

NOT MEASUREMENT SENSITIVE

MIL-DTL-22777G

7 July 1999

SUPERSEDING

MIL-S-22777F

18 October 1982

## DETAIL SPECIFICATION

### SOLES AND HEELS, RUBBER TRACTION TREAD FOR FOOTWEAR

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

#### 1. SCOPE

1.1 Scope. This specification covers the requirements for rubber soles and heels with a chevron tread design.

1.2 Classification. The soles and heels covered by this document are in the following types and sizes (see 6.2).

Type I - Full sole

Sizes – 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15

Type II - Heels

Sizes - 28, 30, 32, 34, 36, 38, 40, 44

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-CR, 700 Robbins Avenue, Bldg. 6D, Philadelphia, PA 19111-5096, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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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 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).

#### STANDARDS

##### FEDERAL

FED-STD-601 -Rubber, Sampling and Testing

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

#### DRAWINGS

##### NAVY CLOTHING AND TEXTILE RESEARCH FACILITY DRAWING NUMBERS

16-1-499 - Soles and Heels, Rubber, Traction Tread, Shoes - Heels

16-1-500 - Soles and Heels, Rubber, Traction Tread, Shoes - Soles

(Copies of drawing numbers required by contractors in connection with specific procurement functions should be obtained from the procuring agency or as directed by the contracting officer.)

2.3 Non-Government publications The following documents form a part of this document to the extent cited 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).

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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM-D-471	-Test for Rubber Property – Effects on Liquids
ASTM-D-624	-Test for Rubber Property – Tear Resistance
ASTM-D-1052	-Test for Measuring Rubber – Cut Growth Using Ross Flex
ASTM-D-2240	-Test for Rubber Properties – Durometer Hardness
ASTM-D-3183	-Preparation of Pieces for Test from Other Than Standard Vulcanized Sheets
ASTM-D-4786	-Test for Stitch Tear Strength – Single Hole

(Applications for copies should be addressed to the American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

AMERICAN SOCIETY FOR QUALITY (ASQ)

ASQ Z1.4	-Sampling Procedures and Tables for Inspection by Attributes
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(Applications for copies should be addressed to the American Society for Quality (ASQ), P.O. Box 3005, 611 East Wisconsin Avenue, Milwaukee, WI 53201-4606.)

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 First article. When specified, samples shall be subjected to first article inspection (see 4.3, 6.2, and 6.3).

3.2 Material.

3.2.1 Rubber. The rubber shall conform to the requirements specified in Table I. The color shall be black. Testing shall be as specified in 4.5 and 4.6.

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Table I - Physical requirements of rubber

<u>Characteristics</u>	<u>Requirements</u>	
Abrasive index, minimum (Before and after aging)		
Minimum	150	
Hardness		
(Before and after aging)	Before	After
Minimum	65	65
Maximum	75	80
Volume swell (percentage, maximum)	30	
Cut growth after aging (percentage, maximum)	250 <u>1/</u>	
Stitch tear		
Before and after aging		
Pounds/inch, minimum	240 <u>1/</u>	
After immersion, lb./inch, minimum	160 <u>1/</u>	
Tear strength		
Pounds/inch, minimum	175 <u>1/</u>	

1/ This requirement is applicable only when the rubber is used for manufacturing the soles.

3.3 Design and dimensions. The soles shall conform to the design and dimensions specified in Drawing No. 16-1-500. The heels shall conform to the design and dimensions specified in Drawing No. 16-1-499.

#### 3.4 Construction.

3.4.1 Sole. The sole shall be of a solid rubber construction.

3.4.2 Heels. The heels shall be constructed with a composition core.

#### 3.5 Marking for size, trademark, and mold identification.

3.5.1 Soles. The size and the contractor's trademark or name shall be inscribed in the shank area.

3.5.2 Heels. The size, trademark, and mold identification markings shall be inscribed on either the wearing surface or on the inside surface.

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## 4. VERIFICATION

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

- a. First article inspection (see 4.2).
- b. Quality conformance inspection (see 4.3).

4.2 First article inspection. When a first article is required (see 3.1, 6.2 and 6.3), it shall be tested for the characteristics specified in 4.5.

4.3 Quality conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with ASQ Z1.4.

4.3.1 Component and material certification. A certificate of compliance shall be acceptable as evidence that the characteristics listed in Table II conform to the specified requirements.

4.4 End item testing. The methods of testing specified in FED-STD-601 and ASTM Test methods, and those listed in Table II shall be followed, as applicable. All test reports shall contain the individual values utilized in expressing the final results.

Table II - End item testing.

Component	Characteristics	Rqmt. para.	Test Method	Sample unit	Number of determinations per sample unit	Results reported as	
Soles and heels	Abrasive index	Before aging	3.2.1	ASTM-D-1630	X	3	Nearest whole number
		After aging	3.2.1	ASTM-D-1630 <u>1/</u>	X	3	Nearest whole number
	Hardness	Before aging	3.2.1	ASTM-D-1630	X	4	Nearest whole number
		After aging	3.2.1	ASTM-D-1630 <u>1/</u>	X	4	Nearest whole number
	Volume swell	3.2.1	ASTM-D-471	X	3	Percent (Nearest whole number)	

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Table II - End item testing - continued

Component	Characteristics	Rqmt. para.	Test Method	Sample unit	Number of determinations per sample unit	Results reported as
Soles and heels	Cut growth After aging	3.2.1	ASTM-D-1052 <u>4/</u> <u>5/</u>	X	2	Percent
Heels	Non-marking	3.2.1	4.6.1	X	1	Pass or fail
Soles	Stitch tear Before aging	3.2.1	ASTM-D-4786 <u>2/</u>	X	3	Nearest pound/inch
	After aging	3.2.1	ASTM-D-4786 <u>1/</u> <u>2/</u>	X	3	Nearest pound/inch
	After immersion	3.2.1	ASTM-D-4786 <u>1/</u> <u>2/</u> <u>3/</u> <u>4/</u> <u>5/</u>	X	3	Nearest pound/inch
	Tear strength Die C	3.2.1	ASTM-D-624	X	3	Nearest pound/inch

1/ Aging shall be accomplished in accordance with Method 7221 of FED-STD-601. The soles and heels shall be aged 24 hours at  $212 \pm 1.8$  ° F.

2/ Buffing and preparation of samples shall be in accordance with ASTM-D-3183 and thickness shall be in accordance with ASTM-D-624.

3/ The hole for the stitch tear test shall be made prior to immersion of the test sample in the test fluid.

4/ The cut growth test shall be performed at full thickness of the sole and reported as percent of cut growth after 50,000 cycles. A reading for each 100% increase in cut growth is not required.

5/ The specimens shall be clamped in the flexing machine and conditioned for one hour at 0° F then run at 0°F, and the % cut growth shall be reported after 50,000 cycles. A reading after each 100% increase in cut growth is not required.

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4.6 Test methods.

4.6.1 Non-marking test. The corner edge of the sole or heel shall be drawn across a sheet of white paper using moderate pressure. If only a light mark is made which is easily erased by rubbing with the fingers, the heels and soles shall be classified as non-marking.

## 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 DoD personnel, those 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

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

6.1 Intended use. The soles and heels are intended for use as components of work and safety footwear.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number and date of this specification.
- b. Types, classes and sizes required (see 1.2).
- c. Issue of DoDISS to be cited in the solicitation and, if required, the specific issue of individual documents referenced (see 2.2.2 and 2.3.2).
- d. When first article inspection is required (see 3.1 and 6.3).

6.3 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of Federal Acquisition Regulation (FAR) 52.209-4. The first article should be a reproduction sample. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should also include specific instructions in acquisition documents regarding arrangements for selection, inspection, and approval of the first article. (see 3.1)

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6.4 Subject term (key word) listing

Footwear  
Safety  
Soles  
Heels  
Rubber

Custodians:

Navy - NU  
Army - GL  
Air Force - 11

Preparing Activity:

DLA - CT

Project 8335-0184

Review Activities:

Navy - AS, MC, CG, OS  
Army - MD  
Air Force - 45, 82, 99



## 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-22777G	<b>2. DOCUMENT DATE (YYMMDD)</b> 99/07/07
<b>3. DOCUMENT TITLE</b> SOLES AND HEELS, RUBBER TRACTION TREAD FOR FOOTWEAR		
<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 (2) DSN <i>(If applicable)</i>	7. DATE SUBMITTED (YYMMDD)
<b>8. PREPARING ACTIVITY</b>		
a. NAME DEFENSE SUPPLY CENTER PHILADELPHIA DSCP-CR	b. TELEPHONE <i>(Include Area Code)</i> (1) Commercial (2) DSN  (215) 737- 3256 444-3256	
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	