

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT	USE OF MATERIALS BULLETIN NO 44d
ASSISTANT SECRETARY FOR HOUSING FEDERAL HOUSING COMMISSIONER	Date Issued: August 15, 1993
TO: DIRECTORS, HOUSING DEVELOPMENT DIVISION	
SUBJECT: HUD BUILDING PRODUCT STANDARDS AND CERTIFICATION PROGRAM FOR CARPET	

Members of the HUD staff processing cases and inspecting construction, shall use this information in determining acceptability of the subject products for the use indicated.

This bulletin should be filed with bulletins on Special Methods of Construction and Materials as required by prescribed procedures. Additional copies may be requisitioned by the Field Offices.

The technical description, requirements and limitations expressed herein do not constitute an endorsement, approval or acceptance by the Department of Housing and Urban Development (HUD/FHA) of the subject matter, and any statement or representation, however made, indicating approval or endorsement by the Department of Housing and Urban Development is unauthorized and false, and will be considered a violation of the United States Criminal Code 18, U.S.C. 709.

Any reproduction of this Bulletin must be in its entirety and any use in sales promotion or advertising is not authorized.

Subject to good workmanship, compliance with applicable codes, and the methods of application listed herein, the products described in this bulletin may be considered suitable for HUD housing programs, including Housing for the Elderly and Care-Type Housing.

The eligibility of a property under these programs is determined on the property as an entity and involves the consideration of underwriting and other factors not indicated herein. Thus, compliance with this bulletin should not be construed as qualifying the property as a whole, or any part thereof, as to its eligibility.

The method of application for the products listed herein are considered a part of the HUD Minimum Property Standards and shall remain effective until this bulletin is canceled or superseded.

HUD BUILDING PRODUCT STANDARDS AND CERTIFICATION PROGRAM
FOR CARPET

ADMINISTRATION AND PROCEDURES:

This certification program shall be administered by organizations that qualify under the Administrator Qualifications and Procedures FOR HUD Building Product Certification Programs, 24 CFR 200.935, except as modified by the provisions of this Use of Materials Bulletin (UM).

Procedures for carrying out the certification program shall be in accordance with 24 CFR 200.935, as supplemented by Section 200.944 which provides that:

1. The Administrator shall issue to the manufacturer a label, stamp, or mark containing the Administrator's validation mark, manufacturer's statement of conformance to UM 44d, and manufacturer's name or code identifying the plant location.
2. The certification label, stamp, or mark shall be applied to each carpet at least every six feet, not less than one foot from the edge.
3. Every six (6) months, three (3) samples and 1 annual field sample of carpet shall be submitted to the Administrator for testing in a laboratory accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) of the U. S. Department of Commerce.
4. The Administrator also shall review the quality assurance procedures every six (6) months to assure that they are being followed by the manufacturer.

This standard applies to pile yarn floor covering materials designated as first quality, tufted, woven, bonded or knitted carpet, free from objectionable visual blemishes and physical defects. The standards includes the backing material, secondary, unitary, attached cushion (foam-backed), fibers used in the pile and extended into the backing, structure of the yarns, and weight and density of the yarn material. Minimum requirements and test methods required for carpet products to be acceptable under HUD programs are contained in the Bulletin.

GENERAL:

This Bulletin is written with the assumption that the property owner follows an adequate carpet maintenance schedule since manufacturers stress that their guarantees are valid only if this is done. The manufacturer's recommended maintenance program shall be supplied to the occupant of each unit through the builder at settlement or at the time of occupancy.

Carpet shall be of good service quality and free of fiber adulterants, and shall show no obvious deficiencies or objectionable streaks, poorly dyed areas or other manufacturing defects resulting from poor quality control. It shall exhibit adequate resiliency, abrasion resistance, appearance, pattern, and texture retention. The use of fluorochemical or equivalent soil and stain repellent treatments is permitted.

TYPES AND CLASSES OF CARPET:

Type I - Single Family and Multi-Family Dwelling Units

Class 1. For moderate traffic use. Not all textures are recommended for stairs.

Class 2. For heavy traffic use at all levels.

Type II - Housing for Elderly and Care-Type Housing

Class 1. For moderate traffic use.

Class 2. For heavy traffic use at all levels but specifically for public areas such as lobbies and corridors. Carpet installed in corridors and exit ways outside of living units is restricted to single level pile.

TEXTURES:

Texture A - Level or Textured Loop: Level uncut pile with a height differential of not more than 1/16"

Texture B - Multi-Level: Two or more levels of pile with pile height differential greater than 1/16", either cut and/or uncut.

Texture C - Plush: Level cut pile, made from non-heatset yarns.

Texture D - Twist: Cut pile, made from hard twist heat set yarns.

Texture E - Level Cut and Loop: Level pile, cut and uncut, made from heatset and/or non-heatset yarns.

Texture F - Cut Pile Heatset - Piled: Single level or multilevel cut or cut-and-loop pile, made from balanced heatset and plied yarns.

Texture G - Cut Pile Heatset - Singles: Single level cut pile, made from heatset single yarn.

USE AND INSTALLATION:

This Bulletin covers the use of wall-to-wall carpet and carpet with attached cushion for interior application in multifamily, one- and two-family, housing for the elderly, and nursing homes. Carpet shall be installed by experienced and qualified installers following acceptable carpet laying techniques, and the following requirements:

1. Installation shall comply with the manufacturer's instruction, or the minimum requirements of the Carpet and Rug Institute (CRI) Standard No. 105, "Standard Reference Guide for Installation of Residential Textile Floor Covering Materials." If installation is over existing floors or those in need of renovating, the same verification of acceptable moisture, tolerances and evenness as for new construction is required. Patching of substrates shall be done in accordance with the patching material manufacturer.
2. Various medical and care-type facilities may require that carpet be installed by direct gluedown method without intervening cushion. Installation in such cases shall conform to the carpet manufacturer's printed instructions or CRI-105, and cracks and depressions shall be filled by recommended procedures. Cracks, depressions, and ridges shall not be excessive prior to patching.
3. Carpet installed by the "stretched-in" method shall use tackless strips over detached carpet with attached cushion acceptable to HUD. Foam-back and unitary back carpet shall be installed by gluedown methods or other techniques recommended by the manufacturer. Installer agrees that within one year, if restretching is required by HUD, it shall be done in a professional manner and at no expense to the owner of the premises.

*Copies are available from: Carpet and Rug Institute,
P. O. Box 2048, Dalton, GA 30720

4. Carpet shall not be used as a finish flooring material in kitchens, bathrooms, laundry rooms, or other similar service areas.
5. New carpet installations shall have provisions for adequate air ventilation during and after the installation to help eliminate the existence of any odors opening windows and doors utilizing exhaust fans or operating ventilation systems are recommended.

REQUIREMENTS AND TEST METHODS FOR CARPET:

Carpet and carpet with attached cushion shall be tested in accordance with Table 1, 4 and 5 "Minimum Carpet Requirements and Test Methods." Tests or determinations are not required for all colors unless it appears that such colors or dyeing techniques could unfavorably change the values so obtained or unless the color itself is involved in test procedure.

The pile weights and densities for each of the above yarns for each texture of carpet are shown in Tables 2 and 3. The values are expressed as minimum, therefore, no minimum tolerances are allowed.

TABLE 1 Minimum Carpet Requirements
and Test Methods

<u>Characteristics</u>	<u>Value, Minimum</u>	<u>Test Method</u>
File Weight (oz/yd ²)	Tables 2 & 3	ASTM D 418-92 ¹
Density (oz/yd ³)	Tables 2 & 3	N/A
Tuft Bind (lbf)	6.2 for loop 6.2 for cut & loop (loop only)	ASTM D 1335-67 ¹
Dry Breaking Strength (Finished Carpet)	3.0 for cut pile 100	ASTM D 2646-87 ¹
Delamination Strength of secondary backing (lbf/in)	2.5	ASTM D 3936-80 ¹
Colorfastness to light (xenon arc) (Gray Scale rating)	4 (after 40 AATCC fading units)	AATCC 16E-82 ²
Crocking (Color Transference Chart)	4	AATCC 165-86

¹Copies are available from American Society for Testing & Material (ASTM) 1916 Race St. Philadelphia, PA 19103

²Copies are available from American Association of Textile Chemist & Colorists (AATCC) P. O. Box 12215, Research Triangle Park, NC 27709

1. Average Pile Weight (W): In determining pile weights, no allowance shall be made for the inclusion of any fibers needled or flocked onto or into the primary backing prior to tufting or weaving. Any process which is designed primarily to increase the total yarn weight and which is not integrally a part of the knitting, weaving, or tufting manufacturing process shall not be considered.
2. Minimum Pile Weight of Blend: Compute by multiplying the average percent of each fiber in the blend by the pile weights. To compute a requirement for any given blend, follow the procedure outlined below. If, for a blend composed of 30% nylon and 70% wool, each of whose minimum yarn weights are respectively 22 and 35, the minimum yarn weight for this mixture would be calculated as follows:

Nylon	0.30 x 22 =	6.6 oz/sq yd
Wool	0.70 x 35 =	24.5 oz/sq yd
Total minimum weight		31.1 oz/sq yd

3. Average Percent of Fibers in Blend: The average percent of the fibers shall be determined by AATCC Test Method 20 A. The carpet shall meet the minimum requirements for the fibers in the blend.
4. Average Pile Thickness (t) (all carpet except Textures F and G): The average pile thickness in inches shall be computed in accordance with ASTM D 418.
5. Average Tuft Height (T): Average tuft height for Textures F and G shall be the tuft height above the backing as determined by ASTM D 418.
6. Average Pile Density (D): The average pile density shall be weight per unit volume in ounces of total pile yarn per cubic yard.

$$D = \frac{36W}{(t \text{ or } T)}$$

Table 2 Minimum Weight & Density Requirements for Type I - Single & Multi-Family Housing

Class	Texture	Nylon				Polypropylene				Polyester		Acrylic		Wool	
		BCF*		Staple		BCF		Staple		staple		Staple			
		Wt	Density	Wt	Density	Wt	Density	Wt	Density	Wt	Density	Wt	Density	Wt	Density
Class 1 Moderate Traffic	A. Level or Tex. Loop	20	3300	22	3450	20	3600	24	4000			33	3550	35	3450
	B. Multilevel	23	2850			24	3400					38	3050	40	2950
	C. Plush	24	2600	24	2600							40	2850	42	2700
	D. Twist	24	2950	24	2950					28	3250	37	3050	38	2950
	E. Level Cut & Loop	24	3200	24	3200	24	3600			32	3700	37	3300	38	3200
	F. Cut Pile Heat Set Plied	24	625	24	625	32	2800			32	1550	40	2300	42	2400
	G. Cut Pile Heat Set Singles			24	1150					32	2300				
Class 2 Heavy Traffic	A. Level or Tex. Loop	26	4000	28	4200	26	4350	28	5000			39	4800	40	4550
	B. Multilevel	30	3500			32	3600					45	4800	46	4000
	C. Plush	32	3350	28	3350	32	4500					46	3850	48	3850
	D. Twist	32	3350	32	3350					36	3950	45	4200	46	4000
	E. Level cut & Loop	28	3850	28	3850	28	4000			39	4100	43	4500	45	4350
	F. Cut Pile Heat Set Plied	30	1440	32	1440	32	4500			40	1920	45	2600	46	2650
	G. Cut Pile Heat Set Singles			32	1530					40	2900				

*BCF Bulk Continuous Filament

**For Blended Purposes Only

Table 3 Minimum Weight & Density Requirements for Type II Elderly & Care Facilities

Class	Texture	Nylon				Polypropylene				Polyester		Acrylic		Wool	
		BCF*		Staple		BCF		Staple		Staple		Staple			
		Wt	Density	Wt	Density	Wt	Density	Wt	Density	Wt	Density	Wt	Density	Wt	Density
Class 1 Moderate Traffic	A. Level or Tex. Loop	20	3300	22	3450	20	3600	24	4000			33	3550	35	3450
	B. Multilevel														
	C. Plush	24	2600	24	2600							40	2850	42	2700
	D. Twist	24	2950	24	2950					28	3250	37	3050	38	2950
	E. Level Cut & Loop	24	3200	24	3200	24	3600			32	3700	37	3300	38	3200
	F. Cut Pile Heat Set Plied	24	1250	24	1250	32	4000			32	1550	40	2300	42	2400
	G. Cut Pile Heat Set Singles			24	1250					32	2300				
Class 2 Heavy Traffic	A. Level or Tex. Loop	26	4000	28	4000			28	5000			39	4800	40	4550
	B. Multilevel														
	C. Plush	28	4000	28	4000										
	D. Twist	32	3500	32	3500					36	3900	48	4200	50	4000
	E. Level Cut & Loop	28	3850	28	3850	28	4000			39	4100	43	4500	45	4350
	F. Cut Pile Heat Set Plied	32	3600	32	3600	32	4500								
	G. Cut Pile Heat Set Singles														

*BCF Bulk Continuous Filament

** For Blend Purposes Only

TABLE 4. Physical Requirements for Attached Cushion (Flowed-On)

Characteristic	Urethane		Latex Foam Rubber		Test Method
	Class 1	Class 2	Class 1	Class 2	
Weight, min., (oz/yd ²)	9.0	32	38	46	ASTM D 3676
Thickness, min., (inches)	0.125	1/8	1/8	1/8	ASTM D 3676
Density, min., (pcf)	3.2	14	17	20	ASTM D 3676
Compression Set, max. (%)	15*	10*	15	15	ASTM D 3574
Compression Resistance min., psi.	1.5	9	5	6	ASTM D 3676
Delamination Strength	—	2.5	2.0	2.5	ASTM D 3676
Accelerated Aging Heat Aging	Pass	Pass	Pass	Pass	ASTM D 3676
Fade-O-Meter Aging 20 Hours	Pass	Pass	Pass	Pass	AATCC 16-3
Ash Content, max. (%)	50	50	50	50	ASTM D 297

*After 30 minute recover at 158°F (70°C)

YARN AND FIBER REQUIREMENTS:

1. Certification and Testing

During the course of manufacture of carpet yarns and fibers, the producers shall conduct continuing tests of their products, not only to maintain a continuing quality control of their output but also to furnish a reliable specification statement to their customers.

In support of the specific yarn and fiber requirements in this standard, HUD will also accept certain test data when supplied by the yarn or fiber manufacturer. In doing so, however, HUD will continue to assess full responsibility on the carpet manufacturer for failure to meet HUD requirements.

Test and requirements for the yarn or fiber may be covered by the yarn or fiber manufacturer's certificate of compliance in lieu of a similar certificate of compliance from the carpet manufacturer. If the yarn characteristics are such that it is the carpet manufacturer who is responsible for the ultimate set of properties, then the certificate of compliance must solely be the responsibility of the carpet manufacturer.

2. Materials for Pile Yarn. Fibers for the yarn shall not have been reclaimed from any woven, tufted, knitted, or felted products. The pile yarn shall be made of acrylic, modacrylic, nylon, polypropylene olefin, polyester, wool or blends of these fibers in yarns, exclusive of ornamentation and antistats. All spun yarns must have sufficient twist, entanglement wearability and performance, apart from meeting any weight or density requirements. Spun yarn shall be at least two ply for loop pile carpet. Not less than 9% of any of the above fibers shall be used with other fibers when they are part of a blend. Yarn setting shall be sufficient to assure texture retention under normal conditions of cleaning, shampooing and use.

Where blends are used, the major component shall be the governing fiber in construction interpretation, except for weights. Thus construction consisting of 70% wool and 30% nylon shall be treated as wool. Acrylic and modacrylic fibers may be blended together and shall be treated as a single fiber type.

Fiber denier and staple lengths are subject to normal manufacturing variations. However, no more than 15% variation in staple length shall be acceptable. Staple denier variation may be $\pm 15\%$ in the individual fiber denier and $\pm 10\%$ in the average denier.

- a. Acrylic. Acrylic shall be carpet type staple fiber with an average fiber size of 15 denier or coarser and of specified fiber length. Minimum staple length shall be 3 1/2" on woolen system yarns and 6" on parallel (Modified Worsted) system yarns.
- b. Modacrylic. Modacrylic shall be a carpet type staple fiber with an average fiber size of 15 denier or coarser and of specified fiber length. Minimum staple length shall be 3 1/2 inches on woolen system yarns and 6 inches on parallel (Modified Worsted) system yarns. Modacrylic is restricted in use in blends and shall not exceed 45%
- c. Nylon (Continuous Filament). Continuous filament nylon shall be high bulk or textured carpet type yarn. Average filament size shall be 12 denier or coarser.
- d. Nylon (Staple). Staple nylon shall be carpet type fiber with an average fiber size of 12 denier or coarser, and of specified fiber length. For level loop carpet, the staple length shall be a minimum of 6".
- e. Polyester (Staple). Polyester shall be a carpet type staple fiber with an average fiber size of 12 denier or coarser and of specified fiber length.
- f. Polypropylene Olefin (Continuous Filament). Continuous filament polypropylene olefin shall be high bulk or textured carpet type yarn. Average filament shall be a minimum of 15 denier or coarser.
- g. Polypropylene Olefin (Staple). Polypropylene olefin shall be carpet type staple fiber with an average fiber size of 15 denier or coarser and a minimum staple of 6".
- h. Wool. Wool shall be thoroughly scoured carpet type fiber. The yarn shall contain a minimum of 95%, based on the original dry weight of the specimen.

ACCEPTED ADMINISTRATORS:

1. ADMINISTRATORS. Qualified organizations interested in becoming administrators under the HUD Building Products Standards and Certification Program for Carpet and Carpet with Attached Cushion shall submit their request to HUD Headquarters, Office of Manufactured Housing and Regulatory Functions, 451 7th Street, SW, Attention Mail Room B-133, Washington, DC 20410.

The following Administrators have been accepted by HUD as qualified to certify carpet under this Use of Materials Bulletin No. 44d.

MEA

MEA Certification, Inc.
600 Houze Way, Suite C1
Roswell, GA 30076

A.L.I, Inc.
P. O. Box 15705
Dallas, TX 75215

A-L-I

ETL

ETL, Inc.
Route 11, Industrial Park
Cortland, NY 13045

HUD Field Offices will maintain a file of all Certified Carpet Directories furnished by the Administrators. Only carpet products in the Directories and identified by imprints on the back of the carpet, will be acceptable to HUD.