

**INCH-POUND**

---

MIL-DTL-32068

July 12, 2000

SUPERSEDING

KK-L-271H

March 9, 1976

**MILITARY DETAILED SPECIFICATION  
LEATHER, CATTLEHIDE, STRAP, VEGETABLE TANNED**

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

1. **SCOPE** This Military Detailed Specification covers the requirement for vegetable tanned cattlehide strap leather.

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

Type I - Sides  
Type II - Backs  
Type III - Bends  
Type IV - Double shoulders

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

MIL-DTL-32068

## 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.

MIL-L-8067

(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.)

2.2 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- 5053 Resistance to Crocking of Leather
- D- 6075 Cracking Resistance of Leather
- D- 2209 Tensile Strength of Leather
- D- 3495 Hexane Extraction of Leather
- D- 2617 Total Ash in Leather
- D -6018 Determining of Lead Salts in Leather
- D- 1814 Measuring Thickness of Leather Units
- D -2813 Practice for sampling leather for physical and chemical tests

(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.)

## MIL-DTL-32068

2.3 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.

### 3. REQUIREMENTS

3.1 Materials. The strap leather shall be full grain or corrected grain cattlehide. Corrected grain leather shall be buffed or snuffed only to the extent necessary to remove superficial blemishes.

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, backs, bends or double shoulders 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 except that double shoulders shall be marked on the flesh side in the right hand corner formed by the straight edge cut and the belly cut.

3.3.2 Thickness. The thickness of the leather shall be as specified in the acquisition document (see 6.2). A tolerance of  $\pm 1/2$  ounce shall be permitted. (Note: 1 ounce = 1/64 inch).

3.3.3 Color and finish. The color and finish shall be as specified (see 6.2 and 6.3).

3.3.4 Colorfastness (resistance to rubbing). The leather shall be tested in accordance with 4.3 for resistance to wet and dry crocking. Unless otherwise specified, staining of the dry cloth shall be not lower than Munsell value 8.5 and the staining of the wet cloth shall be not lower than Munsell value 8.0.

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

3.3.6 Breaking force. At least 80 percent of the specimens tested shall meet the minimum breaking force values shown in table I when tested as specified in 4.3.

TABLE I Breaking force

Thickness (ounces)	Breaking force (pounds), minimum
2 to 3 ½	30.0
3 ¾ to 5 ½	65.0
5 ¾ and up	110.0

## MIL-DTL-32068

3.3.7 Elongation. At least 80 percent of the specimens tested shall have elongation values no greater than 20.0 percent at the loads indicated in table II when tested as specified in 4.3.

TABLE II Elongation load

Thickness (ounces)	Load (pounds)
2 to 3 ½	20.00
3 ¾ to 5 ½	45.00
5 ¾ and up	70.0

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

3.4.1 TCMTB. 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)

### 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 III Chemical requirements

Characteristic	Minimum	Maximum
Chloroform-soluble material, percent <u>1/</u>	9.0	15.0
Water-soluble material, percent <u>1/</u>	-----	18.0
Total ash, percent <u>1/</u>	-----	5.0
Acidity (pH)	3.3	5.0
Lead, qualitative	<u>2/</u>	<u>2/</u>

## MIL-DTL-32068

Table III footnotes

1/ Moisture free basis.

2/ The leather shall be free of lead

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 inspection. 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 Quality 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. Components an 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.

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, back, bend, or double shoulder. The lot size shall be expressed in terms of one side, back, bend, or double shoulder. 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.

#### Examine

#### Defect

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.  
 Stain, discoloration, cut scratch, hole, brand, hepmark,  
 Rough shoulder, heavy vein, deep fat wrinkle, boney  
 Or flanky areas and surface imperfections which  
 Impair the cutting value of more than 12 percent of the  
 total area of the leather.

## MIL-DTL-32068

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

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.

## MIL-DTL-32068

TABLE IV Tests

Composite Characteristic	Requirement paragraph	Test method	Requirement <u>Applicable to</u>	
			Sample unit	sample
Material identification	3.1	<u>1/</u>		—
Tannage	3.2	<u>1/</u>		—
Thickness	3.3.2	ASTM-D-1814		X
Colorfastness (resistance to rubbing)	3.3.4	ASTM-D-6012	X	
Cracking	3.3.5	ASTM-D-6075	X	
Breaking force	3.3.6	ASTM-D-2209	X	
Elongation	3.3.7	ASTM-D-2209	X	
Fungicide	3.4.	para 4.4.	-	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
Acidity (pH)	3.4.1	ASTM-D-3790	—	X
Lead (qualitative)	3.4.1	ASTM-D-6018	—	X

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

## MIL-DTL-32068

#### 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 into 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.

(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.



## MIL-DTL-32068

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 monoiodomethyl-para-tolylsulfone is about 6 minutes and for Diiodomethyl-para-tolylsulfone is about 8.5 minutes.

## MIL-DTL-32068

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) from linear regression.  $\times \frac{75}{\text{Sample wt(g)}}$

3.7 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>
2 to 5 ½	¼
5 ¾ to 9 ½	3/8
9 ¾ and over	½

## 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 strap leather covered by this document is intended primarily for use in post office mail bags, cases, belts, holsters, shoulder straps, and cap visors.

MIL-DTL-32068

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification
- b. Type and class required (see 2.0)
- c. Thickness required (see 3.3.2).
- d. Color and finish required (see 3.3.3)
- e. Colorfastness values when other than specified values are required (see 3.3.4)
- f. Packageing requirements (see 5.1)
- g. When fungicides are not required (see 3.5)

6.3 Lead chromate, lead pigments, or other lead salts should not be used in the finish.

6.4 Subject term (key word) listing.

Sides  
Backs  
Bends  
Fungicide

MILITARY INTERESTS:

Custodians

Army – GL

Reviewer Activities

ARMY – MD, AT,  
Air Force 11.6

CIVIL AGENCY COORDINATING  
ACTIVITY:

DLA  
GSA - FSS

PREPARING ACTIVITY:  
DLA - CT

Project 8330-0201

MIL-DTL-32068

## 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.

<b>I RECOMMEND A CHANGE:</b>	<b>1. DOCUMENT NUMBER</b> MIL-DTL-32068	<b>2. DOCUMENT DATE (YYYYMMDD)</b> <b>JULY 12, 2000</b>
<b>3. DOCUMENT TITLE</b> Leather, Cattlehide, Strap, Vegetable Tanned		
<b>4. NATURE OF CHANGE</b> <i>(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)</i>		
<b>5. REASON FOR RECOMMENDATION</b>		
<b>6. SUBMITTER</b>		
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	7. DATE SUBMITTED (YYYYMMDD)
	(2) DSN <i>(If applicable)</i>	
<b>8. PREPARING ACTIVITY</b>		
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	<b>IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:</b> 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	

**DD Form 1426, FEB 1999 (EG)**  
WHS/DIOR, Feb 99

PREVIOUS EDITION IS OBSOLETE