

INCH-POUND

MIL-DTL-32069

July 20, 2000

SUPERSEDING

KK-L-241D

May 13, 1982

**MILITARY DETAILED SPECIFICATION
LEATHER, CATTLEHIDE, RIGGING**

This specification is approved for use by all Department and Agencies of the Department of Defense.

1. SCOPE This Military Detailed Specification covers rigging leather made from full grain cattlehide and is intended for use in shoe and textile repair shops.

- 1.2 CLASSIFICATION. The leather will be in the following types:

Type I - Sides

Type II – Backs

Class 1 – Mildew resistant treated

Class 2 - Untreated

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Defense Supply Center Philadelphia, Clothing and Textiles Directorate, Attn: DSCP-COC, bld 6-1-D, 700 Robbins Ave, Philadelphia, PA 19111-5096.

AMSC N/A

FSC 8330

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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.

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(Unless otherwise indicated, copies of Federal and military specifications, standards and handbooks are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

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).

AMERICAN SOCIETY FOR TESTING AND MATERIALS

D- 6075 Cracking Resistance of Leather
D- 2209 Tensile Strength of Leather
D- 3495 Hexane Extraction of Leather
D- 2617 Total Ash in Leather

(Applications for copies should be addressed to American Society For Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428.)

ANSI/ASQC Z1.4

(Applications for copies should be addressed to ANSI/ASQC American Society for Quality Control 611 East Wisconsin Ave. , Milwaukee WI 53202)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.4 Order of Precedence. In the event of a conflict between the text of this document and the references cited herein (except for related associated specifications or specification sheets), the text of this document takes precedence. Nothing in this document however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

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3. REQUIREMENTS

3.1 Materials. The strap leather shall be full grain cattlehide. Bull hides will not be acceptable. The flesh side of the leather shall be smooth and free of coarse loose flesh.

3.2 Tannage. The leather shall be vegetable tanned.

3.3 Physical requirements.

3.3.1 Trim (form and area). The leather shall be furnished in the form of sides or backs as required for the type specified. The area in terms of square feet shall be legibly marked in the butt area on the flesh side of the leather.

3.3.2 Color. Unless otherwise specified (see 6.2), the color of the leather shall be natural as produced by the tanning agents. If necessary, a light application of dye or pigment may be employed to level the color of the grain side.

3.3.3 Weight and Thickness. The leather shall be of the weight and thickness specified (see 6.2) as shown in table I. The leather may be shaved on the flesh side to provide greater uniformity of thickness, but shall not be split (see 6.4).

TABLE I. Weight and thickness

Weight	Thickness (ounces) <u>1</u> /
Light	6 to 7 $\frac{3}{4}$
Medium	8 to 9 $\frac{3}{4}$
Heavy	10 and above

1/ 1 ounce = 1/64 inch

3.3.4 Breaking force. Not less than 80 percent of the specimens tested shall meet the minimum breaking force values indicated in table II when tested as specified in 4.3.

TABLE II. Breaking force

Thickness (ounces)	Breaking force minimum (pounds)
6 to 7 $\frac{3}{4}$	150
8 to 9 $\frac{3}{4}$	200
10 and above	250

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- 3.3.5 Elongation. Not less than 80 percent of the specimens tested shall have elongation values of 25 percent or less, at the loads shown in table III when tested as specified in 4.3.

TABLE III. Elongation load

Thickness (ounces)	Elongation load (pounds)
6 to 7 $\frac{3}{4}$	100
8 to 9 $\frac{3}{4}$	150
10 and above	200

- 3.3.6 Cracking. The leather shall not crack when tested as specified in 4.3.

- 3.4. Fungicide. Unless otherwise specified (paragraph 6.2), one of the following leather fungicides is required.

3.4.1 2- (thiocyanomethylthio) Benzothiazole. The leather shall contain not less than 100ppm and not more than 400ppm of active ingredient 2- (thiocyanomethylthio) benzothiazole (TCMTB), (see paragraph 4.4.1).

3.4.2 Ortho- Phenyl Phenol. The leather shall not contain less than 540 ppm and not more than 2580 ppm. (see paragraph 4.4.2)

3.4.3 Diiodomethyl para Tolysulfone. The leather shall contain not less than 300 ppm and not more than 2000 ppm. (see paragraph 4.4.3)

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3.5 Chemical requirement

3.5.1 The leather shall conform to the chemical requirements of table III when tested as specified in 4.3.

TABLE IV Chemical requirements

<u>Characteristic</u>	<u>Minimum</u>	<u>Maximum</u>
Chloroform-soluble material, percent <u>1/</u>	7.0	18.0
Water-soluble material, percent <u>1/</u>	-----	18.0
Total ash, percent <u>1/</u>	-----	5.0
Acidity (pH)	3.3	5.0

1/ Moisture free basis.

3.6 Workmanship. The finished leather shall conform to the quality established by this specification. The occurrence of defect shall not exceed the applicable acceptable levels.

4.0 VERIFICATION.

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

4.1.1 Certificate of compliance. Where certificates of compliance are submitted, the government reserves the right to check test such items to determine the validity of the certification.

4.2 Conformance inspection. Sampling for inspection shall be in accordance with the provisions of ANSI/ASQC Z1.4, except where otherwise indicated hereinafter.

4.2.1 Component and material inspection. In accordance with 4.1 above, components and material shall be tested in accordance with all the requirements of referenced specification, drawings, and standards unless otherwise excluded, amended, modified, or qualified in this specification or applicable purchase document.

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4.2.2 Examination of the end item. The classification of defects found during the examination shall be in accordance with the lists shown in 4.2.2.1 and 4.2.2.2. The sample unit for these examinations shall be one side or back. The lot size shall be expressed in terms of one side or back. A sample size of 15 and a rejection number of 2 shall be applicable for thickness determinations on lots consisting of 51 or more units of product. Separate examinations shall be performed for visual and dimensional characteristics, but the same sample may be used for each examination.

4.2.2.1 Examination for visual characteristics.

<u>Examine</u>	<u>Defect</u>
Material	Not full grain cattlehide
Trim	Not sides or backs as required
Color	Unless otherwise specified, color not natural
Quality of leather	Burn mark on flesh side Flesh side not smooth or has areas of loose Flesh in excess of four square inches in total area. Any hole, deep cut, scratch, damaged grain hipmark, Rough shoulder, Stain, or other defects which individually or collectively impair the cutting value of more than 10 % of the total area of the back or sided. Raw streak

NOTE: Light, well healed scratches and grub holes, light fat wrinkles, and slight stains
Shall not be classified as defects.

4.2.2.2 Examination for dimensional characteristics.

<u>Examine</u>	<u>Defect</u>
Area (expressed in Terms of square feet)	Not as marked on leather
Marking	Omitted
Thickness <u>1</u> /	Not as specified

1/ Thickness shall be measured in accordance with ASTM-D-1814

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4.3 End item testing. The methods of testing specified in ASTM wherever applicable and as listed in table IV, shall be followed. Sampling procedure and location from which the sample unit is to be obtained shall be in accordance with ANSI/ASQC Z1.4. All test reports shall contain the individual values utilized in expressing the final result . The lot shall be rejected if any one of the following conditions exists:

- a. More than three test failures occur for breaking force or elongation.
- b. More than one test failure occurs for the remaining requirements applicable to the sample unit.
- c. Any composite fails to meet the specified requirement.

TABLE V Tests

Characteristic	Requirement paragraph	Test method	Sample unit	Requirement <u>Applicable to</u> Composite sample
Material	3.1	<u>1</u> /		—
Tannage	3.2	<u>1</u> /		—
Breaking force	3.3.4	ASTM-D-2209	X	
Elongation	3.3.5	ASTM-D-2209	X	
Cracking	3.3.6	ASTM-D-6075	X	
Chloroform-soluble material	3.4.1	ASTM-D-3495	—	X
Water-soluble material	3.4.1	ASTM-D-3495	—	X
Total ash	3.4.1	ASTM-D-3790	—	X
PH value	3.4.1	ASTM-D-3790	—	X
Fungicide	3.4.	para 4.4	-	X

1/ Unless otherwise specified, a certificate of compliance is required and will be acceptable for the stated requirement.

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4.3.1 Cracking. The leather shall be tested for cracking in accordance with ASTM-D-6075. The diameters of the mandrels for the indicated thickness shall be as follows:

<u>Thickness of leather (ounces)</u>	<u>Diameter of mandrel (inches)</u>
6 to 7 $\frac{3}{4}$	$\frac{1}{4}$
8 to 9 $\frac{3}{4}$	$\frac{1}{4}$
10 and above	$\frac{5}{16}$

4.4 Fungicide

4.4.1 TCMTB. Testing to determine the concentration of Busan 30 L in the leather shall be conducted by using Buckman Laboratories standard test method for 2- (Thiocyanomethylthio) Benzothiazole Analysis of Leather by HPLC. This method may be obtained by contacting Buckman Laboratories at 1256 North McLean Blvd., Memphis, TN 38108 (800) 282-5625.

4.4.2 Ortho-phenyl phenol. Testing to determine chemical concentration in leather shall be conducted in accordance with Test I, Type I of the MIL-L-8067 specification.

4.4.3 Diiodomethyl para Tolysulfone. The chemical concentration in the leather shall be conducted using the High Pressure Liquid Chromatography (HPLC) test method as follows:

4.4.3.1 Grinding. Grind the leather according to paragraph 6.3.7 of ASTM Method D2813 Standard Practice for Sampling Leather for Physical and Chemical Tests.

4.4.3.2 Stock Standard Preparation. Weigh accurately approximately 100mg of Diiodomethyl-para-tolylsulfone Internal Reference Standard (IRS), into a 100ml volumetric flask. Add approximately 50ml of acetonitrile, stopper and sonicate to aid dissolution (about 1 minute). Dilute to volume with acetonitrile.

4.4.3.3 Working Standards Preparation. Transfer 3ml aliquots of the Stock Standard Preparation in to 25, 50, 100, and 250ml volumetric flasks. Dilute to volume with acetonitrile. These standards contain approximately 12, 30, 60 and 120ppm of Diiodomethyl-para-tolylsulfone.

Note: (1) A lower standard may be required for samples containing very low levels of Diiodomethyl para tollylsulfone

(2) Solutions must be stored in darkness to prevent degradation. Minimize exposure to light during preparation and use. The Standard Preparations may be retained one month.

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(3) Internal Reference Sample (IRS) is available from Chemtan Company, Inc., P.O. Box C, Exeter, NH 03833 Tel.: 603-772-3741

4.4.3.4 Sample preparation. Accurately weigh approximately 3 to 5g of sample into a 150ml beaker. Add 75-100ml of acetonitrile. Cover samples with parafilm; mix 16 to 24 hours on magnetic stir plate. The following day, allow samples to settle; remove necessary amount of acetonitrile and inject. Note: Samples may have to be diluted further to fall within standard curve.

4.4.3.5 Testing equipment:

- a. HPLC System with variable UV detector and integrating computer. Suitable syringe and glassware.
- b. A micro-Bondapak C18 column (Waters Associates P/N 2734) or equivalent.
- c. 0.45-micron polycarbonate filters (Nuclepore Corporation, Catalog No. 111107) or equivalent.
- d. Calculator capable of doing linear regression.
- e. Reagents: Acetonitrile (Chromatographic grade).

4.4.3.5.1 Typical mobile phase. Mix 550ml of distilled water and 450ml of acetonitrile. Filter and degas the solution. The concentration may be varied to meet system suitability requirements within range 50% to 40% acetonitrile.

4.4.3.5.2 Typical chromatographic conditions:

Injection Volume	20 Microliters
Flow	2.5 ml/minute
Detector	235 nm

4.4.3.6 System suitability. Inject the highest working standard until 2 percent agreement is reached between two successive injections. Chromatograph for approximately 15 minutes. Determine that, after the solvent front, one impurity peak elutes before the major peak. Elution for moniodomethyl-para-tolylsulfone is about 6 minutes and for Diiodomethyl-para-tolylsulfone is about 8.5 minutes.

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4.4.3.7 Procedure. Inject each standard and sample preparation in duplicate allowing each injection to run for at least 15 minutes. Measure the peak response for the Diiodomethyl-paratolylsulfone.

Note: The run time may have to be increased for samples with late eluting peaks. Perform a linear regression of peak response (area) versus concentration for each of the components.

For each component:

Concentration (ppm) in leather =

Concentration (ppm)	x <u>75</u>
from linear regression.	Sample wt(g)

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 materiel is to be performed by 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 or Defense Agency, or within the Military Department's System 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

6.1 Intended use. The leather is intended for use in shoe and textile repair shops, trailer mounted.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- Title, number, and date of this specification
- Type and class required (see 2.0)
- Thickness required (see 3.3.2).
- Color when other than natural color is required (see 3.3.2)
- Packageing requirements (see 5.1)

6.3 Strength and elongation characteristics are known to be adversely affected when thick layers of leather are removed from the flesh side by splitting.

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6.4 Subject term (key word) listing.

Sides
Backs
Mildew resistant
Fungicide

MILITARY INTERESTS:

Custodians

Army - GL
Navy - NU

Reviewer Activities

ARMY - MD,

CIVIL AGENCY COORDINATING
ACTIVITY:

DLA
GSA - FSS

PREPARING ACTIVITY:
DLA - CT

Project 8330-0204

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7 and send to preparing activity.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of 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.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER	2. DOCUMENT DATE (YYYYMMDD)	
	2. MIL-DTL-32069	July 20, 2000	
3. DOCUMENT TITLE LEATHER, CATTLEHIDE RIGGING			
4. NATURE OF CHANGE <i>(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)</i>			
5. REASON FOR RECOMMENDATION			
6. SUBMITTER			
a. NAME <i>(Last, First, Middle Initial)</i>		b. ORGANIZATION	
c. ADDRESS <i>(Include Zip Code)</i>		d. TELEPHONE <i>(Include Area Code)</i> (1) Commercial (2) DSN <i>(If applicable)</i>	7. DATE SUBMITTED (YYYYMMDD)
8. PREPARING ACTIVITY			
a. NAME DEFENSE SUPPLY CENTER PHILADELPHIA DSCP-COCT Bldg 6-1-D		b. TELEPHONE <i>(Include Area Code)</i> (1) Commercial (2) DSN (215) 737- 8035 444-8035	
c. ADDRESS <i>(Include Zip Code)</i> 700 Robbins Ave (Bldg 6, C&T) PHILADELPHIA, PA 19111-5092		IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Standardization Program Office (DLSC-LM) 8725 John J. Kingman Road, Suite 2533 Fort Belvoir, Virginia 22060-6221 Telephone (703) 767-6888 DSN 427-6888	

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WHS/DIOR, Feb 99

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