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Interim Revision of
Fed. Spec. ZZ-C-811
October 20, 1936

INTERIM SPECIFICATION

CUSHION, CARPET AND RUG, CELLULAR RUBBER

This Interim Federal Specification was developed by the Department of Commerce, National Bureau of Standards, Washington 25, D.C., based on currently available technical information. It has been coordinated with industry. Classification of the cellular rubber cushion is based on degree of firmness. It is recommended that Federal agencies use this specification in procurement and forward recommendations for changes to the preparing activity at the address shown above.

The General Services administration has authorized Federal agencies to use this Interim Federal Specification as a valid exception to Federal Specification ZZ-C-811.

1. SCOPE AND CLASSIFICATION

1.1 Scope. - This specification covers rubber cushion for use in preventing slipping of rugs and carpets on polished floors, to add to the Cushioning effect, and to reduce the year on the carpet or rug.

1.2 Classification.

1.2.1 Types.- Rubber cushion covered by this specification shall be furnished in the following types, as specified (see 6.1):

Type I. - Roll.

Type II. - Definite size underlay.

1.2.1.1 Dimensions (other than thickness). - The dimensions of types I and II rubber cushion shall be as specified (see 6.1). Common widths for type I are 36, 54, 72, and 108 inches (see 3.3.3 for length of type I).

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1.2.2 Classes and thicknesses. - Rubber cushion covered by this specification shall be furnished in the following classes and thicknesses as specified (See 3.3.1 and 6.1):

Class 1. - Firm.
Thickness: 1/8, 3/16, 1/4, 3/8, 1/2 inch.

Class 2. - Medium.
Thickness: 1/4, 3/8, 1/2 inch.

Class 3. - Soft.
Thickness: 1/4, 3/8, 1/2 inch.

2. APPLICABLE SPECIFICATIONS, STANDARDS, AND OTHER PUBLICATIONS

2.1 Specifications and standards. - The following specifications and standards of the issue in effect on date of levitation to bid form a part of this specification:

Federal Specifications:

UU-P-268 - Paper, Kraft, Untreated, Wrapping
CCC-T-191 - Textile Test Methods.
PPP-B-591 - Boxes, Fiberboard, Wood-Cleated
PPP-B-601 - Boxes, Wood, Cleated-Plywood
PPP-B-621 - Boxes, Wood, Nailed and Lock Corner
PPP-B-636 - Box, Fiberboard

Federal Standards:

Fed. Std. No. 102 - Preservation, Packaging and Packing Levels.
Fed. Std. No. 123 - Marking for Domestic Shipment (Civilian Agencies)
Fed. Test Method Standard No. 601 - Rubber: Sampling and Testing.

FOR INSTRUCTIONS ON OBTAINING COPIES OF FEDERAL SPECIFICATIONS AND STANDARDS, SEE LAST PAGE

Military Specification:

MIL-L-10547 - Liner, Case, Waterproof

Military Standard:
MIL-STD-129 - Marking for Shipment and Storage.

(Copies of Miliary Specification and Standards required by contractor connection with specific procurement functions should be obtained from the procuring activity as directed by the contracting officer.)

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3. REQUIREMENTS

3.1 Material.

3.1.1 Rubber cushion. - The rubber compound used in the manufacture of the cushion shall be made from natural rubber, synthetic rubber, or a mixture of natural and synthetic rubber and be free from objectionable odors. The cushion shall have a cellular structure either in the form of sponge or foam rubber with a skin on both sides.

3.1.2 Facing. - The facing used on one surface of the cushion shall be made of any fibrous material, woven, nonwoven, or both, that will meet the requirements of this specification (see 3.5).

3.2 Construction. Cushion underlay shall have smooth, flat parallel surfaces with the exception that classes 2 and 3 may have surface designs. The effective surfaces of cushion with designs which would function between the floor and carpet or rug shall be smooth, flat, and parallel. A facing, 3.1.2, shall be provided on one surface of the cushion to prevent stretching and to facilitate laying.

3.3 Dimensions.

3.3.1 Thickness. - The average overall thickness of the cushion shall be Ms specified (see 1.2.2). The tolerances for variations in average thickness shall be as indicated below. The rubber at any point in the cushion having surface designs shall not be less then 25 percent of the average overall thickness.

Less than 1/4 inch:	Class 1.	+0.03, -0.015
1/4 inch and over:	Class 1.	+0.03, -0.03
	Class 2.	+0.04, -0.03
	Class 3.	+0.05, -0.03

3.3.2 Width, type I. - The width of the cushion shall be as specified (see 1.2.1.1). A tolerance of +/- 1/2 inch is permitted in the width of the roll.

3.3.3 Length, type I, rolls. - Rubber underlay 1/8 inch in nominal thickness shall be delivered in 60- or 75-foot rolls, as specified in the invitation to bid. Sixty-foot rolls shall be in one piece. Seventy-five-foot rolls may consist of two pieces but neither piece shall be less than 15 feet in length. Underlay over 1/8 inch in thickness shall be delivered in 60-foot rolls which consist of two pieces neither of which shall be less than 15 feet in length. A plus tolerance of 1 foot and no minus tolerance is permitted in the length of the roll.

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3.3.4 Type II definite size underlay. - Type II, definite size underlay, shall be delivered in one piece. When it is necessary to splice two or more pieces to obtain a definite size, the adjoining edges shall make a tight fit. The pieces shall withstand a load of not less than 10 pounds when joined as described in 4.4.3. A tolerance of +/- 1/2 inch in both dimensions as permitted.

3.3.4.1 Compression deflection. - The compression deflection of the rubber cushion shall be as follows:

Class	Compression deflection
	lb/in.^{2}
1. Firm	5 - 9
2. Medium	2-1/2 - 5
3. Soft	1 - 2-1/2

3.5 Aging. - After aging for 166 +/- 1 hour at 70 deg. +/- 1 deg. C. (158 deg. + 1.8 deg. F.) described in 4.3.3, the compression deflection of the rubber cushion shall change by more than 20 percent and the facing shall show no evidence of embrittlement.

3.6 Compression set. - When determined as described in 4.3.2, the compression set of the cushion shall not exceed 15 percent for class 1, 17-1/2 percent for class 2, and 20 percent for class 3.

3.7 Workmanship. - The rubber cushion shall be of uniform texture, free from dirt, lumps, voids, and obvious manufacturing imperfections. All edges shall be trimmed clean and smooth.

4. SAMPLING, INSPECTION, AND TEST PROCEDURES

Supplier's inspection responsibility. - The supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own or any other inspection facilities and services acceptable to the Government. Inspection records and the examinations and tests shall be kept complete and available to the Government as specified in the contract or order (see 6.2). The Government serves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.1 Sampling.

4.1.1 Lot. - Unless otherwise specified in the invitation to bid, the lot shall be formed as described in 3 of section 6 of Federal Standard No. 601.

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4.1.2 Sampling for inspection. - Unless otherwise specified in the invitation to bid, the sample for inspection shall be taken as described in 4 of section 6 of Federal Standard No. 601.

4.1.3 Sampling for test. - Unless otherwise specified in the invitation to bid, the sample for test shall be taken as described in 4.2.3.2.1 of section 6 of Federal Standard No. 601. Sampling plan B of table II of section 6 of Federal Standard No. 601 shall be used.

4.1.3.1 Type II material. - As a substitute for the sampling for test of definite size underlay required in 4.1.3, at the request of the purchasing officer the manufacturer shall furnish a sample of rubber under not less than 12 inches by 12 inches of the same composition and cure as that used in fabricating the underlay. The sample shall contain a seam of the same materials and construction used in fabricating the underlay. The edges of the seam shall be at least 2 inches from the edges of the sample parallel to the seam.

4.2 Inspection. - Each unit in the sample for inspection shall be inspected for odor, visual characteristics, workmanship, and for dimensions, 4.2.3.1.3.1 of section 6 of Federal Standard No. 601. The inspection of type I underlay shall be carried out on a unrolled portion not less than 20 feet in length.

4.2.1 Thickness. - The average overall thickness of the cushion shall be determined as described in method 12031 of Federal Test Method Standard No. 601 using the dial micrometer described in 3.1.1 and the procedure described in 4.1.2 and 4.2.1 of that method. The minimum thickness of the rubber at any point in cushion having surface designs shall be determined as described in method 12031 using the vernier caliper described in 3.1.2 and the procedure described in 4.1.2 and 4.3.1 of that method.

4.2.2 Width, type I. - The minimum and maximum width of the cushion shall be determined as described in method 12021 of Federal Standard No. 601 except that the minimum width shall be recorded to the nearest 1/8 or 1/2 inch as applicable.

4.2.3 Length, type I. - The average length of rolls and pieces in rolls shall be determined as described in method 2411 of Federal Standard No. 601.

4.2.4 Dimensions, type II. The minimum and maximum length and width of type II cushion shall be determined as described in method 12021 of Federal Standards No. 601 except that the minimum and maximum width and length shall be recorded to the nearest 1/2 inch.

4.3 Tests.

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4.3.1 Compression deflection. - The compression deflection of the cushion shall be determined as described in method 12151 of Federal Standard No. 601 except that (1) the specimen shall be a 2 by 2 inch portion of the test unit that includes the facing and (2) the dimensions of the metal plates in the machine shall be larger than the dimensions of the specimen.

4.3.2 Compression set. - The compression set of the cushion shall be determined as described in method 12131 of Federal Standard No. 601 except that the specimen shall be a 2 by 2 inch portion of the test unit that includes the facing and (2) the time exposure shall be 22 hours at 70 deg. +/- 1 deg. C. (158 deg. +/- 1.8 deg. F.).

4.3.3 Resistance to aging. - The resistance to aging of the cushion shall be determined as described in method 12131 except that the specimen shall be 2 by 2 inch portion of the test unit that includes the facing and shall be heated to air heat a temperature of 70 deg. +/- 1 deg. C. (158 deg. +/- 1.8 deg. F) for 1 hour. The amount of deterioration of the cushion shall be determined by the change in compression deflection. The facing shall be examined evidence of embrittlement.

4.3.4 Seam strength. The strength of the seam shall be determined as described in method 5100 of CCC-T-191b except that (1) the specimen shall be 2 inches wide and 6 inches long, with the seam midway between ends perpendicular to the long dimension of the specimen, (2) the distance between the clamps at the start of the test shall be approximately 4 inches, (3) the face of each jaw of the clamps shall be 1 by 2-1/2 or more inches, (4) the specimen shall be aligned in the clamps of the machine with the joined sides of the underlay midway between the clamps and perpendicular to the portion of the application of the force, (5) no portion of the tape or seam shall be clamped between the jaws of the clamps, (6) five specimens shall be examined, and (7) the force required to rupture each specimen shall be recorded.

4.4.1 Inspection. - Compliance of the lot shall be in accordance with section 6 of Federal Standard No. 601.

4.4.2 Tests.

4.4.2.1 When the underlay is sampled as required in 4.1.3, compliance of the lot shall be in accordance with section 6 of Federal Standard No. 601.

4.4.2.2 If a sample of type II material furnished by the manufacturer, 3.3.1, falls to meet any property for which tests were made, 4.3, the lot of underlay represented by the sample of material shall be considered as having failed to meet the requirements of the specification.

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4.5 Inspection of preparation for delivery. - The packaging, packing, and marking of the cushions shall be inspected to determine compliance with the requirements of 5 of this specification.

5. PREPARATION FOR DELIVERY

(Federal Standard No. 102 should be referred to for definitions and applications of the various levels of packaging protection for supplies and equipment.).

5.1 Packaging. - Packaging shall be level A, B, or C as specified (see 6.1).

5.1.1. Level A or B. - Each type II cushion shall be rolled on a suitable core. Each roll of type I cushion and each roll of type II cushion shall be completely wrapped and headed with kraft wrapping paper of minimum 60 pounds basic weight conforming to Federal Specification UU-P-268, and the paper suitably secured.

5.1.2 Level C. - The cushions shall be packaged in accordance with industry's practice.

5.2 Packing.

5.2.1 Level A. - Each packaged roll of type I cushion or one or more packaged rolls of type II cushion shall be packed in a close-fitting wood-cleated fiberboard, wood-cleated plywood, or nailed wood box conforming to Federal Specification PPP-B-591 (overseas type), PPP-B-601 (overseas type), and PPP-B-621 (class 2), respectively. The box shall be lined with a waterproof case liner conforming to Military Specification MIL-L-10547, sealed in accordance with the appendix thereto. The box shall be closed and strapped in accordance with the appendix to the applicable box specification.

5.2.2 Level B. - Each packaged roll of type I cushion or one or more packaged rolls of type II cushion shall be packed in close fitting containers conforming to PPP-B-636, Class 1 or PPP-B-621, Class 1. The boxes shall be reinforced with banding in accordance with the appendix to the applicable box specification. The gross weight of each box shall not exceed the weight limitations of the containers specification.

5.2.3 Level C. Cushions packaged as specified in 5.1 shall be packed to insure carrier acceptance and safe delivery to destination. Shipping containers shall comply with carrier Rules and Regulations applicable to the mode of transportation.

5.3 Marking.

5.2.1 Civil agencies. - In addition to any special marking required by the contract or order, shipping containers shall be marked in accordance with FED-STD-123.

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5.2.2 Military agencies. - In addition to any special marking required by the contract or order, shipping containers shall be marked in accordance with MIL-STD-129.

5.3 NOTES

5.3.1 Purchasers should exercise any desired options offered herein and should specify the following:

(a) Title, number and date of the specification.

(b) Type and class (see 1.2.1 and 1.2.2).

(c) Thickness, Width, and length (see 1.2.2. 1.2.3 and 3.3.3).

(d) Size of type II underlay (see 1.2.1.1).

(e) Level of packing and packaging required (see 5.1 and 5.2).

5.3.2 Underlay should be purchased by the square yard.

5.3.3 Type II, definite size underlay. - The dimensions of type II underlay should be approximately 2 inches smaller in both linear dimensions than the lot under which it is to be used.

5.4 Transportation description. - Transportation descriptions and minimum lots applicable to this commodity are:

eil [hard copy not readable]:
Carpet or rug cushions, cushioning or lining, rubber.
Carload minimum weight 30,000 pounds.

Motor:
Carload or rug cushions, cushioning or lining, rubber.
Truckload minimum weight (w) 30.6 pounds, (w) subject
to Rule 34, National Motor Freight Classification.

5.5 Intended use. - Class 1 cushion is a general purpose underlay intended for use in offices, heavy traffic areas, and an stairways; classes 2 and 3 underlay are intended for use in areas where there is medium or light traffic with no heavy office furniture.