

1.0 CARPET CUSHION APPENDIX

1.1 Bonded Polyurethane

Leggett and Platt, Inc

Leggett & Platt has produced a recyclable bonded urethane carpet cushion. Designed for both residential and commercial use. The following are links to product information and data sheets.

<http://www.lpurethane.com/Bonded/index.html>

<http://www.lpurethane.com/Bonded/specsheet.html>

<http://www.lpurethane.com/Commercial/index.html>

<http://www.lpurethane.com/Commercial/Doubleglue/Products/benefits.html>

<http://www.lpurethane.com/Commercial/Doubleglue/Products/specs.html>

Hickory Springs Carpet Cushion Division

Hickory Springs produces a flexible polyurethane foam carpet cushion. Designed for both residential and commercial use.

<http://www.carpetcushion.com/products.html>

<http://www.carpetcushion.com/residential.html>

<http://www.carpetcushion.com/commerical.html>

1.2 Fiber

DuPont Commercial Flooring

The DuPont Flooring Systems' nationwide network removes and collects used carpeting and installation scraps and then ships it to a DuPont recycling center. At the DuPont recycling center, the fiber content and quality are identified and carpets are sorted according to their recycling value. Carpets may be processed into reusable materials for such items as:

[EchoSoft™ Carpet Cushion](#)

DuPont™ EchoSoft™ Carpet Cushion a durable, yet environmentally friendly padding product because half of the materials used are from reclaimed commercial carpet. High-traffic installation tests show EchoSoft™ carpet cushion

can extend the life of commercial carpet, provide underfoot comfort and reduce fatigue.

Reliance Carpet Cushion

Reliance Carpet Cushion manufacturers two products, Marathon needle punched synthetic fiber 24, 28, 32 and 40, and Diamond Bond I, 2000 and Bond II bonded synthetic fiber. These are made from 100% post-industrial recycled textile waste fibers and recycled carpet fibers.

The Marathon and Diamond Bond products are constructed from selected synthetic fibers blended into a dense, resilient material that is needle punched into carpet cushion. In order to provide extra strength and firmness a polyethylene (low melt) fiber is incorporated into the manufacturing process to lock the needle punching in place. These products are used as a carpet underlay for medium to heavy traffic for commercial and residential installations. These can be used indoors, below, on, or above grade. Not recommended for use in areas susceptible to water migration or constant wet/damp conditions.

These products have the following attributes:

- Prevents restretch and seam problems caused by bottoming out of carpet.
- Has high acoustical and noise reduction ratings.
- Will not support bacterial growth.
- Is mildew and mold proof.
- Is non-allergenic.
- Has a high flame retardancy ratings.

DIAMOND BOND CUSHION SPECIFICATIONS

	DIAMOND BOND I	DIAMOND BOND 2000	DIAMOND BOND II
WEIGHT: (ASTM D3776)	5 lb cu ft	7.3 lb cu ft	7.3 lb cu ft
THICKNESS: (FTMS 191)	5/16" Approx.	5/16" Approx.	3/8" Approx.
WIDTH:	6'	6'	6'
LENGTH:	60'	60'	60'
TEAR STRENGTH: (ASTM 2262)	28 lb	28 lb	28 lb
ELONGATION TEST:	17% Average	17% Average	17% Average
FOOT TRAFFIC (300,000 Min.): (ASTM 2401)	Pass	Pass	Pass
ACOUSTICAL NRC: (ASTM C423-77)	.59	.63	.66
INSULATION "R" FACTOR: (ASTM C518-76)	1.95	2.12	2.18
ODOR/MILDEW:	None	None	None
STATIC LOAD TEST (24 Hr.): (225 lb Pressure Applied)	1 Hr. Recovery 96%	1 Hr. Recovery 97.1%	1 Hr. Recovery 98%
	24 Hr. Recovery 97%	24 Hr. Recovery 97.7%	24 Hr. Recovery 98.6%

MARATHON SPECIFICATIONS

	24	28	32	40
DENSITY: (A.S.T.M. D3776)	6.5 # Cu. Ft.	6.5 # Cu. Ft.	7.1 # Cu. Ft.	7.6 # Cu. Ft.
GAUGE: (FTMS 191)	5/16" Prox.	3/8" Prox.	3/8" Prox.	7/16" Prox.
SQ. YARD:	24 oz.	28 oz.	32 oz.	40 oz.
WIDTH:	6'	6'	6'	6'
LENGTH:	60'	60'	60'	60'
TEAR STRENGTH: (A.S.T.M. 2262)	40 lbs.	42 lbs.	44 lbs.	46 lbs.
ELONGATION TEST:	13% Avg.	13% Avg.	13% Avg.	13% Avg.
FOOT TRAFFIC (300,000 Min.): (A.S.T.M. 2401)	Pass	Pass	Pass	Pass
ACOUSTICAL NRC: (A.S.T.M. C423-77)	.66	.68	.69	.74
INSULATION "R" FACTOR: (A.S.T.M. C518-76)	2.19	2.24	2.29	2.39
ODOR/MILDEW:	None	None	None	None
STATIC LOAD TEST: (24 Hr.)	1 Hr. Rec. 97.5%	1 Hr. Rec. 97.5%	1 Hr. Rec. 97.5%	
	24 Hr. Rec. 98.3%	24 Hr. Rec. 98.3%	24 Hr. Rec. 98.3%	
FHA/HUD UM 72 A:	Class I	Class II	Class II	Class III

FLAMMABILITY

DOC-FF-1-70 (Pill Test):	Pass	Pass	Pass	Pass
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Leggett and Platt, Inc

Leggett & Platt engineers a complete line of fiber carpet cushion for both residential and commercial markets.

For additional information see link to data sheet below. The following products are available within all major markets in the Leggett & Platt national distribution network:

[Syntex Plus](#)

[Envoy](#)

[Nova](#)

<http://www.lpurethane.com/Synthetic/datasheet.html>

1.3 Rubber

Dura Undercushions Ltd.

DURACOUSTIC underlayment is a 5/16" reinforced rubber (recycled) matting with an open cell structure, which enhances its sound deadening properties making possible the installation of cost effective sound-rated floors. The DURACOUSTIC underlayment system acts not only as a sound deadener but also as a decoupler by breaking the sound transmission path through the floor-ceiling assembly and prevents noise flanking room to room.

<http://www.duracoustic.com/pdf/Duracoustic.pdf>

2.0 DISCUSSION

TYPES OF CARPET CUSHION: There are three basic types of cushion:

Bonded Polyurethane Foam

Rubber

Synthetic Fiber

Each type is further subdivided into two or three varieties. Each variety has characteristics that make it useful in particular types of carpet installation. Each variety also has *grades*, which vary by weight (also called *density*), thickness, and the amount of force it takes to compress the cushion.

Density is one of the most important parameters of any type of cushion. Density equals weight divided by thickness, and it measured in pounds per cubic foot. All types of cushion can be made dense (more material), or light (more air), or any grade in between, so they can be soft or firm, resilient or supportive, according to the type of room and expected traffic on the carpet they support.

2.1 Foam

Generally speaking, foam cushion comes in three recognized, clearly different varieties:

Prime polyurethane foam is a firmer version of the same cushioning used in upholstered furniture, mattresses, and automobile seats. Two liquid ingredients are combined to form a large mass of foam, which is then sliced into sheets for use as carpet cushion.

Bonded polyurethane foam (sometimes called *rebond*) is quite unique. You cannot mistake it when you see it, because it is formed by combining chopped and shredded pieces of foam, in different sizes and usually different colors, into one solid piece. It frequently has a surface net for ease of installation and improved performance. Nearly all the scrap foam in the U.S., and some from other countries as well, is utilized to make bonded cushion. This recycles waste, which would otherwise be thrown out, and it eases the strain on our landfills. Moreover, bonded foam is itself recyclable.

Froth polyurethane foam is made with carpet backing machinery. Liquid ingredients are applied, either directly to the backs of some carpet styles, or to a non-woven material (for making separate cushion). They react and form a thin, dense foam which is particularly useful in commercial applications with wide expanses of carpet.

2.2 Rubber

There are two basic types of sponge rubber carpet cushion:

Waffled rubber cushion is made by molding natural or synthetic rubber. Heat cures the rubber and forms a waffle pattern. This variety produces a soft, resilient cushion whose luxurious feel is particularly useful for residences.

Flat sponge rubber is a firm, dense cushion, which has a flat surface and is normally used in large-scale commercial applications and with loop type (or Berber) carpet.

Rubber cushion manufacturing processes can be varied to produce different levels of density and firmness. The usual measurement is the weight in ounces per square yard.

2.3 Fiber

Foam and rubber cushions are produced from new and recycled materials. Fiber cushion, on the other hand, uses existing fibers (both virgin and recycled, and

either natural or man-made fibers), which are interlocked into a useful sheet of felt.

There are two distinct varieties of fiber cushion:

Natural fibers include felt, animal hair, and jute (the material used to make some kinds of rope and heavy burlap bags). This is one of the oldest types of carpet cushion, dating back to the earliest days of machine-made carpet.

Synthetic fibers include nylon, polyester, polypropylene, and acrylics, which are needle-punched into relatively dense cushions which have a firm feel and, as with other types of cushion, can be made in virtually any weight, to stand up under *light, medium, or heavy* traffic, which is how they are usually classified.

SPECIAL NOTES

Berber carpet is becoming increasingly popular, and needs a thin, firm cushion. When using this type of carpet, be sure that the accompanying cushion has been specified by the manufacturer as suitable for Berber carpet.

Radiant heating is becoming more widely used in certain sections of the country. In the case of radiant heating, you do not want a cushion that is an exceptionally effective insulator, but one that allows the heat from the subflooring to penetrate the carpet system and heat the room. A relatively thin, flat cellular sponge rubber or synthetic fiber cushion works well under these circumstances. Be sure to ask your customers if their room(s) have radiant heating.

The above information is provided by the **Carpet Cushion Council, P.O. Box 546, Riverside, CT 06878. Tel: 203.637.1312. Copyright 2000.**

Due to the number of manufacturer's and variety of products listed within this appendix it will be necessary to follow the links to the manufacturers web sites for current product information, applications, technical specifications and costs.