

Installation Guidelines for Commercial Carpet and Commercial Bonded Polyurethane Carpet Cushion



Alliance for Flexible Polyurethane Foam



The Double-Glue Method

The double-glue installation method is one approach to cushioned carpet in the commercial setting. The process involves adhering the cushion to the floor, followed by adhering the carpet to the installed cushion. In both steps, manufacturer-defined adhesives are used – many of which are similar or identical to those used in the installation of direct-glue commercial carpet. The double-glue method allows for a choice of cushion and the ability to accommodate most flooring configurations, while providing the sound absorption, ergonomic and carpet life-extending benefits for which it is designed. Many cushion manufacturers offer several products specifically designed for double-glue installation. Each has developed precise application instructions that are both practical and cost-effective. Conformance to recommendations is needed for long-term installation performance. The double-glue method of installation is appropriate in most commercial settings, small or large.

Carpet installation should be performed by professional installers with specific training in commercial carpet installation. Many installers are certified by the International Certified Floorcovering Installers Association (Master or C-II), are members of the Floor Covering Installation Contractors Association (FCICA), or are employed by floor covering contractors certified by the Floor Covering Installation Board (FCIB).

As a general guideline, a moisture emission rate of 3 lbs./1000 sq. ft./24 hours and a pH between 5 and 9 are acceptable for most carpets. Beyond these limits, the risk of moisture or alkalinity related problems increases. Corrective measures may be available if limits are exceeded. Consult the individual carpet and cushion manufacturer to determine the acceptable limits for particular products and, where necessary, proper corrective measures.

Additionally, with the great variety of carpets, cushions and adhesives available for commercial installations, confirm that the products of interest are recommended by the manufacturers for installation by the double-glue method.

Cushion Choice

The starting point in commercial applications is choosing an appropriate commercial carpet cushion for a particular application. The double-glue method requires carpet cushion that has been specifically designed for this installation approach. The guidelines that follow are based on the use of a typical commercial-grade bonded polyurethane carpet cushion with a thickness of 0.25" maximum and a density of 10 lbs./cu.ft. minimum with woven or non-woven scrim on both sides. General information about polyurethane carpet cushion may be found on page 7.

Pre-installation Considerations

Regardless of whether a concrete slab is new or aged, the potential for installation performance problems exists if excess moisture or alkalinity is present. These conditions can degrade the adhesive over time. When installing over a concrete slab, confirm that moisture and alkalinity are within acceptable limits. A calcium chloride moisture test kit for this purpose is commonly available from installation product suppliers. With careful use, this test can produce reliable results. Note that proper planning is critical, as the test requires 60-72 hours to conduct.

Site Conditions

The space in which the carpet is to be installed needs to have adequate temperature and humidity control to facilitate proper installation. Beginning 48 hours before the installation and continuing at least 72 hours following completion of the installation, the temperature needs to be maintained between 65° F. and 95° F. and the relative humidity between 10% and 65%. To achieve the best possible installation, according to The Carpet & Rug Institute's CRI 104 (2002), all materials should be acclimated 48 hours prior to installation. If installing over concrete, the slab temperature should not be less than 65° F. The completed installation needs to be maintained at a minimum of 55° F at all times.



Acclimate materials for 48 hours prior to installation

Floor Preparation

The floor should be free of holes and loose tiles or boards. Repairs should be made as necessary to provide a smooth surface for carpet and cushion installation. The floor should be dry and dust-free. All contaminants that may prevent good adhesion need to be removed. Floors should be vacuumed, mopped if necessary, and otherwise thoroughly cleaned prior to carpet installation. Excessive use of water for cleaning is not recommended, though mopping with a slightly damp mop is useful to remove dust from the floor surface. Architectural tack strip, properly spaced and secured, may be used to hold the carpet edges in place. Setting cove base on top of carpet will also secure edges.



Start with a clean, dry, and smooth floor



Cushion seams should have no compression or gaps

Cushion Layout

The cushion should be laid out in the longest lengths possible. Additionally, the cushion seams should run perpendicular to the carpet seams. If the seams cannot be at right angles to the carpet seams, the cushion seams should be kept at least 6" from the carpet seams. Cushion seams need to be butted without compression, leaving no gaps. Any excess along the perimeter walls should be trimmed and tightly fitted.

Gluing the Cushion to the Floor - Pressure Sensitive or Premium Multi-Purpose Adhesive

Once all of the cushion has been laid out, fold it back and apply adhesive to the floor. Do not staple. Special attention is to be directed to spreading the adhesive adjacent to the walls (cut-in) to prevent edge curling. Apply the adhesive with a

notched trowel measuring 1/16" x 1/16" x 1/16" or according to the adhesive manufacturer's recommendations. (See chart on page 7 for general guidelines.) Applying the adhesive with a paint roller can result in an inconsistent application. Consult the adhesive manufacturer for the best application technique. For bonding, the cushion



Apply adhesive to floor following manufacturer's recommendations



Proper open time is critical for a successful installation



Cushion installation complete

should be laid into the adhesive while in a "tacky wet" condition. For pressure sensitive adhesives, this point is often identified when the adhesive turns clear from its original opaque appearance. Smooth the cushion into the adhesive, working toward the seams. Trim in, eliminating any bubbles or wrinkles so the seams are tight without overlapping.



Dry-fit carpet according to layout plan

Carpet Layout

After the cushion has been secured, cut the carpet to the proper length and spread out in the area to be carpeted. The carpet should be cut 3-4 inches (75-100 mm) longer than the area measurement. Where applicable, allow for

pattern repeat. Carpet seams should be at a right angle to cushion seams or offset at least 6 inches (150mm) to either side. Align all carpet breadths to their proper position and trim seams.

Care must be taken to avoid cutting into the cushion under the seam.



Apply adhesive to cushion following manufacturer's recommendations

Gluings Carpet to Cushion - Premium Multi-Purpose Adhesive

Note: It is imperative that the proper trowel notch and a premium multi-purpose adhesive formulated specifically for double-glue installation be used.

Trowel with a U-notched trowel per manufacturer recommendation and carpet backing texture. The floor adhesive must be spread uniformly over the cushion with an appropriate trowel, leaving ridges of sufficient height to achieve full and complete coverage of the cushion and carpet backing, including penetration into the backing's deepest recesses. (See chart on page 7 for general guidelines.)

Confirm amount and placement of adhesive by installing a small area, then lifting the carpet, noting adhesive transfer and coverage into backstitch of carpet. If insufficient coverage is seen, increase notch size and recheck.



Use seaming technique appropriate for carpet type



Use only hot melt seaming tape designed for double-glue installation



Typical tools for carpet seaming



Finished seam (below tool) is nearly invisible



Once the adhesive has been spread for a given section, lay carpet into the adhesive according to the adhesive manufacturer's recommendation for open time so as to allow even distribution and penetration of adhesive on all areas of backing.



Install carpet and trim in

Note: Proper open time considerations are critical for a successful installation. Installing carpet into adhesive without sufficient

open time may result in installation failure. The use of fans will reduce required open time and promote tackiness. However, be aware that excessive moving of the air will accelerate the drying time and may not achieve a transfer of adhesive to the backing of the carpet.

Using an appropriate carpet roller, roll in both directions to promote complete adhesion of carpet to cushion. Rolling should be performed with the lightest roller that achieves proper transfer of the adhesive into the carpet back. Refer to manufacturer recommendation for

roller weight. Eliminate any bubbles by pressing straight down prior to full adhesive set up time. Do not roll bubbles to edge. Woven carpet should be rolled a second time about 3 to 12 hours after initial rolling to make sure a strong bond is established. Due to dimensional instability, double-glue installation of carpet with a unitary backing is typically not recommended. Prevent all traffic over carpeted area for a mini-



Prevent traffic over carpeted area for a minimum of 24 to 48 hours after installation

mum of 24 to 48 hours after installation. Failure to do so may create areas where inadequate adhesion between carpet and cushion can lead to future problems.

Installation with a Spray Adhesive System

Double-glue installation using a properly specified spray adhesive system needs to be performed by trained, skilled installers certified in this method.

Installation with a pressure sensitive spray adhesive system is an acceptable method for gluing cushion to floor. To be successful, this method should be performed by a Spray Certified Installation Technician. A firm cushion that is designed for double-glue installation is



Roll in both directions to promote complete adhesion

required for successful performance. Similarly, it is recommended to use a pressure sensitive adhesive warranted by the manufacturer for use as a spray-applied adhesive for double-glue installation of cushion-to-floor. Conformance to required application rate and open time is critical for successful installation.

The use of a spray system for gluing carpet to cushion is a very demanding operation. It is critical to use an appropriate carpet-to-cushion adhesive warranted by the manufacturer for use as a spray applied adhesive for double-glue installation. A pressure sensitive adhesive is not acceptable for adhering carpet to cushion. Spraying both the top of the cushion and the back of the carpet is needed. The adhesive must be sprayed uniformly and in sufficient amount to achieve full and complete coverage of the cushion and carpet backing, including penetration into the backing's deepest recesses. This requires applying sufficient adhesive to penetrate all uneven surfaces of backing, regardless of backing type.

Successful double-glue installation with a spray adhesive system demands that the installer have the required training and skills, and that the equipment and adhesives are approved by the adhesive manufacturer for the double-glue method. Check with the adhesive manufacturer prior to beginning the installation.

Other Installation Considerations

The first 30 days following installation is a critical period. During this time, the adhesive is undergoing the final cure required for long-term installation performance. It is critical that the carpet not be exposed to water from cleaning or other sources during the first 30 days. Exposure to water during this period may interfere with proper curing of the adhesive and can lead to future problems. If cleaning is required, it should be performed by a trained, skilled professional. Dry cleaning systems are preferred. Certain types of carpet backing and adhesives are not compatible. Follow manufacturer recommendations as to the correct adhesive and application.

Adhesives: Verification of trowel settings, open time and additional questions should be referred to your adhesive manufacturer.

Seaming: Depending on carpet manufacturer recommendations, seams may be hand sewn, butt-seamed and glued, or hot melt taped using a low profile, non-silicone treated hot melt tape specifically designed for double-glue. Prior to seaming, both trimmed edges of the carpet sections to be joined must be sealed with an appropriate seam adhesive. Latex seam sealer or thermoplastic adhesives are acceptable. Seam adhesive must be applied in a manner that encapsulates both primary and secondary backings.

Double-glue Procedures for Stairs

Pre-cut and dry fit the stair carpet before commencing the stair installation. Position tack strip on the tread and riser and install as with a conventional installation. Install specified cushion, extending completely over the bullnose, which is to be a radius of 3/4 inches. After the cushion is adhered, apply the double-glue adhesive on top of the cushion. Install carpet into the wet adhesive, which will become pliable and easier to stretch.

Installing Patterned Carpet

It is critical that all parties discuss pattern configuration, the backing system, installation method, and pattern carpet expectations. Subsequent to the specification, the specifier, end user and the carpet installation contractor must all understand the manufacturer's tolerances for bow, skew, trueness of edge, and pattern repeat variation. If tolerances exceed manufacturer's published specifications for these or other pattern carpet attributes, contact the manufacturer before proceeding.

Note that carpet meeting manufacturer's published specifications for pattern carpet may still require pattern adjustment during installation. Contact carpet manufacturer for detailed instructions on the proper installation of pattern carpet and methods for pattern adjustment.

About Bonded Polyurethane Carpet Cushion for Commercial Applications

Bonded polyurethane foam, sometimes referred to as 'rebond,' is cut from a fused log or block of chopped pieces of recycled and/or manufactured polyurethane foam. The bonded polyurethane cushion used for commercial installation is specifically engineered for this purpose and is considered commercial-grade bonded polyurethane cushion, a very different product than that specified for residential use.

Commercial-grade bonded polyurethane carpet cushion is a high performance material. Designed to provide the classic benefits of comfort and appearance retention, it is a thin, high density, flat and resilient cushion. Its construction provides comfort without excessive thickness, and its "memory" promotes rapid recovery from depressions caused by heavy furnishings, making furniture arrangement simpler.

Polyurethane cushion under commercial carpet has many benefits over direct-glue. Cushion increases the life expectancy of carpet by up to 50%. Properly cushioned carpet subjected to walk tests, the Hexapod Drum Test, and Phillips Roller Chair test, showed outstanding bottom line results: markedly better appearance

retention, in addition to greater comfort. A recent study by Intertek Testing Services, Cortland, NY proved that polyurethane carpet cushion helps absorb sound by as much as 50% – making the workplace quieter and more productive. Another study by Professional Testing in Dalton, GA found polyurethane cushion makes maintenance easier by improving soil removal while vacuuming by up to 40% or greater. Details of these and other studies are available at www.afpf.com.

Polyurethane cushion is "installer friendly." It's clean, lightweight and easy to cut-to-size.

Features and Benefits of Bonded Polyurethane Carpet Cushion

- ▶ Improves carpet appearance retention
 - reduces life cycle cost
- ▶ Improves workplace acoustics
 - less noise distraction, improved productivity
- ▶ Better ergonomics, more comfort
 - reduces fatigue, raises worker satisfaction
- ▶ Provides thermal insulation
 - environmental comfort, reduced cost
- ▶ Easier to clean
 - carpet looks better, longer
- ▶ Recycled content by definition & recyclable in many locations
 - consistent with recycling goals

TROWEL SIZE - MINIMUM GUIDELINES

SOURCE: The Carpet & Rug Institute's CRI 104 (2002)

	Adhesive Type	Notch Width (inches)	Notch Depth (inches)	Space Between Notches (inches)	Notch Shape
Between Floor and Cushion	Latex	1/16	1/16	1/16	Square
Between Cushion and Carpet					
Smooth Back Carpet	Latex	1/8	1/8	1/16	U-shape
Rough Back Carpet	Latex	1/8	3/16	1/8	U-shape

Carpet, Cushion, and Installation Resources

Alliance for Flexible Polyurethane Foam
(www.afpf.com)

American Floor Covering Institute
(www.carpethelp.com)

Carpet Cushion Council
(www.carpetcushion.org)

The Carpet & Rug Institute
(www.carpet-rug.com)

Floor Covering Installation Board
(www.fcibcertified.com)

Floor Covering Installation Contractors Association
(www.fcica.com)

International Certified Floorcovering Installers
Association (www.cfi-installers.org)

World Floor Covering Association
(www.wfca.org)

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The Alliance for Flexible Polyurethane Foam is a joint program of the Alliance for the Polyurethanes Industry and the Polyurethane Foam Association. AFPF is a corporate sustaining member of IFMA, the International Facility Management Association, a member of the World Floor Covering Association and the International Certified Floorcovering Installers Association

Commercial Bonded Polyurethane Carpet Cushion Manufacturers

Dalton Foam Division of NCFI
P.O. Box 4507
Dalton, GA 30721-1507
Phone: (800) 241-8778
Fax: (706) 277-9409

Future Foam
2210 Parview Road
Middleton, WI 53562
Phone: (800) 733-8063
Fax: (608) 831-0326

GFI Carpet Cushion
100 Columbia Ave.
Linwood, PA 19061
Phone: (800) 497-3626

Hickory Springs Mfg. Co.
P.O. Box 128
Hickory, NC 28603
Phone: (828) 328-2201
Fax: (828) 328-2103
www.carpetcushion.com

Leggett & Platt
P.O. Box 10
Mount Airy, MD 21771
Phone: (800) 866-9446 ext. 262
Fax: (240) 332-4545
www.lpurethane.com

Woodbridge Foam Corporation
8214 Kipling Avenue North
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These guidelines have been prepared to provide some helpful ideas and information for parties interested in the installation of double-glue commercial carpet and cushion. Anyone installing double-glue commercial carpet and cushion has an independent obligation to ascertain that their plans, actions and practices represent sound business practices for their installation and meet all relevant laws, codes or standards. Installers may vary their approach with respect to particular installations, products or locations based on specific factual circumstances, the practicality and effectiveness of particular installations, or technical feasibility. These guidelines are not designed or intended to define or create legal rights or obligations. Any recommendation, express or implied, is for illustrative purposes, and is not intended to be an endorsement of any particular product or manufacturer. AFPF does not make any warranty or representation, either express or implied, with respect to the accuracy or completeness of the information contained in this guideline; nor does AFPF assume any liability of any kind whatsoever resulting from the use of or reliance upon any information, conclusions, or opinions contained herein.