INCH-POUND

MIL-M-910F
9 August 1991
SUPERSEDING
MIL-M-910E
15 December 1965
(See 6 6)

MILITARY SPECIFICATION

MATS, FLOOR, STANDING

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

1 SCOPE

1 1 Scope This specification covers floor mats that reduce personnel fatigue due to vibration and long periods of standing

2 APPLICABLE DOCUMENTS

2 1 Government documents

2 1 1 Specifications and standards The following specifications and standards 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

PPP-F-320 - Fiberboard Corrugated and Solid Sheet Stock (Container Grade) and Cut Shapes

MILITARY

MIL-P-116 - Preservation Methods of
MIL-L-19140 - Lumber and Plywood, Fire Retardant Treated

Beneficial comments (recommendations, additions deletions) and any pertinent data which may be of use in improving this document should be addressed to Commander, Naval Sea Systems Command, SEA 55Z3, Department of the Navy, Washington, DC 20362-5101 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter

AMSC N/A FSC 7220

STANDARDS

FEDERAL

FED-STD-601 - Rubber Sampling and Testing

MILITARY

MIL-STD-289 - Visual Inspection Guide for Rubber Sheet Material

MIL-STD-293 - Visual Inspection Guide for Cellular Rubber Items

MIL-STD-2073-1 - DOD Materiel Procedures for Development and Application of Packaging Requirements

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

2 2 Non-Government publications The following documents 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 DoDISS cited in the solicitation Unless otherwise specified, the issues of the 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 (ASTM)

D 3951 - Standard Practice for Commercial Packaging (DOD adopted)

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

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

2 3 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 (see 6.2), a sample shall be subjected to first article inspection (see 6.4) in accordance with 4 3)

3.2 Material. The material shall be vulcanized rubber, plasticized polyvinyl chloride, reclaim, or a combination thereof which meets the requirements specified herein Asbestos fibers and components containing asbestos fibers are prohibited.

3 3 Construction The mat shall consist of a smooth unicellular base bonded to a solid rubber or plastic top covering The top covering may have ribbed or other suitable surface finish. The edges of the finished mat shall be beveled at a 45 degree (°) angle maximum

3 4 Dimensions Unless otherwise specified (see 6 2), the dimensions of the mat shall be 30 by 36 inches and the tolerance shall be plus or minus (+/-) 1/4 inch for width and length

3 4.1 Thickness The overall thickness of a mat shall be 1/2 inch minimum and 5/8 inch maximum The top covering shall be 0 125 +/- 0 025 inch thick

3.5 Weight The maximum weight of the mat shall be 10 pounds per square yard

3 6 Physical requirements The matting shall conform to the requirements specified in table I when tested (see 4.6 2 through 4 6 2.7)

Table I Physical requirements

	Requirement
Properties of mat, top covering	
Initial	
Tensile strength, psi (min)	1,500
Ultimate elongation, percent (min)	200
After oven aging	
Tensile strength, percent of initial (min)	80
Ultimate elongation, percent of initial (min)	70
Properties of complete mat	
Weight increase after water immersion, grams (max)	3
Weight increase after immersion in medium No 3 oil, grams (max)	3
Compression set, percent (max)	66
Deflection under 75 pounds load, inches	0 100 to 0 150
Adhesion of top covering to cellular base, pounds/inch (min)	3

3 7 Workmanship The workmanship shall be first class in every respect and samples of mats shall be examined (see 4 6 1) and shall conform to MIL-STD-289 and MIL-STD-293

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 (examinations and tests) 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 specifications where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements

4 1 1 Responsibility for compliance All items shall 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 (see 6 3) The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract Sampling inspection, as part of the manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material

4 2 Classification of inspections The inspection requirements specified herein are classified as follows

a First article inspection (see 4 3)
b Quality conformance inspection (see 4 4)

4 3 First article inspection First article inspection shall be conducted on samples from the first lot of material offered for delivery under a contract or order and from every tenth lot thereafter First article tests shall be as specified in Table II

4 4 Quality conformance inspection Quality conformance tests shall be conducted on samples from all intermediate lots on which first article inspection is not performed Quality conformance tests shall be as specified in table II (see 6 3)

Table II. Inspection requirements.

	Inspection	Requirement Paragraph	Test Paragraph
Visual inspection	First article/quality conformance	3.6	4 6 1.2
Dimensional inspection	First article/quality conformance	3 4	4 6.1.3
Tensile properties	First article/quality conformance	3 6	4 6.2 1
Tensile properties after oven aging	First article	3 6	4 6.2.2
Change in weight after water immersion	First article	3 6	4 6 2 3
Change in weight after oil immersion	First article	3 6	4 6 2 4
Compression set	Quality conformance	3 6	4 6 2.5
Deflection	First article/quality conformance	3 6	4 6 2 6
Adhesion	First article/quality conformance	3 6	4 6 2 7

4.5 Sampling

4 5 1 Lot For purposes of sampling, examinations, and tests, a lot shall consist of all mats of the same size, design and style, produced in one plant under essentially the same conditions, and offered for delivery at one time

4 5 2 Sampling for examination As a minimum, the contractor shall select a sample quantity of mats in accordance with table III Sample size depends on classification of the characteristic as shown in paragraph 4 7, MIL-STD-289, and MIL-STD-293 The sample size for major and minor characteristics is shown in table III If one or more defects are found in any sample, the entire lot shall be rejected The contractor has the option of screening 100 percent (%) of the rejected lot for the defective characteristic(s), or providing a new lot, which shall be inspected in accordance with the sampling plan contained herein

Table III Sampling for examination.

Lot size	Sample size	
	Major Characteristic	Minor Characteristic
2 to 50	5	2
51 to 90	7	4
91 to 150	11	5
151 to 280	13	6
281 to 500	16	7
501 to 1200	19	8
1201 to 3200	23	9
3201 to 10,000	29	9
10,000 to 35,000	35	9
35,001 to 150,000	40	9

4 5 3 Sampling for tests Samples for the tests specified in 4 6 2, as applicable, shall be taken in accordance with table IV from each lot that passes the examination of 4 6 1 If one or more defects are found in any sample, the entire lot shall be rejected The contractor has the option of screening 100% of the rejected lot for the defective characteristic(s), or providing a new lot which shall be inspected in accordance with the sampling plan

Table IV Sampling for tests

Lot size Number of mats	Sample size Number of mats
Up to 15	None
16 to 50	1
51 to 150	2
151 to 280	3
281 to 500	4
Over 500	5

4 6 Inspection conditions Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified herein

4 6 1 Examination Each of the sample mats selected in accordance with 4 5 2 shall be examined for workmanship, visual defects, dimensions, and tolerances and all other requirements of this specification which do not involve tests MIL-STD-289 and MIL-STD-293 shall be used to determine and evaluate visual defects

4 6 1 2 Visual inspection Mats shall be selected in accordance with 4 5.2 and visually examined to conform with 3.6. MIL-STD-289 and MIL-STD-293 shall be used to determine and evaluate visual defects

4.6.1.3 Dimensional inspection. Mats shall be selected in accordance with 4 5.2 and dimensionally inspected to conform with 3 4

4 6.2 Tests

4 6 2 1 Tensile properties The strength and ultimate elongation of the top covering of the mat shall be determined by methods 4111 and 4121, respectively, of FED-STD-601 and shall conform to 3 6 Die III specimens shall be used for all tensile determinations

4 6.2 2 Tensile properties after oven aging Tensile strength and ultimate elongation of the top covering of the mat shall be determined after oven aging at 90 degrees (°) +/- 1 1 degrees Celsius (°C) (194 degrees Fahrenheit (°F) +/- 2°F) for 46 plus or minus (+/-) 1/4 hours in accordance with method 7221 of FED-STD-601 and shall conform to 3 5

4 6 2 3 Change in weight after water immersion Change in weight after tap water immersion for 22 +/- 1/4 hours at room temperature shall be determined on 3 by 4 inch specimens from the complete mat in accordance with method 6251 of FED-STD-601, except that no acetone rinse shall be used The specimens shall be lightly blotted after immersion and weighed to within plus or minus 0.1 gram The change in weight after water immersion shall conform to 3 6

4 6 2 4 Change in weight after oil immersion Change in weight after immersion in medium No 3 oil of method 6001 of FED-STD-601 for 46 +/- 1/4 hours at room temperature shall be determined on 3 by 4 inch specimens from the complete mat in accordance with method 6251 of FED-STD-601, except that no acetone rinse shall be used The specimens shall be lightly blotted after immersion and weighed to within plus or minus 0 1 gram The change in weight after oil immersion shall conform to 3.6

4 6.2 5 Compression set Compression set shall be determined in accordance with method 3311 of FED-STD-601 on 1 129 +/- 001 inch diameter specimens cut from the complete mat The thickness of the specimens shall be determined with the top covering of the mat up and in accordance with method 12031 of FED-STD-601 The specimens shall be clamped to 25 percent deflection during oven aging for 22 hours at 50° +/- 1.1°C (122° +/- 2°F) and allowed to recover for 24 hours at room temperature before determining compression set The compression set shall conform to 3 6

4.6.2.6 Deflection. Deflection under 75 pound (+/- 1 percent) load shall be determined on three 8-inch square specimens cut from each sample mat A three inch diameter cylindrical indenter shall be used for applying the load to the top covering of the mat The indenter shall have rounded edges that are not sharp and measurements shall not be made closer than 2 inches from the edge of the specimen The load deflection shall be determined by machine method using a universal tester and a continuous uniform loading rate within

0.2 to 2.0 inches per minute. The specimens shall be deflected with only one loading cycle and the deflection measured to within plus or minus 0.001 inch by dial gauge, or equivalent The test shall be conducted at 23° +/- 1.1°C (73 5° +/- 2°F) after conditioning the specimens for 4 hours at this temperature. The results shall be the average of the three determinations The deflection shall conform to 3 6 The slope of the load deflection curve shall be determined using an 8-inch square specimen cut from each sample mat The specimen shall be loaded to 50 pounds (+/- 1 percent) and the deflection measured Immediately the load shall be increased to 75 pounds (+/- 1 percent) and the deflection measured The slope of the load deflection curve (75-50 divided by the difference in the deflection values) shall lie between 500 and 750 pounds/inch

4.6.2 7 Adhesion test The adhesion of the top covering to the cellular base shall be determined in accordance with method 8011 or 8021 of FED-STD-601 and shall conform to 3 6

4 7 Inspection of packaging Sample packs and the inspection of preservation, packing, and marking for shipment, stowage, and storage shall be in accordance with the requirements of section 5 and the documents specified herein

5 PACKAGING

(The packaging requirements specified herein apply only for direct Government acquisition)

5 1 General

5 1 1 Navy fire-retardant requirements

(a) Treated lumber and plywood Unless otherwise specified (see 6.2), all lumber and plywood including laminated veneer material used in shipping container and pallet construction, members, blocking, bracing, and reinforcing shall be fire-retardant treated material conforming to MIL-L-19140 as follows

Level A and B -	Type II - weather resistant Category I - general use
Level C -	Type I - non-weather resistant Category I - general use

(b) Fiberboard Fiberboard used in the construction of interior (unit and intermediate) and exterior fiberboard boxes including interior packaging forms shall conform to the class-domestic/fire retardant materials requirements as specified (see 6 2), of PPP-F-320.

5.2 Preservation Preservation shall be level A, C or commercial as specified (see 6 2)

5.2 1 Level A. Each mat (see 3 4) shall be placed in a transparent or opaque bag. Bag closure shall be accomplished by heat or cold sealing, pressure sensitive tape, or provided with an interlocking or press fit type closure. Unit protection shall meet the requirement for method III of MIL-P-116 Each sealed bag shall then be placed into a water resistant, folding, set-up or metal edged paperboard or fire retardant fiberboard unit container meeting the closure shall be in accordance with method V of the appendix to the box specification Unless otherwise specified (see 6 2), container selection shall be at the option of the contractor

5.2 2 Level C Each mat shall be unit protected as specified under level A except that the unit container shall be as follows

(a) The paperboard containers shall be of the domestic or non-weather resistant type, class, or variety as applicable and,

(b) The fiberboard containers shall be of the class-domestic/fire-retardant material (see 5 1 1 (b)) The box closure shall be in accordance with method I using pressure sensitive, adhesive tape

5 2 3 Commercial Commercial packaging (cleaning, preservation, cushioning, unit and intermediate package) shall be in accordance with ASTM D 3951

5 3 Packing Packing shall be level A, B, C or commercial as specified (see 6 2)

5 3 1 General requirements for levels A B, and C Containers selected (see 5 3 2), shall be of minimum weight and cube consistent with the protection required, of uniform size, and contain identical quantities of identical mats

5 3.2 Levels A, B and C containers Mats preserved as specified (see 5 2) shall be packed in exterior shipping containers for the level of packing specified (see 5 3) in accordance with the exterior shipping container requirements of MIL-STD-2073-1 and herein Unless otherwise specified (see 6 2), container selection shall be at the contractor's option

5 3.2.1 Caseliners, closure and gross weight

5 3 2 1 1 Caseliners Unless otherwise specified (see 6.2), level A shipping containers containing mats preserved level C or commercial shall be provided with waterproof caseliners in accordance with MIL-STD-2073-1

5 3 2 1 2 Closure Container closure reinforcing, or banding shall be in accordance with the applicable container specification or appendix thereto except that the class-weather-resistant including fire retardant fiberboard boxes shall be closed in accordance with method V and reinforced with non-metallic or tape banding and class-domestic/fire retardant fiberboard boxes shall be closed in accordance with method I using pressure sensitive tape.

5.3.2.1.3 Weight Wood, plywood, and cleated type containers exceeding 200 pounds gross weight shall be modified by the addition of skids in accordance with MIL-STD-2073-1 and the applicable container specification or appendix thereto

5 3 3 Commercial Mats preserved as specified (see 5 2), shall be packed for shipment in accordance with ASTM D 3951 and herein

5 3 3 1 Container modification Shipping containers exceeding 200 pounds gross weight shall have a minimum of two, 3-inch by 4-inch nominal wood skids laid flat, or a skid or sill type base which will support the material and facilitate handling by mechanical handling equipment during shipment, stowage and storage

5 4 Marking, levels A, B, C and commercial In addition to any special marking required (see 6 2), interior packs and shipping containers shall be marked including bar coding, cure date and size for shipment, stowage, and storage in accordance with MIL-STD-2073-1

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 mats covered by this specification are for use at work stations to help reduce personnel fatigue due to standing

6 2 Acquisition requirements Acquisition documents must specify the following

(a) Title, number, and date of this specification
(b) Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents reference (see 2 1 1 and 2 2)
(c) Dimensions (see 3 4)
(d) When fire retardant lumber and plywood is not required (see 5 1.1 (a))
(e) Class of fire retardant fiberboard required (see 5 1 1 (b))
(f) Level of preservation and level of packing required (see 5 2 and 5 3)
(g) Container selection if other than contractor's option (see 5 2 1 and 5 3 2)
(h) When caseliners are not required (see 5 3 2 1 1)
(i) Special marking required (see 5 4)

6 3 Consideration of data requirements The following data requirements should be considered when this specification is applied on a contract. The applicable Data Item Description (DID's) should be reviewed in conjunction with the specific acquisition to ensure that only essential data are requested/provided and that the DID's are tailored to reflect the requirements of the specific acquisition To insure correct contractual application of the data requirements, a Contract Data Requirements List (DD Form 1423) must be

prepared to obtain the data, except where DoD FAR Supplement 27 475-1 exempts the requirements for a DD Form 1423

Referenced Paragraph	DID Number	DID Title	Suggested Tailoring
4 4	DI-T-2072	Reports, Test	-------

The above DID's were those cleared as of the data of this specification The current issue of DoD 5010 12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), must be researched to ensure that only current, cleared DID's are cited on the DD Form 1423

6 4 First article When first article inspection is required, the contracting officer should provide specific guidance to offerors whether the item(s) should be a preproduction sample, a first article sample, a first production item, a sample selected from the first production items, a standard production item from the contractor's current inventory (see 3 1), and the number of items to be tested as specified in 4 3 The contracting officer should also 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 requirement 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 Bidders should not submit alternate bids unless specifically requested to do so in the solicitation

6 5 Subject term (key word) listing

anti-fatigue

6 6 Changes from previous issue Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes

Custodians
Navy - SH
Air Force - 69

User activity
Army - CE

Preparing activity
Navy - SH
(Project 7220-0240)

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.
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 (YYMMDD)
	MIL-M-910F	9 AUGUST 1991

3. DOCUMENT TITLE
MATS, FLOOR, STANDING

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)	b. ORGANIZATION	
c. ADDRESS (Include Zip Code)	d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (If applicable)	7. DATE SUBMITTED (YYMMDD)

8. PREPARING ACTIVITY

a. NAME	b. TELEPHONE (Include Area Code)	
Technical Point of Contact (TPOC): T. Berry (SEA 5141) PLEASE ADDRESS ALL CORRESPONDENCE AS FOLLOWS:	(1) Commercial 703-602-0214	(2) AUTOVON 8-332-0214
c. ADDRESS (Include Zip Code) COMMANDER, NAVAL SEA SYSTEMS COMMAND ATTN: 55Z3, DEPARTMENT OF THE NAVY WASHINGTON, DC 20362-5101	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	