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 SUPERSEDING  
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 (See 6.6)

## PERFORMANCE SPECIFICATION

### RUBBER OR PLASTIC SHEETS AND ASSEMBLED AND MOLDED SHAPES, SYNTHETIC, FOAM OR SPONGE, OPEN CELL

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

#### 1. SCOPE

1.1 Scope. This specification covers inherently combustion retardant flexible foam or sponge materials with low emission of smoke and toxic products to be used for mattresses, cushioning, and packaging applications.

1.2 Classification Cellular synthetic rubber or plastic shall be of the following types, classes, and conditions, as specified (see 3.5 1, 3.5 2.2, and 6.2.1).

Type I	- Cored.
Type II	- Uncored.
Class 5	- Fire retardant, low smoke (for shipboard use).
Condition A	- Medium.
Condition B	- Medium firm.
Condition C	- Firm.

#### 2 APPLICABLE DOCUMENTS

##### 2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation.

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 5523, 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.

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## SPECIFICATIONS

## FEDERAL

- PPP-B-576 - Boxes, Wood, Cleated, Veneer, Paper Overlaid.
- PPP-B-585 - Boxes, Wood, Wirebound.
- PPP-B-591 - Boxes, Shipping, Fiberboard, Wood-Cleated.
- PPP-B-601 - Boxes, Wood, Cleated-Plywood.
- PPP-B-621 - Boxes, Wood, Nailed and Lock-Corner.
- PPP-B-636 - Boxes, Shipping, Fiberboard.
- PPP-B-640 - Boxes, Fiberboard, Corrugated, Triple-Wall.

## MILITARY

- MIL-L-10547 - Liners, Case, and Sheet, Overwrap; Water-Vaporproof or Waterproof, Flexible.

## STANDARDS

## FEDERAL

- FED-STD-313 - Material Safety Data Sheets, Preparation and the Submission of.

## MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-293 - Visual Inspection Guide for Cellular Rubber Items.
- MIL-STD-1623 - Fire Performance Requirements and Approved Specifications for Interior Finish Materials and Furnishings (Naval Shipboard Use).

(Copies of specifications and standards required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted shall be those listed in the issue of the DoDISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS shall be the issue of the nongovernment documents which is current on the date of the solicitation.

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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- D 412 - Standard Test Methods for Rubber Properties in Tension. (DoD adopted)
- D 573 - Standard Test Method for Rubber-Deterioration in an Air Oven. (DoD adopted)
- D 945 - Standard Test Methods for Rubber Properties in Compression or Shear (Mechanical Oscillograph). (DoD adopted)
- D 1055 - Standard Specification for Flexible Cellular Materials - Latex Foam. (DoD adopted)
- D 1391 - Standard Test Method for Measurement of Odor in Atmospheres (Dilution Method).
- D 3574 - Standard Methods of Testing Flexible Cellular Materials - Slab, Bonded, and Molded Urethane Foams. (DoD adopted)
- E 162 - Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source.
- E 662 - Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.

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

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT  
National Motor Freight Classification

(Application for copies should be addressed to the National Motor Freight Traffic Association, Inc., ATA TRAFFIC Dept., 2200 Mill Road, Alexandria, VA 22314.)

UNIFORM CLASSIFICATION COMMITTEE AGENT  
Uniform Freight Classification Ratings, Rules and Regulations

(Application for copies should be addressed to the Uniform Classification Committee Agent, Tariff Publication Officer, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

(Nongovernment standards and other publications are normally available from the organizations which prepare or which distribute the documents. These documents 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 specification and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

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## 3. REQUIREMENTS

3.1 Material. The base material shall be a synthetic rubber or plastic cellular compound, processed to meet all of the requirements of this specification. The use of reclaimed or natural rubber is prohibited.

3.1.2 Material safety data sheet. The contracting activity shall be provided a material safety data sheet (MSDS) at the time of contract award. The MSDS is Form OSHA-20, found in and part of FED-STD-313. The MSDS shall be included with each shipment of the material covered by this specification (see 6.4).

3.2 Construction.

3.2.1 Form. The material shall have a polymerized or vulcanized homogeneous (free from foreign material) cellular structure with a porous surface and open cells. The cells shall be interconnecting and uniform in size. The form of the material shall be in sheets, or in assembled or molded shapes, cored or uncored, as specified (see 6.2.1). Unless otherwise specified (see 6.2.1), the size, shape, and distribution of coring shall be at the manufacturer's option. Solid fillers, flame retardant chemicals, and other additives used to achieve appropriate performance standards in accordance with this specification shall not be deemed "foreign" material within the meaning of this section.

3.2.2 Finish. When a finish, such as a cloth scum, is required to improve the strength, tear resistance, and so forth, on the finished shape, it shall be as specified (see 6.2.1).

3.2.3 Allowable manufacturing practices. Cellular material for mattresses and cushions may be molded in one piece or may be assembled by laminating to achieve thickness, and by butting to achieve width or length. Assembled items shall be cemented together. Incidental defects in the cellular material which occur in standard manufacturing practices and assembly will be allowed if they are corrected as indicated and the resulting product conforms to this specification.

- (a) Tears occurring during removal from mold shall be cemented together.
- (b) Changes in volume during cure, resulting in surface depressions or minor changes in size, shall be corrected by addition of material of identical composition and buffed to a level surface.
- (c) Low-compression cored cushions shall be adjusted by the addition of material of identical composition in the core holes in a symmetrical pattern to produce the required uniform compressibility.
- (d) Laminated products shall be scrim-reinforced, provided that such scrim reinforcing does not add to flammability or smoke emission of the material. Also, scrim reinforcing will be permitted as long as the surfaces of the mattress are not wrinkled. Scrim reinforcing is defined as woven cloth fabric bonded to the cellular surfaces to add to the tensile strength of the assembly.
- (e) Where laminated assembly is employed to achieve thickness, the laminae shall be as thick as possible, but in no case less than 1/2-inch.

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- (f) Seams that are cemented shall not cause distortion of the base material in an uncompressed state or when compressed to 75 percent of the original height. Cemented seams shall exhibit strength greater than the base material.
- (g) For cushions, a maximum of two sections may be butted together to achieve width or length. Sections are defined as pieces of full thickness which are the full width or length of the item. Lamination may be used to achieve thickness.

3.3 Odor. The material shall be properly cured in order to prevent any objectionable odor. (An objectionable odor shall be defined as one that is atypical of cellular rubber compound.) In cases where an objectionable odor is present, the odor concentration shall be determined. When tested in accordance with 4.4.13, the odor concentration shall be 10 or less.

3.4 Dimensions and tolerances. Dimensions of all sheets, molded or assembled shapes shall be as specified (see 6.2.1), and within the tolerances or dimensions of latex foam rubber products for general applications in accordance with ASTM D 1055.

### 3.5 Physical properties.

3.5.1 Indentation (type I and for type II mattress inserts only). The indentation of each condition of type I cellular material or type II mattress inserts shall be as specified in table I, when tested as specified in 4.4.1.

TABLE I. Indentation and apparent density of mattress insert material (type I and type II mattress inserts only).

Class	Condition	Indentation, pounds required to compress 50 square inches (in <sup>2</sup> ) of a 4-inch specimen 25 percent	Apparent density, pounds per cubic foot (lb/ft <sup>3</sup> ) (maximum) based on gross volume including coring
Class 5	Medium	25 to 42	8.0
	Medium firm	30 to 55	9.0
	Firm	42 to 60	9.2

### 3.5.2 Density.

3.5.2.1 Type I. The maximum apparent density of each class and condition of cored material shall be as specified in table I, when tested as specified in 4.4.2.

3.5.2.2 Type II. The maximum apparent density of each class and condition of uncured material shall be as specified in table II, when tested as specified in 4.4.2.

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TABLE II. Indentation and density of cushioning material (type II nonmattress inserts).

Class	Condition	Indentation, pounds required to compress 50 in <sup>2</sup> of a 4-inch specimen 25 percent - test method ASTM D 3574	Apparent density, pounds per lb/ft <sup>3</sup> (maximum) based on gross volume including coring
Class 5	Medium	25 to 42	8.0
	Medium firm	30 to 55	9.0
	Firm	42 to 60	9.2

3.5.3 Compression resistance (for type II, other than mattress inserts).

Compression resistance of each condition of cellular material shall be as specified in table II, when tested as specified in 4.4.3.

3.5.4 Low temperature compression resistance (type II only). Compression resistance of type II material shall not change more than 70 percent from the initial values when tested at low temperature as specified in 4.4.4.

3.5.5 Compression set. Compression set of the cellular material shall be not greater than 12 percent for class 5 material, when tested as specified in 4.4.5.

3.5.6 Flexing. Cellular material shall withstand flexing as specified in 4.4.6, without physical breakdown of cellular structure. After the flexing test, the set remaining after 1 hour at rest shall be not greater than 10 percent.

3.5.7 Accelerated aging.

3.5.7.1 Air-oven aging. After air-oven aging, as specified in 4.4.7.1, the change in indentation or compression, as applicable, of the cellular material shall be not greater than 20 percent from the values obtained before aging.

3.5.7.2 Air-pressure heat aging. Cellular material shall withstand the air-pressure heat aging test as specified in 4.4.7.2 for 2 hours without changing shape, hardening, softening, or becoming tacky.

3.5.8 Fire performance.

3.5.8.1 Flame spread index. Class 5 material shall demonstrate a flame spread index no greater than the requirements in accordance with MIL-STD-1623 when tested as specified in 4.4.8. The specimen shall not melt or drip.

3.5.8.2 Smoke generation (class 5 material). Maximum specific optical density of smoke generated shall be 200, when tested as specified in 4.4.9.

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3.5.9 Bend fatigue resistance (mattress inserts only). The cellular material shall not crack before or after aging, when tested as specified in 4.4.10.

3.5.10 Tensile strength and ultimate elongation. Tensile strength of the material shall be not less than 9 lb/in<sup>2</sup>. Ultimate elongation shall be not less than 70 percent for class 5 material, when tested as specified in 4.4.11.

3.5.11 Cemented seam strength. Cemented seams shall be stronger than the base material, when tested as specified in 4.4.12, both initially and after oven aging.

3.5.12 Steam autoclave effect. The material shall be exposed in a steam autoclave. Exposed material shall conform to the following requirements when tested as specified in 4.4.14:

Compression force deflection change - 25 percent maximum.  
Constant deflection compression set - 25 percent maximum.

3.6 Identification. Each sheet, molded or assembled shape, shall be marked in a permanent and legible manner with the following information. If the item is too small for marking, the information shall be provided on the wrapping or container of each item (see 5.3).

Manufacturer  
Date of manufacture  
Contract number and lot (if applicable)  
Specification number  
Type  
Class  
Condition

3.7 Workmanship. Material shall be of uniform texture, shall be free from obvious manufacturing imperfections which may impair serviceability, and shall meet the requirements of this specification.

#### 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 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 specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.



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4.1.1 Responsibility for compliance. All items must 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. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.2 Sampling.

4.2.1 Lot. A lot shall consist of all material of the same type, class, and condition produced in one plant under the same conditions, and offered for delivery at one time.

4.2.2 Sampling for examination. Sample sheets or molded or assembled shapes shall be taken from each lot in accordance with MIL-STD-105 at inspection level II. The Acceptable Quality Levels (AQL) shall be 4.0 percent defective major and 15.0 percent defective minor. Major and minor defects shall be classified in accordance with MIL-STD-293.

4.2.3 Sampling for tests. Representative samples shall be taken at random from each lot that passes the examination of 4.3.1, in sufficient quantity to conduct either the production check tests or the quality conformance tests of 4.3.2 and 4.3.3, as applicable. For mattresses and seat cushions, the sample unit shall be a minimum of three each one-half mattresses. Samples shall be selected from the production line, and shall be complete in all respects, namely, with authorized repairs, taping, and marking. No substitute samples shall be permitted for mattresses and seat cushions. If, for applications other than mattresses and seat cushions, the items are of such size or shape that test specimens cannot be prepared from them, substitute samples shall be provided in the form of one sheet 4 feet long by 2.5 feet wide by 1 inch thick, and one piece 12 by 12 by 4 inches. Where the substitute samples represent items which are laminated to achieve thickness, the substitute sample shall contain the same number of seams, including the scrim reinforcement, where employed. The substitute samples shall be certified to be of the same material and equivalent cure as that used in the lot of finished material offered for delivery (see 4.5 and 6.2.2).

4.3 Quality conformance inspection.

4.3.1 Examination. Each of the samples taken in accordance with 4.2.2 shall be examined for workmanship, visual defects, dimensions, tolerances, and marking. Determination and evaluation of visual defects shall be in accordance with MIL-STD-293.

4.3.2 Production check tests. Production check tests shall be conducted on end item samples from (or representing) the first lot of material and once every 10 lots thereafter. All applicable tests as specified in table III shall be conducted.



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TABLE III. End item tests.

Characteristic	Requirement paragraph	Test procedure	Requirement applicable to sample unit	Lot average	Number of determinations per sample unit	Results reported as
Odor	3.3	4.4.13	X	-	5	Required by ASTM D 1391
Indentation	3.5.1	4.4.1	X	-	1	To nearest 0.5 pound per 50 square inches
Density:						
Cored material	3.5.2.1	4.4.2	X	-	1	To nearest 0.1 lb/ft <sup>3</sup>
Uncored material	3.5.2.2	4.4.2	X	-	1	To nearest 0.1 lb/ft <sup>3</sup>
Compression resistance	3.5.3	4.4.3	-	X	3	To nearest 0.1 lb/in <sup>2</sup>
Low temperature compression resistance	3.5.4	4.4.4	-	X	3	To nearest 1 percent
Compression set	3.5.5	4.4.5	-	X	3	To nearest 0.1 percent
Flexing:						
Physical breakdown set	3.5.6	4.4.6	X	-	1	Pass or fail
Set	3.5.6	4.4.6	X	-	1	To nearest 0.1 percent
Air-oven aging	3.5.7.1	4.4.7.1	-	X	2	To nearest 1 percent
Air-pressure heat aging	3.5.7.2	4.4.7.2	X	-	1	Pass or fail
Flame spread (radiant panel)	3.5.8.1	4.4.8	X	-	1	Required by ASTM E 162
Smoke generation	3.5.8.2	4.4.9	X	-	3	Required by ASTM E 662
Bend fatigue requirements:						
Before aging	3.5.9	4.4.10	X	-	1	Pass or fail
After aging	3.5.9	4.4.10	X	-	1	Pass or fail
Tensile strength	3.5.10	4.4.11	-	X	3	To nearest 0.1 lb/in <sup>2</sup>
Ultimate elongation	3.5.10	4.4.11	-	X	3	To nearest 1 percent
Cemented seam strength:						
Before aging	3.5.11	4.4.12	X	-	1	Pass or fail
After aging	3.5.11	4.4.12	X	-	1	Pass or fail
Steam autoclave	3.5.12	4.4.14	X	-	3	Pass or fail

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4.3.3 Quality conformance tests. Quality conformance tests shall be conducted on end item samples from (or representing) all intermediate lots on which the production check tests were not conducted. Unless otherwise specified (see 6.2.1), the applicable test specified in table III shall be conducted except those for flexing, air-pressure heat aging, low temperature compression resistance, fire retardance, flame spread, smoke generation. The air-pressure heat aging test shall be performed by the contractor on the first lot, subsequent testing will be performed by the Government as necessary.

4.4 End item testing. Testing of the completely fabricated item taken from the production line shall be performed in accordance with table III for the characteristics shown therein. The sample size shall be as specified in 4.2.3. Tests shall be conducted in accordance with applicable methods as specified. Unless otherwise specified (see 6.2.1), tests shall be conducted at a temperature of  $70 \pm 5$  degrees Fahrenheit ( $^{\circ}\text{F}$ ). Specimens shall be conditioned in an atmosphere of  $50 \pm 4$  percent relative humidity, and a temperature of  $73 \pm 2^{\circ}\text{F}$ .

4.4.1 Indentation. The indentation of type I cellular material and type II mattress inserts shall be determined in accordance with ASTM D 3574, except that test specimens shall be not less than 15 by 15 by 3 inches and the values shall be obtained 5 seconds after the pressure foot has produced a 25 percent indentation in the cellular material.

4.4.2 Density. Density or apparent density shall be determined by accurately weighing and measuring the cellular sample and dividing the weight by the volume. The volume of irregular-shaped pieces shall be determined as follows: If coring is present, the core holes shall be sealed off. The sample shall be placed in a graduated container and then completely surrounded by 10 to 14 mesh, free flowing seed, such as flaxseed, so that the sample is covered to a depth of 1 inch. The true or apparent volume (as applicable) of the seed plus the sample shall be noted, the sample removed, and the volume of the seed determined. The volume of the sample shall be determined by deducting the volume of the seed from the volume of seed plus sample.

4.4.3 Compression resistance. The compression resistance of type II cellular material shall be determined in accordance with ASTM D 945.

4.4.4 Low temperature compression resistance (type II only). Compression resistance at low temperature shall be determined in accordance with ASTM D 1055, after conditioning for  $5 \pm 1/4$  hours at minus  $20 \pm 2^{\circ}\text{F}$ .

4.4.5 Compression set. Compression set of the cellular material shall be determined in accordance with compression set under the constant deflection procedure of ASTM D 3574, except that the specimens shall be compressed to 50 percent of their original height for a period of  $46 \pm 1/4$  hours at room temperature. The thickness of the specimens shall be determined 1 minute after removal from the compression apparatus. The compression set shall be calculated and expressed as a percentage of the original height of the sample tested.

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4.4.6 Flexing. The flexing endurance of the cellular material shall be determined in accordance with ASTM D 1055. The thickness of the specimen shall be measured 1 hour after completion of the test, and the percent set calculated as follows:

$$\text{Percent set} = \frac{(a-b)}{a} \times 100$$

Where:

a = original thickness before flexing.

b = thickness 1 hour after flexing.

The percent set reported shall be the average of the results obtained from the test conducted.

4.4.7 Accelerated aging.

4.4.7.1 Air oven aging. A test specimen and apparatus as specified for the compression resistance test in 4.4.3 shall be used for this test. The specimen shall be subjected to aging in a circulating air oven of the type specified in ASTM D 573 for  $70 \pm 1/2$  hours at  $212 \pm 2^\circ\text{F}$ . After aging, the load required to compress the unaged specimen 25 percent shall be applied to the compression resistance apparatus. At least four equal weights shall comprise this load and the weights shall be added separately at 1-minute plus or minus 2-second intervals. The percent compression obtained shall be recorded as the compression of the aged specimen. Change in compression resistance shall then be calculated by the following formula:

$$\text{Percent of change in compression resistance} = \frac{X-25 \times 100}{75}$$

Where:

X = percent compression (after aging) when subjected to the load which was required to produce 25 percent compression on unaged specimen.

This test shall be run in duplicate and the results averaged.

4.4.7.2 Air-pressure heat aging. The cellular material shall be air-pressure aged in accordance with ASTM D 1055. The specimen shall be visually examined to determine its condition as specified in 3.5.7.2. Specimens for this test shall be of any convenient size to permit visual examination. Where laminated construction is employed to achieve specified product thickness, the specimen shall contain the maximum number of cemented seams, including scrim reinforcement where employed, but in no case less than one.

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4.4.8 Flame spread test (class 5). Class 5 material shall be tested in accordance with the test procedure specified in ASTM E 162. The size of the test specimen shall be 18 by 6 inches by 1 inch.

4.4.9 Smoke generation tests. Smoke generation tests shall be conducted in accordance with ASTM E 662. Sample size shall be 3 by 3 inches by 1/2-inch. The tests shall be conducted in the flaming mode.

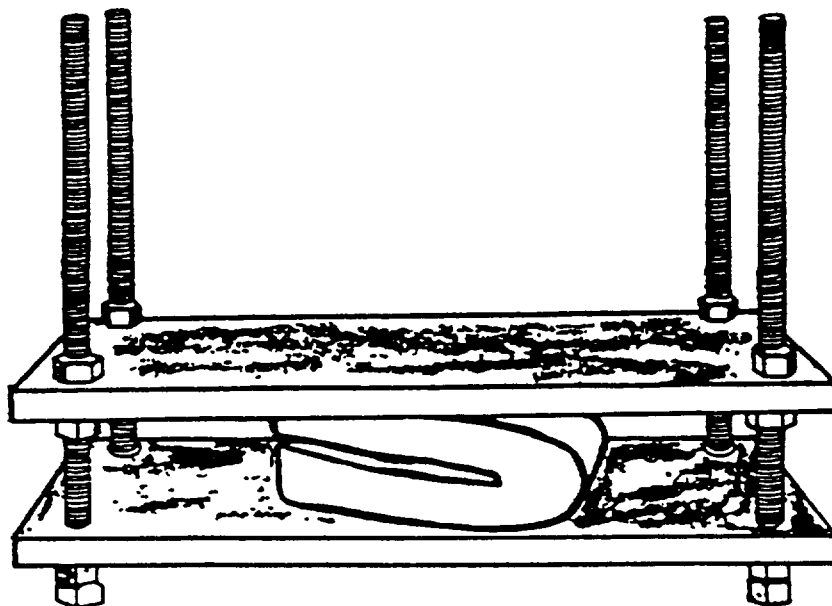
4.4.10 Bend fatigue test.

4.4.10.1 Test specimen. The specimen shall be the full specified product thickness by  $4 \pm 1/4$  inches wide by at least four times its thickness in length.

4.4.10.2 Apparatus. The following apparatus shall be used:

- (a) Set of two parallel metal compression plates as shown on figure 1.
- (b) Aging chamber in accordance with ASTM D 573.

4.4.10.3 Procedure. The specimen shall be folded crosswise and inserted between the two compression plates; skin side out, if there is more skin on one side, or coring side in, if coring is present. The opening between the compression plates shall be adjusted to two times the thickness of the unfolded specimen. The specimen shall be examined visually without magnification for cracks in the outer folded edge. The assembly shall be aged for  $22 \pm 1/4$  hours at  $158 \pm 2^\circ\text{F}$ . After aging, the specimen shall again be examined visually for cracks.



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FIGURE 1. Specimen positioned in test apparatus for fatigue test.

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4.4.11 Tensile strength and ultimate elongation. Three test specimens, 1 inch by 6 inches by 1/2 inch (plus or minus 0.0625 inch) shall be cut from the top uncured portion of the material. The length of the test specimens shall be parallel to the length of the material and the cut edges shall be perpendicular to the top surface and free of ragged edges. The specimens shall contain no scrim reinforced laminae. If the item to be tested is assembled of scrim reinforced laminae, three additional specimens cross-sectional (through all laminae) shall be required. The tensile strength and ultimate elongation of the test specimens shall then be determined in accordance with ASTM D 3574.

4.4.12 Cemented seam strength.

4.4.12.1 Specimen. The specimen used in this test shall be of any convenient length and shall have a cross-section 1/2 by 1 inch. The cemented seam shall be across this cross-section, duplicating production as nearly as practical. Where the mattress is of laminated construction, a multiplicity of cemented seams shall be included.

4.4.12.2 Apparatus. The following apparatus shall be used:

- (a) Testing machine in accordance with ASTM D 412.
- (b) Aging chamber in accordance with ASTM D 573.

4.4.12.3 Procedure. The specimen shall be tested perpendicular to the cemented seams in the testing machine. The elapsed time before testing the cemented seams shall be not less than 24 hours at  $70 \pm 5^\circ\text{F}$  after cementing and shall be not less than  $70 \pm 1/2$  hours at  $158 \pm 2^\circ\text{F}$  after aging.

4.4.13 Odor test. The odor test shall be conducted in accordance with ASTM D 1391.

4.4.14 Steam autoclave test. Material shall be tested in accordance with ASTM D 3574, procedure J<sub>1</sub>.

4.5 Certificate of compliance. When specified in the contract or order, certificates showing conformance to the applicable material specifications shall be prepared (see 6.2.2).

4.6 Inspection of packaging. Sample packages and packs, and the inspection of the preservation-packaging, packing and marking for shipment and storage shall be in accordance with the requirements of section 5 and the documents specified therein.

5. PACKAGING

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

5.1 Packaging. Packaging shall be level A or C, as specified (see 6.2.1).

5.1.1 Level A. The foam or sponge sheets shall be separated with paper or other suitable separator sheets. Molded or assembled shapes shall be wrapped, boxed, or otherwise protected against deformation and abrasion.

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5.1.2 Level C. Packaging shall afford adequate protection against deterioration and physical damage during shipment from the supply source to the first receiving activity for immediate use. The contractor's retail or wholesale packaging methods may be utilized when such meet the requirements of this level.

5.2 Packing. Packing shall be level A, B, or C as specified (see 6.2.1).

5.2.1 Level A. Foam or sponge sheets and molded or assembled shapes, packaged as specified (see 6.2.1), shall be packed in boxes conforming to any one of the following specifications at the option of the contractor:

<u>Specification</u>	<u>Type or class</u>
PPP-B-576	Class 2
PPP-B-585	Class 3
PPP-B-591	Class II
PPP-B-601	Overseas type
PPP-B-621	Class 2
PPP-B-636	Class weather resistant
PPP-B-640	Class 2

When specified (see 6.2.1), shipping containers shall have caseliners in accordance with MIL-L-10547. Caseliners shall be closed and sealed in accordance with the appendix to MIL-L-10547. Caseliners for fiberboard boxes, in accordance with PPP-B-636 and PPP-B-640, may be omitted provided all center and edge seams and manufacturer's joints are sealed and waterproofed with pressure sensitive tape in accordance with the applicable fiberboard box specification. Shipping containers shall be closed, strapped, or banded in accordance with the applicable box specification or appendix thereto, with method V closure applicable to PPP-B-636 boxes. Reinforcement of fiberboard containers shall be with pressure-sensitive reinforced tape or non-metallic banding in lieu of steel strapping. The gross weight of wood-cleated boxes shall not exceed 200 pounds, fiberboard boxes shall not exceed the weight limitations of the applicable fiberboard box specification.

5.2.2 Level B. Foam or sponge sheets and molded or assembled shapes, packaged as specified (see 6.2.1), shall be packed in boxes conforming to any of the following specifications at the option of the contractor:

<u>Specification</u>	<u>Type or class</u>
PPP-B-576	Class 1
PPP-B-585	Class 1 or 2
PPP-B-591	Class I
PPP-B-601	Domestic type
PPP-B-621	Class 1
PPP-B-636	Class domestic
PPP-B-640	Class 1

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Shipping containers shall be closed in accordance with the applicable box specification or appendix thereto, with method I closure in accordance with PPP-B-636 boxes.

5.2.3 Level C. Foam or sponge sheets and molded or assembled shapes, packaged as specified (see 6.2.1) shall be packed in containers, in a manner which will insure acceptance by common carrier at the lowest rates, and shall afford protection against physical damage during direct shipment from the supply source to the first receiving activity for immediate use. Containers, packing, or method of shipment shall comply with National Motor Freight or Uniform Freight Classification, Ratings, Rules, and Regulations or other carrier rules as applicable to the mode of transportation.

5.3 Marking. In addition to any special marking required by the contract or order (see 3.6 and 6.2.1), interior packages and exterior shipping containers shall be marked for shipment in accordance with MIL-STD-129.

## 6. NOTES

6.1 Intended use. The material covered by this specification is intended for use in cushioning, packaging, and in mattresses.

### 6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Type, class, and condition required (see 1.2).
- (c) Form of material required (sheets or shapes) (see 3.2.1).
- (d) Cored or uncored material required (see 3.2.1).
- (e) Size, shape and distribution of coring required (see 3.2.1).
- (f) When finishing is required and material required for finishing (see 3.2.2).
- (g) Dimensions required (see 3.4).
- (h) Test conditions, if other than specified (see 4.3.3 and 4.4).
- (i) Applicable level of packaging and packing required (see 5.1 and 5.2).
- (j) Whether caseliners are required (see 5.2.1).
- (k) Additional marking if required (see 5.3).

6.2.2 Data requirements. When this specification is used in an acquisition and data are required to be delivered, the data requirements identified below shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved Contract Data Requirements List (CDRL), incorporated into the contract. When the provisions of DoD FAR Supplement, Part 27, Sub-Part 27.410-6 (DD Form 1423) are invoked and the DD Form 1423 is not used, the data specified below shall be delivered by the contractor in accordance with the contract or purchase order requirements. Deliverable data required by this specification are cited in the following paragraph.



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<u>Paragraph no.</u>	<u>Data requirement title</u>	<u>Applicable DID no.</u>	<u>Option</u>
4.5	Certificate of compliance	DI-E-2121	---

(Data item descriptions related to this specification, and identified in section 6 will be approved and listed as such in DoD 5010.12-L., AMSDL. Copies of data item descriptions required by the contractors in connection with specific acquisition functions should be obtained from the Naval Publications and Forms Center or as directed by the contracting officer.)

6.2.2.1 The data requirements of 6.2.2 and any task in sections 3, 4, or 5 of this specification required to be performed to meet a data requirement may be waived by the contracting/acquisition activity upon certification by the offeror that identical data were submitted by the offeror and accepted by the Government under a previous contract for identical item acquired to this specification. This does not apply to specific data which may be required for each contract regardless of whether an identical item has been supplied previously (for example, test reports).

6.3 Design information. Unless a particular type of cellular material is specifically desired, the type should not be specified. The approximate compressibility and density should be determined and detail drawings and specifications should designate the material by indentation or compression resistance and density required. Table IV reflects a comparison of compression resistance measured in terms of 50 in<sup>2</sup> with corresponding densities obtainable in cored or uncured material.

TABLE IV. Comparison of compression resistance.

Class	Condition	Mattress inserts		Cushioning material	
		Indentation		Compression resistance <sup>1/</sup>	
		Pounds	Apparent density (max) lb/ft <sup>3</sup>	Pounds	Apparent density (max) lb/ft <sup>3</sup>
Class 5	Medium	25 to 42	8.0	25 to 42	8.0
	Medium firm	30 to 55	9.0	30 to 55	9.0
	Firm	42 to 60	9.2	42 to 60	9.2

<sup>1/</sup> The compression resistance for type II material is based upon a maximum sample thickness of 1.125 inches (see 4.4.3). Material which is being acquired at a thickness exceeding 1.125 inches will possess a condition somewhat more firm than that indicated by its compression resistance value. Acquisition documents should specify the condition accordingly.

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6.4 Material safety data sheets. Contracting officers will identify those activities requiring copies of completed Material Safety Data Sheets prepared in accordance with FED-STD-313. The pertinent Government mailing addresses for submission of data are listed in appendix B of FED-STD-313.

6.5 Subject term (key word) listing.

Cushioning, foam or sponge  
 Foam, fire retardant  
 Mattresses, foam or sponge  
 Open cell foam  
 Open cell sponge  
 Packaging, foam or sponge, fire retardant  
 Plastic sheets  
 Rubber sheets  
 Shapes, molded and assembled

6.6 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:

Army - MR  
 Navy - SH

Preparing activity:

Navy - SH  
 (Project 9320-0482)

Review activities:

Army - AR, EA, MI  
 Navy - MC  
 Air Force - 99  
 DLA - GS

User activities:

Army - ME  
 Navy - EC

**INSTRUCTIONS:** In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge (*DO NOT STAPLE*), and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

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

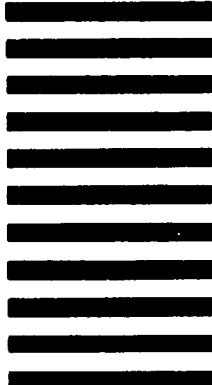
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## STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1 DOCUMENT NUMBER MIL-P-20092L		2 DOCUMENT TITLE Rubber Or Plastic Sheets And Assembled And Molded Shapes, Synthetic, Foam Or Sponge, Open Cell	
3a. NAME OF SUBMITTING ORGANIZATION		4 TYPE OF ORGANIZATION (Mark one)	
b ADDRESS (Street, City, State, ZIP Code)		<input type="checkbox"/> VENDOR	
		<input type="checkbox"/> USER	
		<input type="checkbox"/> MANUFACTURER	
		<input type="checkbox"/> OTHER (Specify) _____	
5 PROBLEM AREAS			
a. Paragraph Number and Wording			
b. Recommended Wording			
c. Reason/Rationale for Recommendation			
6. REMARKS			
7a. NAME OF SUBMITTER (Last, First, MI) - Optional		b. WORK TELEPHONE NUMBER (Include Area Code) - Optional	
c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional		8. DATE OF SUBMISSION (YYMMDD)	

(TO DETACH THIS FORM, CUT ALONG THIS LINE)