

INCH-POUND

MIL-DTL-28921B (MC)

16 October 1997

SUPERSEDING

MIL-S-28921A (MC)

30 June 1981

DETAIL SPECIFICATION

SWORD AND SCABBARD - (OFFICER'S) WITH CASE

This specification is approved for use by U.S. Marine Corps, 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 requirements for the sword and scabbard worn by officers.

1.2. Classification. The sword blade will be of one type and of the following classes and lengths (see 6.2):

Class 1 - High carbon tool steel

Class 2 - Stainless steel

Lengths: 26-29-32-35

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to the Commander (PSE-D), Marine Corps Systems Command, Quantico, VA 22134-5010 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 8465

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2. APPLICABLE DOCUMENTS

2.1. General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2. Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

- A-A-52071 - Tape, Textile, Cotton, General Purpose
(Unbleached, Bleached, or Dyed)
- A-A-52094 - Thread, Cotton
- DDD-L-20 - Label: For Clothing, Equipage, and Tentage,
(General Use)

STANDARDS

FEDERAL

- FED-STD-191 - Textile Test Methods
- FED-STD-311 - Leather, Methods of Sampling and Testing
- FED-STD-751 - Stitches, Seams and Stitchings

(Unless otherwise indicated, copies of the above specifications, standards, handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents and publications. The following other Government documents and publications form a part of this document to the extent specified herein. Unless

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otherwise specified, the issues are those cited in the solicitation.

DRAWINGS

MARINE CORPS

- P-224-1 - Sword and Scabbard, Officers (Marine Corps Std.); Assembly
- P-224-2 - Sword and Scabbard, Officers (Marine Corps Std.); Assembly
- P-224-3 - Sword and Scabbard, Officers (Marine Corps Std.); Case, Cloth, Detail and Assembly

(Copies should be obtained from the contracting officer or his authorized representative.)

2.3. Non-Government publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

ANSI/ASQC Z1.4 - Sampling Procedures and Tables for
Inspection by Attributes

(Application for copies should be addressed to The American National Standards Institute, 11 West 42nd Street, New York, NY 10036.)

ASTM D710 - Standard Specification for Vulcanized Fibre
Sheets, Rods, and Tubes used for Electrical
Insulation

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

Department of Defense (DoD) Standard Color Card of
Official Standardized Shades for Sewing Threads 1968

(Application for copies should be addressed to the Color Association of the United States, Inc., 409 W. 44th Street, New York, NY 10016-0927.)

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2.4. Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1. Standard sample. Standard samples are furnished solely for guidance and information to the contractor (see 6.4). Variation from this specification may appear in the sample, in which case the specification shall govern.

3.2. First article. When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.3.

3.3. Materials. The materials for the sword, scabbard and case shall conform in all respects to the requirements specified herein.

3.3.1 Fiber sheet. The scabbard lining shall be 0.032 ± 0.003 inch thick fiber sheet conforming to ASTM D710, except the fiber sheet shall be undyed and free of all sulphur compounds or compounds capable of oxidation to sulphuric acid.

3.3.2 Sword case. Each sword and scabbard shall be provided with a cotton flannelette case to fit the assembled sword and scabbard.

3.3.2.1. Cloth, cotton, flannelette. The basic material for the sword case shall be cloth, cotton, flannelette. The cloth shall be constructed with a plain weave, and shall have a thread count of 44 ± 2 warp and 36 ± 2 filling threads per inch. The fabric shall weight 4.0 ± 0.5 ounces per square yard and shall be evenly napped on one side. The cloth shall be free from any imperfections that would affect the appearance or durability of the case.

3.3.2.1.1 Color and colorfastness. The cloth shall be vat-dyed gray. The cloth shall show good fastness to wet (dry) cleaning, laundry, crocking, perspiration and light.

3.3.2.2. Drawcord. The tape for the drawcord shall be bleached cotton, 3/8 inch wide, conforming to type I, class 2 of

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A-A-52071. The ends of the drawcord shall be hemmed or resin dipped to prevent raveling.

3.3.2.3. Cotton thread. The cotton thread for the sword case shall be cotton, soft finish, ticket No. 50, 3-ply, conforming to type I of A-A-52094. The cotton thread shall be dyed gray, shade TS, cable No. 66082. The dyed thread shall show good fastness to laundering, wet (dry) cleaning and light when tested as specified in the thread specification (see DoD Standard Color Card of Official Standardized Shades for Sewing Threads 1968).

3.3.3 Label. Each sword case shall be provided with an identification-size label conforming to type VI, class 4 of DDD-I-20, except the contents shall include the name of contractor. Fastness to dry cleaning or laundering shall apply.

3.4. Design. The design of the sword, scabbard and case shall be as specified in drawing numbers P-224-1 through P-224-3. The blade shall be cut and thrust type with a single gore, double channel and a rounded back edge. The blade shall measure 7/8 inch wide by 1/4 inch thick at the hilt end and shall have a tapered and curved shape conforming to the standard sample and drawing number P-224-1.

3.5. Patterns. Patterns for the sword case, cut to finish in accordance with drawing number P-224-3, shall be furnished by the contractor.

3.6. Construction. The stitches, seams and stitchings used in the manufacturing of the cases shall conform to FED-STD-751.

3.6.1 Sword.

3.6.1.1. Blades.

3.6.1.1.1 Class 1 - High carbon tool steel. The blade shall be high carbon tool steel with a minimum carbon content of 0.70 percent. The blade shall be hardened full hard and then tempered to show a Rockwell "C" scale hardness test of 48 to 53. A chromium plating shall be applied over an intermediate coating of nickel, or nickel on copper plate. The intermediate plating shall be 0.002 inch thick and may be either nickel or nickel on copper plate. If the latter is used, the minimum final thickness of nickel shall be 0.001 inch. The chromium plate shall have a minimum thickness of 0.0001 inch. The chromium plating shall be

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polished to a bright smooth finish free from frosty or milky areas, indications of burning, pits and nodules. The chromium deposit must be adherent, homogeneous, of uniform appearance, free from laminations, blisters, pinholes, and other defects. The blade shall withstand the temper test.

3.6.1.1.2 Class 2 - Stainless steel. The stainless steel blade shall be made with a minimum of 12 percent chromium and shall be polished to a bright finish. No additional coatings are required.

3.6.1.1.3 Etching. The etching design on each side of the blade shall be in accordance with drawing number P-224-1. All etching shall be accurately executed in fine contrast and shall be well-defined.

3.6.1.2. Hilt. The hilt shall be made of solid brass, straight cross and ends, with an acorn design as shown in drawing number P-224-2. The copper base alloy for the solid brass shall have a chemical composition of 85 percent minimum copper and 15 percent maximum zinc. The color shall be the basis of acceptability of the metal for composition, except in case of dispute, when an analysis shall be made. The alloy shall be uniform in color and quality, and free from pits, scale (including red oxide) dents, nicks, cracks, deep scratches, segregations and foreign inclusions that cannot be removed in later processing. The finished hilt shall be clean, smooth, free from pits and tool marks, and shall be highly polished to a mirror-like finish.

3.6.1.2.1 Hilt guard. A piece of white felt or white leather $1/8 \pm 1/32$ inch thick shall be slotted to fit on the hilt.

3.6.1.3. Grip. The grips shall be made from plastic, finished in an ivory color and secured to the hilt by two through-brass binding screws.

3.6.2 Scabbard. The scabbard body shall be made from cold-rolled steel, shall be free from burrs, and shall be finished in polished chrome. The top escutcheon, shoe, rings, mounts, and bands shall be made of solid brass (see 3.6.1.2) and shall be ornamented as shown on drawing number P-224-1. The top escutcheon, shoe, and bands shall be secured to the scabbard with brass machine screws, countersunk. The finished top escutcheon, shoe, rings, mounts, and bands shall be clean, smooth, free from

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pits and dents, and shall be highly polished to a mirror-like finish.

3.6.3 Lacquering. The sword hilt, and the top escutcheon, shoe rings, mounts, and bands on the scabbard shall be thoroughly lacquered with a clear nonpigmented synthetic lacquer. The dry lacquer film shall be continuous, level and adherent, shall be free from lint, dust, or other foreign inclusions that may affect appearance or serviceability, and shall withstand the test for tackiness.

3.6.4 Sword case. The case shall receive the scabbard with fully sheathed sword freely when manually examined. When the drawcord is tightened, the case shall completely enclose the scabbard and sword.

3.7. Marking.

3.7.1 Identification. Identification marking shall be etched into the blade 1/4 inch (minimum) below the hilt. The letters shall be not less than 1/32 inch in height and each line shall be separated by a minimum of 1/32 inch. The content shall be as follows:

Name of contractor:

Address of contractor:

3.7.2 Length. The length of the sword blade shall be stamped on the top view of blade near the hilt in 1/8 inch numerals.

3.8. Workmanship. The finished swords, scabbards and cases shall conform to the quality established by this specification.

3.9. Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

4. VERIFICATION

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

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- a. First article inspection (see 4.3).
- b. Conformance inspection (see 4.4).

4.2. Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the provisions set forth in ANSI/ASQC Z1.4.

4.3. First article inspection. When first article is required, inspection shall be made of a completely fabricated sword and scabbard, with case, for all provisions of this specification.

4.4. Conformance inspection.

4.4.1 Testing of components. Testing of components shall be in accordance with the applicable subsidiary specifications and standards to the extent applicable, except that this specification shall govern in the event of conflict. The method of testing shall be as specified in FED-STD-191, wherever applicable. Testing shall be performed on components listed in Table I for characteristics noted.

Table I - Testing of components.

Component & lot expressed in terms of	Characteristics	Reqmt. para	Test method	Reqd. appl to:			Results reported as		
				S/U	Lot avg	Det. S/U	Pass or fail	Numerically nearest	Sample unit
Fiber sheet (1 sheet)	Sulphur	3.3.1	4.6.3	X	-	1	X	Pass or fail	6" X 6" piece
Flannelette	Weave	3.3.2.1	Visual	X	-	5	X	-	
	Weight	3.3.2.1	FED-STD-191 5041	X	-	5	-	0.1 oz.	
	Texture	3.3.2.1.1	-	-	-	-	-	number	
	-warp		5050	X	-	5	-	-	
	-filling		5050	X	-	5	-	-	
	Colorfastness to:		-	-	-	-	-	-	1 yard
	-wet-dry cleaning		5622	X	-	-	X	-	
	-laundry		5610	X	-	-	X	-	
	-crocking		5650	X	-	-	X	-	
	-perspiration		5680 or 5682	X	-	-	X	-	
Steel; blade 1/ (1 sheet)	-light	3.6.1.1.1	5660	X	-	-	X	-	
	-dye ident.		Std com'l	X	-	-	X	-	
Chromium-plate finish (1 sheet)	Material ident.	3.6.1.1.1	-	-	-	-	-	-	4 oz.
	-carbon, %		Std com'l	-	X	2	-	0.01%	
	-chromium, %		Std com'l	-	X	2	-	0.1%	
Chromium-plate finish (1 sheet)	Hardness	3.6.1.1.1	Std com'l	-	X	1	-	"C" value	2" X 2" piece
	Thickness		Std com'l	-	X	2	-	0.0001	

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Table I - Testing of components. (cont'd)

Component & lot expressed in terms of	Characteristics	Reqmt. para	Test method	Reqd. appl to:			Results reported as		
				S/U	Lot avg	Det. S/U	Pass or fail	Numerically nearest	Sample unit
Solid brass (Copper base alloy (1 lb.))	Material ident. -copper, % -zinc, %	3.6.1.2	- Std com'l Std com'l	- - -	- X X	- 2 2	- - -	- 0.1% 0.1%	2" X 2" piece
Material: Hilt guard (1 sheet)	Thickness	3.6.1.2.1	1011 of FED-STD-311	X	-	10	-	1/64"	8" X 8" piece
Steel: Scabbard (1 lb.)	Thickness	3.6.2	Std com'l	X	-	10	-	0.001"	12" lg
	Temper	3.6.2	Std com'l	X	0	1	X	-	-
Chrome finish	Thickness	3.6.2	Std com'l	-	X	2	-	0.0001"	2" X 2" piece

1/ Shall meet either the carbon requirement of carbon steel or the chromium requirement of stainless steel.

4.4.1.1. Sampling for testing. Unless otherwise specified in subsidiary specifications, sampling shall be in accordance with the following. The lot shall be unacceptable if one or more sample units fail to meet any test requirement specified herein. Items shall be tested for the characteristic listed below.

Lot size	Sample size
800 or less	2
801 to 22,000 inclusive	3
22,001 and over	5

4.4.2 Examination of the end item. The end item shall be examined for defects listed in 4.4.2.1 and 4.4.2.2. The sample unit shall be one sword and scabbard with case.

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4.4.2.1. General defects. General defects shall be classified as follows:

Examine	Defects	Classification		
		Major	Minor	
		A	B	
Color and finish	a. Color does not compare favorably with the standard or approved sample.	101		
	b. Stain, discoloration or blemish on the exposed surface of the blade or scabbard.		201	
	c. Blade, hilt, scabbard, shoe, band or hook not highly polished to a mirror-like finish.	102		
	d. Hilt, top escutcheon, shoe, ring mounts, bands on scabbard not lacquered.		202	
	e. Lacquer is pigmented.		203	
	f. Foreign matter embedded in the finish, i.e., lint, dust or foreign inclusion affecting appearance.		204	
	g. Lacquer coating haze, cloudy or powdering.			301
	h. Lacquer not smooth, not continuous or adherent, i.e., flaking, blistering, peeling or has run or sag.			302
	i. Lacquer not set to touch, i.e., tacky when gentle finger pressure is applied to coating.			303
	j. Any permanent type spot or stain that is clearly noticeable.			304
	k. Any spot or stain that is clearly noticeable but can be readily removed with cleaning agent.			305

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Examine	Defects	Classification		
		Major	Minor	
		A	B	
Quality of metal	a. Pit, scale, dent, nick, chip-out, crack, scratch or foreign inclusion.			306
	b. Metal marks on exposed surfaces, such as nick, dent, crack, dig, gouge or scratch.		205	
Design and construction	a. Does not compare favorably with drawings.	103		
	b. Etching not well-defined or not accurately executed in fine contrast.		206	
	c. Detail missing, e.g., etching missing from one side of blade.	104		
	d. Detail obscured, marred, reduced, altered or obliterated.	105		
	e. Blade not cut and thrust type.	106		
	f. Blade has more than one blood gore.	107		
	g. Blade has single channel.	108		
	h. Back edge of blade not rounded as required.	109		
	i. Curve or taper at blade not as shown on drawing.	110		
	j. Plastic grip wrong color.			307
	k. Plastic grip broken, chipped, cracked or crazed.		207	
	l. Binding screws on plastic grip do not show five-pointed star.			308
Design and construction (cont'd)	m. Top escutcheon, band or shoe not secured with countersunk screws.	111		
	n. Flannelette case does not fit assembled sword and scabbard as intended.			309

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Examine	Defects	Classification		
		Major	Minor A	B
Workmanship of sword and scabbard	o. Hilt guard in hilt assembly missing.	112		
	p. Hilt guard of insufficient thickness to cushion effect of impact when sliding sword strikes upon scabbard.		208	
	q. Brazed end of ring not ground or polished.			310
	a. Any warp, twist or distortion producing irregular surface or outline.	113		
	b. Piercings not free from superfluous metal.			311
	c. Hilt not pierced where specified.	114		
	d. Edge not clean or smooth, i.e., burr, drag, step, or roughness.	115		
	e. Hilt guard, screw, liner or component missing.	116		
	f. Length of blade not stamped on top view of blade.			312
	a. Blade cannot be easily inserted or withdrawn from scabbard.	117		
Performance examination	b. Blade does not fully enter scabbard.	118		
	c. Scabbard does not grip blade firmly.	119		
	d. Sword does not slide smoothly when drawn.	120		
Performance examination (cont'd)	e. Swords and scabbards of the same length are not interchangeable.	121		

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Examine	Defects	Classification		
		Major	Minor A B	
Flannelette case	a. Napped side not on inside of case.		209	
	b. When drawcord is tightened, case does not completely enclose scabbard in case.		210	
	c. Open seam or runoffs more than 1 inch.		211	
	d. Open seam or runoffs less than 1 inch.			313
NOTE: A seam shall be classified as open when one or more stitches joining a seam are broken or when two or more continuous skipped stitches occur.				
	e. Raw edge more than 1/2 inch when securely caught in stitching.			314
NOTE: Raw edges not securely caught in stitching shall be classified as open seams.				
	f. Wrong seam or stitch type.		212	
	g. Cut, hole, tear or break.		213	
	h. Stitches per inch: - two or more less than the minimum specified.		214	
	- one stitch less than minimum not specified.			315
	i. More than maximum number of stitches per inch resulting in cutting or damage to fabric.		215	
	j. Loose or tight stitch tension.			316
	k. Identification label not caught in stitches of the hem.			317
	l. Drawcord missing.		216	
Flannelette case (cont'd)	m. Drawcord not located on each side of body seam and hem.		217	

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Examine	Defects	Classification		
		Major	Minor A B	
Markings	a. Numerals are illegible, incorrect, wrong size, or not permanently marked.			318

4.4.2.2. Finished measurements. Any dimension that is not within the specified tolerances shall be classified as a defect.

4.5. Tests.

4.5.1 Tackiness test. At room temperature of 60°F to 80°F press a piece of tissue paper against the lacquered parts for 30 seconds, using any pressure capable of being exerted by the thumb and two fingers. The tissue paper shall not adhere to the lacquered parts, but shall fall free when pressure is released.

4.5.2 Test for sulphur.

4.5.2.1. Solutions.

4.5.2.1.1 Acid stannous chloride. Dissolve 100 grams of stannous chloride crystals in 100 milliliter (ml) of hydrochloric acid (35 percent concentration); add 50 ml of distilled water.

4.5.2.1.2 Lead acetate solution. Dissolve 5 grams of reagent grade lead acetate in 100 ml of distilled water. Add one drop of glacial acetate acid to clear up the solution if it appears cloudy.

4.5.2.2. Procedure. One to 1.5 grams of material, cut into small pieces, shall be used for the test. Place the sample in a test tube of suitable size and cover with the stannous chloride solution. Place a filter paper, which has been moistened with one drop of lead acetate solution, over the mouth of the tube (punch needle hole in paper). Heat the tube slowly over a low flame until the solution is boiling. The solution shall not be boiled more than 10 to 15 seconds as prolonged boiling will reduce the sensitivity of the test. A brown stain appearing on the paper indicates the presence of sulphur.

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5. PACKAGING

5.1. Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of material is to be performed by Department of Defense (DoD) personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department of Defense Agency, or within the Military Department's Systems Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1. Intended use. The sword and scabbard described herein are intended for wear by officers of the U.S. Marine Corps.

6.2. Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of the specification.
- b. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2).
- c. Packaging requirements (see 5.1).
- d. Class and length required (see 1.2).
- e. When first article is required (see 3.2).

6.3. Standard sample. For information regarding the availability of a standard sample sword, address the contracting activity issuing the invitation for bids.

6.4. Subject term (keyword) listing.

Blade
Hilt
Steel

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6.5. Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Preparing Activity:

Navy - MC

Project No. 8465-N241