective coating shall be tested in accordance with ASTM B117 with continuous exposure to salt spray for 96 hours. Sampling and acceptance shall be in accordance with table I.

4.9.4 Threads. The Go and No-Go gaging practices for the threads as set forth in FED-STD-H28 shall apply.

4.9.5 Chamber gage examination. Each cartridge case shall be chamber gaged to determine conformance to the requirements of 3.9.

4.9.6 Ballistic. Cartridge cases, when assembled as part of service and proof rounds, shall be fired at the pressures, temperatures and rates specified in the applicable detail specification. Sampling and acceptance shall be in accordance with Table I.

4.9.6.1 Weapons. The ballistic tests shall be performed with a weapon of service quality. The term "weapon of service quality" is defined in 6.5.1. A weapon of service quality shall be used for ballistic testing at proof pressure except where specific exemption has been authorized and the test weapon used in lieu thereof has been approved by the contracting activity.

4.9.7 Examination of preparation for delivery. Samples of fully prepared shipping containers ready for shipment shall be visually examined for conformance to the requirements of 5.1 and 5.2.

4.9.8 Visual examination. Each cartridge submitted to the contracting activity for acceptance shall be visually examined to insure that it is free of burrs, cracks, gouges, tears, wrinkles and other imperfections.

4.9.9 Inspection of packaging. Except when industrial packaging is specified, the sampling and inspection of the preservation and interior package marking shall be in accordance with groups A and B quality conformance inspection requirements of MIL-P-116. The sampling and inspection of the packing and marking for shipment and storage shall be in accordance with the quality assurance provisions of the applicable container specification shown in Section 5 and the marking requirements of MIL-STD-129. The inspection of industrial packaging shall be as specified in the contract (see 6.2).

5. PACKAGING

(The packaging requirements specified herein apply only for direct Government acquisition. For the extent of applicability of the packaging requirements of referenced documents listed in section 2, see 6.5.)

5.1 Packing.

5.1.1 Level C. Unless otherwise specified by the contracting activity (see 6.2.1), cartridge cases shall be packed by the contractor for domestic shipment in 200 lb test RSC boxes conforming to Rule 41 of Uniform Freight Classification. Care shall be taken to protect the mouth and the primer hole and to separate the cases so they will not be damaged in shipment. Cartridge cases shall be packed in each box with the mouth of the cartridge case in an upright position. The boxes shall be appropriately marked to assure that the mouth of the cartridge case be maintained in an upright position. The requirements of applicable detail specifications also shall be met.

5.2 Marking. In addition to any special markings required by the contract (see 6.2.1), all markings shall be in accordance with MIL-STD-129 and the requirements of the applicable detail specifications. Lot number shall be in accordance with MIL-STD-1168.

MIL-C-82537A(OS)

6. NOTES

6.1 Intended use. (See detail specifications).

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification
- b. Applicable detail specification (see 3.1)
- c. Whether a first article sample is required (see 3.2)
- d. Production lot if different from size given in detail specification
- e. Chemical analysis report, if required (see 3.3 and 6.2.2)
- f. Protective coating if different from 3.7
- g. Responsibility for the place of inspection, if different from 4.1
- h. Source of gages (see 4.1.1.1.2)
- i. Sampling plan if different from 4.4
- j. Submission of test samples if different from 4.6.2.2
- k. Measurement and testing of coating if different from 4.9.3
- l. Level C packing requirements if different from 5.1.1
- m. Special markings required (see 5.2).

6.2.2 Data requirements. When this specification is used in an acquisition and data are required to be delivered, the data requirements identified below shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved Contract Data Requirements List (CDRL), incorporated into the contract. When the provisions of DOD FAR Supplement, Part 27, Sub-Part 475.1 (DD Form 1423) are invoked and the DD Form 1423 is not used, the data specified below shall be delivered by the contractor in accordance with the contract or purchase order requirements. Deliverable data required by this specification are cited in the following paragraphs.

Paragraph no.	Data requirement title	Applicable DID No.	Option
3.3	Certification Data For Material	UDI-T-23191B	—
3.13	Ammunition Data Card	DI-MISC-80043	—

(Data item descriptions related to this specification, and identified in this section will be approved and listed as such in DOD 5010.12-L, AMSDL. Copies of data item descriptions required by the contractors in connection with specific acquisition functions should be obtained from the Naval Publications and Forms Center or as directed by the contracting officer.)

6.2.2.1 Possible waiver. The data requirements of 6.2.2 and any task in sections 3, 4, or 5 of this specification required to be performed to meet a data requirement may be waived by the contracting/acquisition activity upon certification by the offeror that identical data were submitted by the offeror and accepted by the Government under a previous contract for identical item acquired to this specification. This does not apply to specific data which may be required for each contract regardless of whether an identical item has been supplied previously (for example, test reports).

6.3 First article. When a first article inspection is required, the item(s) should be a first article sample. The first article should consist of 158 cases. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results and disposition of first articles. Invitations for bids should provide that the Government reserves the right to waive the requirements for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

6.4 Additional samples. Additional samples required because of failure of any sample(s) to pass the prescribed inspections will be provided by and inspected at the expense of the contractor.

MIL-C-82537A(OS)

6.5 Definition.

6.5.1 Weapon. A "weapon of service quality" is a gun with a barrel in its second or third quarter of life, and the housing, slide, and loading mechanism is of current service design and is in an operating condition satisfactory for unrestricted use.

6.6 Sub-contracted material and parts. The packaging requirements of referenced documents listed in section 2 do not apply when material and parts are acquired by the contractor for incorporation into the equipment and lose their separate identity when the equipment is shipped.

6.7 Subject term (key word) listing.

Ammunition
Cartridge cases
40 mm cartridge case
Large caliber cartridge cases
Spiral-wrapped cartridge cases

6.8 Changes from previous issue. Asterisks (or vertical lines) are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Preparing Activity
Navy - OS

(Project No. 1310N440)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER MIL-C-82537A(0S)		2. DOCUMENT TITLE CASE, CARTRIDGE, STEEL, SPIRAL-WRAPPED 40 MILLI-METER (MM) AND LARGER CALIBERS, GENERAL SPECIFICATION FOR	
3a. NAME OF SUBMITTING ORGANIZATION		4. TYPE OF ORGANIZATION (Mark one)	
3b. ADDRESS (Street, City, State, ZIP Code)		<input type="checkbox"/> VENDOR <input type="checkbox"/> USER <input type="checkbox"/> MANUFACTURER <input type="checkbox"/> OTHER (Specify): _____	
5. PROBLEM AREAS			
c. Paragraph Number and Wording:			
a. Recommended Wording:			
c. Reason/Rationale for Recommendation:			
6. REMARKS			
7a. NAME OF SUBMITTER (Last, First, MI) - Optional		7b. WORK TELEPHONE NUMBER (Include Area Code) - Optional	
8. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional		8. DATE OF SUBMISSION (YYMMDD)	

(TO DETACH THIS FORM, CUT ALONG THIS LINE.)

INSTRUCTIONS: In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge (*DO NOT STAPLE*), and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

NOTE: This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

(Fold along this line)

(Fold along this line)

DEPARTMENT OF THE NAVY

Commanding Officer
Naval Ordnance Station
Documentation Division (370)
Indian Head, MD 20640-5000



**NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES**

**OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE \$300**

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 12503 WASHINGTON D. C.

POSTAGE WILL BE PAID BY THE DEPARTMENT OF THE NAVY

Commanding Officer
Naval Ordnance Station
Documentation Division (370)
Indian Head, MD 20640-5000

