

ZZ-C-766D
 September 14, 1977
 SUPERSEDING
 Int. Fed. Spec. ZZ-C-00766C (GSA-FSS)
 May 12, 1971 and
 Fed. Spec. ZZ-C-766
 January 12, 1940

FEDERAL SPECIFICATION
 CUSHION, CHAIR AND STOOL

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers requirements for chair and stool cushions intended for office use.

1.2 Classification.

1.2.1 Classes. Cushions shall be of the following classes as specified (see 6.1).

1. Woven rattan fabric or knitted fabric cover one side - cotton corduroy on the reverse.

2. Cloth cover.

1.2.2 Styles. Cushions shall be of the following two styles as specified (see 6.1).

- a. Circular
- b. Rectangular

1.2.3 Cushions shall be of the sizes shown in table I (see 6.1).

Size No.	Diameter (inches)	Depth (inches)	Width (inches)	Thickness (inches)
1	15	-	-	1
2	-	15	16	1
3	-	17-1/2	18-1/2	1
4	-	15	16	1-1/2
5	-	17-1/2	18-1/2	2

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

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Federal Specifications:

L-P-386 - Plastic Material, Cellular Urethane (Flexible).
V-T-276 - Thread, Cotton.
PPP-B-636 - Box, Fiberboard.

Federal Standards:

Fed. Std. No. 123 - Marking for Shipment (Civil Agencies).
Fed. Test Method Std. No. 191 - Textile Test Methods.
Fed. Test Method Std. No. 601 - Rubber: Sampling and Testing.
Fed. Std. No. 751 - Stitches, Seams and Stitching.

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

(Single copies of this specification and other Federal Specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Philadelphia, Washington, DC, Atlanta, Chicago, Kansas City, MO, Fort Worth, Houston, Denver, San Francisco, Los Angeles, and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

Military Standard:

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.

(Copies of Military Specifications and Standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

Rules and Regulations Under the Textile Fiber Products Identification Act.

(Copies may be obtained without charge from the Federal Trade Commission, Washington, D.C. 20580.)

American Society for Testing and Materials (ASTM) Standard:

D 3574-77 - Flexible Cellular Materials - Slab bonded, and Molded Urethane Foams.

(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 American Trucking Associations, Inc., Traffic Department, 1616 P Street, N.W., Washington, DC 20036.)

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Uniform Classification Committee, Agent:

Uniform Freight Classification.

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

3. REQUIREMENTS

3.1 Material.

3.1.1 Urethane foam. The urethane foam shall be made from polyhydroxy compounds, isocyanates, and water reacted together to form an expanded, flexible, open-cell product. The urethane foam shall have a polymer density of 1.6 lbs per cubic ft. (0.42 grams per cubic inch), and compression resistance at 15 percent deflection expressed as IFD (Indentation force deflection) shall be 40-50 pounds per 50 square inches when tested as specified in table IV. The material shall be free from objectional odor. The fatigue effects shall not show more than a 5 percent loss of thickness nor more than a 35 percent loss of IFD, and the compression set (75 percent deflection) shall not be greater than 15 percent when tested as specified in table IV.

3.1.2 Bonded urethane foam. The shredded urethane foam shall have a vulcanized interconnecting cellular structure with a porous surface and shall be bonded with a suitable adhesive. The bonded shredded foam shall be uncured (slab stock). The individual shredded cellular urethane particles of which the material is composed shall not exceed 1/2 inch in diameter. The density shall not be less than 4.5 nor more than 6.5 lbs per cubic ft. (1.18 grams per cubic inch (min), 1.70 gram per cubic inch (max), and the compression resistance at 25 percent deflection, expressed as IFD (Indentation Force Deflection) shall be 35-69 pounds per 50 square inches when tested as specified in table IV. The material shall be free from objectional odor, large voids or seams. The fatigue effects shall not show more than a 10 percent loss of thickness nor more than a 30 percent loss of IFD, and the compression set (50 percent deflection) shall not be greater than 15 percent when tested as specified in table IV.

3.1.3 Covering class 1. One side of class 1 cushion (size 4 and 5) shall be covered with dark brown, green, or maroon cotton corduroy (see 6.1). The corduroy shall show good color fastness to preparation and meet the physical requirements in table II when tested as specified in 4.3 and table IV. At the option of the contractor, the remaining side shall be as specified in 3.1.3.1 or 3.1.3.2.

3.1.3.1 Woven rattan fabric. The simulated woven rattan fabric used to cover the other side of the cushion shall be kraft fiber, clear coated with vinyl chloride or vinyl acetate resin. The woven rattan fabric may be a combination of dark and light colors in a single design. Material shall conform to the physical requirements shown in table II when tested as specified in 4.3 and table IV.

3.1.3.2 Knitted fabric. The knitted fabric shall meet the physical requirements specified in table II when tested as specified in 4.3 and table IV. The color of the knitted fabric shall be a combination of light and dark colors in a single design.

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TABLE II. Physical requirements woven rattan fabric and knitted fabric

Base fiber	Ozs. per sq. yd. (min.)	Yarns per inch		Breaking strength grab method	
		Warp or wales per inch (min.)	Filling or courses per inch (min.)	Warp or wale direction lbs. (min.)	Filling or course direction lbs. (min.)
(Rattan)					
Kraft fiber	13	20	12-1/2	110	70
(Knit)					
Nylon and twisting paper tissue, acrylic dip coat finish	7 ozs.	8.3	9	42	25
Cotton corduroy	7 ozs.	8(min) - 22(max)	-	25	25
Cotton or Cotton-Synthetic	5 ozs.	-	-	35	35

3.1.4 Covering, class 2. The woven cloth for the class 2 cushion shall be a mixture of cotton and synthetic fiber. The color shall be dark brown, green, or maroon, as specified (see 6.1). The cloth shall show good colorfastness to perspiration, and shall meet the physical requirements in table II when tested as specified in 4.3.

3.1.5 Sewing thread. Seaming and stitching thread shall be type I, IB3, ticket number 16 or 20, 4 ply, conforming to V-T-276. The color of the thread shall match the color of the basic material.

3.2 Construction - size 1 thru 5. Cushions (sizes 1, 2, and 3), shall be flat and the cover shall be fabricated from two pieces of the material specified in 3.1.4. The cover for sizes 4 and 5 cushions shall be of a box style construction. The boxing and one side of the cover shall be cotton corduroy, and the other side shall be woven rattan fabric as specified in 3.1.3.1. Alternatively, the boxing on one side shall be cotton corduroy, and the other side shall be knitted fabric as specified in 3.1.3.2. No raw edges shall show where boxing is joined. The size 4 and 5 cushion shall have a corded piping consisting of kraft fiber coated with synthetic resin or vinyl extruded lipped welting. The welting which may be in one continuous piece, shall extend around the entire perimeter of the top and bottom surface of the covering. The color of the welting shall be white or it shall be an approximate match of the color of corduroy. The inner core for all sizes, shall be of the material specified in 3.1.1 or 3.1.2 and shall be enclosed completely by the applicable covering specified for the class of cushion ordered.

3.3 Shape of cushions. Size 1 cushion shall be style a (circular). Sizes 2, 3, 4 and 5 shall be Style B (rectangular). All sizes shall be rounded at the corners to a radius of $1-1/2 \pm 1/2$ inches in front and $4 \pm 1/2$ inches in back.

3.4 Straps for size 1, style a, cushions. Style a (circular) cushions shall have four straps securely attached to the cover of the cushions at the seam at four equi-distant points on the perimeter. The straps shall be not less than 10 inches nor more than 13 inches long and $1 + 1/8$ inch wide. The straps shall be of the same material as the cover and shall be double thickness stitched lengthwise.

3.5 Fit and appearance. The finished cover shall fit all parts of the cushion smoothly and in no case shall fit so tightly that fabric shows evidence of strain. Cushion covers shall fit so that the cushion is free to spread as required.

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3.6 Dimensions. Cushions shall conform to the applicable dimensions in table I for the size specified. A tolerance of plus 1/4 inch and minus 1/8 inch will be permitted on each dimension.

3.7 Seams and stitches. Where seams are joined, stitch type 301 of Fed. Std. No. 751 shall be used not closer than 3/8 inch from the union of the edges. The cover shall be neatly and securely sewed from the inside except that opening in back for insertion of the rubber pad may be sewed from the outside. Seam edges for sizes 4 and 5 shall be finished with the corded piping or welting specified in 3.2. All seams shall be sewn with 6 to 8 stitches per inch. Seams shall be straight and show no raw edges.

3.8 Thread breaks and ends of seams. The ends of all seams and stitchings when not caught in other seams and stitchings shall be backtacked not less than 1/2 inch. Thread breaks shall be backstitched not less than 1/2 inch.

3.9 Fiber identification. Each cushion cover shall be labeled, ticketed, or invoiced for fiber content in accordance with the rules and regulations of the Textile Fiber Products Identification Act.

3.10 Label. Each cushion shall have a label attached conforming to the legal requirements of the state of manufacture.

3.11 Workmanship. Each cushion shall conform to the quality and grade of product established by this specification. The occurrence of defects shall not exceed the acceptable quality levels (AQL's), specified herein.

3.12 The bonded urethane offered shall contain not less than 75 percent recovered material. Recovered material is defined as material which has been collected or recovered from solid waste. Solid waste is defined as any garbage, refuse, sludge, from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources, or source, special nuclear, or by product material a certificate of compliance shall be accepted for this requirement.

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 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 that supplies and services conform to prescribed requirements.

4.2 Sampling and inspection. Sampling and inspection for lot acceptance shall be in accordance with provisions of MIL-STD-105, except where otherwise indicated.

4.2.1 Examination of the end item. For the purpose of visual and dimensional inspection, the sample unit shall be one cushion, and shall be examined for the defects listed in table III. Sampling shall be in accordance with MIL-STD-105. The inspection level and acceptable quality levels expressed in percent defectives shall be as follows:

<u>Major</u>	<u>Total (Major and Minor Combined)</u>	<u>Inspection Level</u>
4.0	10	II

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TABLE III. Cushion defects

Defects	Classification	
	Major	Minor
Spots or stains of a permanent nature	X	
Removable spots or stains		X
Cuts, tears, mends or burns	X	
Not approved color or type specified	X	
Material has objectionable odor		X
Any part off shade		X
Any component part or operation omitted	X	
Any part assembled on the bias	X	
Needle chews	X	
Seams puckered, twisted or pleated	X	
Piping loose or uneven	X	
Seams uneven, corners not rounded, or parts not aligned		X
Raw edges any length	X	
Wrong seam or stitch type		X
Loose stitch tension, resulting in a loose seam	X	
Tight stitch tension (breaks when normal strain is applied)	X	
Stitches per inch:		
One or two less than minimum specified		X
Three or more less than minimum specified	X	
More than maximum specified		X
Label missing, incorrect or illegible		X
Cover does not fit all parts smoothly and with an even amount of ease	X	
Radii of corners not as specified	X	

4.2.2 Dimensional examination. Any measurement deviating from the specified dimension by more than the tolerance shall be considered a defect. The unit of product shall be one cushion. The inspection level shall be S-4 and the acceptable quality level (AQL) shall be 4.0 percent defective.

4.2.3 Examination for preparation of delivery requirements. An examination shall be made to determine that packaging, packing, and marking requirements of section 5 of this specification are complied with. Defects shall be scored in accordance with the list below. The sample unit shall be one shipping container fully prepared for delivery with the exception that it need not be sealed. Defects of closure listed below shall be examined on shipping containers fully prepared for delivery. The lot size shall be the number of shipping containers in the end item inspection lot. The inspection level shall be S-2 and the AQL shall be 4.0 defects per 100 units.

Examine	Defects
Marking (exterior and interior)	Omitted, incorrect, illegible, of improper size, location, sequence, or method of application.
Materials	Any component missing or damaged.
Workmanship	Inadequate application of components, such as: Incomplete closure of container flaps, loose strapping, inadequate stapling. Bulging or distortion of containers. Inadequate securing or sealing of wrapping materials and containers.
Content	Number of cushions per shipping container is more or less than required.

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4.3 Tests. Tests shall be performed for the characteristics specified in table IV. The methods of testing specified in Fed. Test Method Std. No. 191, Fed. Test Method Std. No. 601, and ASTM wherever applicable and as listed in table IV shall be followed. The unit of product shall be one finished cushion. The physical and chemical values specified in section 3, apply to the average of the determination made on a unit of product for test purposes in the applicable test method. The lot shall be unacceptable if one or more units fail to meet any requirement as listed in table IV. The sample size for each characteristic shall be in accordance with inspection level S-1.

TABLE IV. Test methods

Characteristic	Requirement reference	Test method
Weight ozs. per sq. yd.	3.1.3.1, Table II and 3.1.3.2	5041 <u>1/</u>
Yarns per inch	Table II	5050 <u>1/</u>
Breaking strength	3.1.3.1, Table II and 3.1.3.2	5100 <u>1/</u>
Wales per inch (corduroy)	3.1.3.1	Visual
Wales and courses per inch	Table II	5070 <u>1/</u>
Colorfastness to perspiration	3.1.3 and 3.1.4	5680 <u>1/</u>
Fatigue endurance	3.1.1 and 3.1.2	D 3574-77 section 66-75 <u>2/</u>
Compression resistance	3.1.1 and 3.1.2	D 3574-77 section 12-18 <u>2/</u>
Compression set	3.1.1 and 3.1.2	D 3577-77 section 31-37 <u>2/</u>
Density	3.1.1 and 3.1.2	D 3574-77 section 6-11 <u>2/</u>

1/ Fed. Test Method Std. No. 191.

2/ American Society for Testing and Materials (ASTM) Standards.

5. PREPARATION FOR DELIVERY

5.1 Packing. Packing shall be level A or Commercial, as specified (see 6.2).

5.1.1 Level A. Twelve (12) cushions of like description shall be packed in a box conforming to PPP-B-636, class weather resistant. The box shall be closed and waterproofed in accordance with the appendix to the box specification.

5.1.2 Commercial. The cushions shall be preserved and packaged in accordance with normal commercial practice. The completed package shall be designed to protect the item against damage during shipment, handling and storage.

5.1.3 Unitization. When shipments to Government depots are full car or truck-load, the packed shall be unitized for shipment and handling in accordance with normal commercial practice. The unitized load shall not exceed 2,500 pounds in weight, 63 inches in height, and 45 inches in width and 56 inches in length.

5.1.4 Marking. Packages, shipping containers, and unitized loads (when applicable) shall be marked in accordance with Fed. Std. No. 123.

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6. NOTES

6.1 Ordering data. Purchasers should select the preferred options permitted herein, and include the following information in procurement documents:

- (a) Title, number, and date of this specification.
- (b) Class, style, and size requirement (see 1.2.1, 1.2.2, and 1.2.3).
- (c) Color of cotton corduroy for class 1 (see 3.1.3.1).
- (d) Color of fabric for class 2 (see 3.1.3.2).
- (e) Selection of applicable levels of packing and marking (see 5.1.1 and 5.1.2).

Preparing Activity:

GSA-FSS

U.S. GOVERNMENT PRINTING OFFICE : 1978 - 261-423/1185

Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See Section 2 of this specification to obtain extra copies and other documents referenced herein. Price 60 cents each.