

CARPET TILE INSTALLATION GUIDELINE

GENERAL REQUIREMENTS | STORAGE & HANDLING | ADHESIVE APPLICATION

**STITCHES
&
GAUGE**

CRAFTING FLOORS FOR SEAMLESS SOLUTIONS

INSTALLATION GUIDELINE

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ACKNOWLEDGEMENTS

This guideline strictly adheres to the Carpet and Rug Institute standards. We would like to acknowledge and thank CRI for the use of their guidelines.

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CARPET AND RUG INSTITUTE REFERENCES

[The Carpet Primer](#)

[Carpet Maintenance and Troubleshooting](#)

[Additional Resource](#)

GENERAL REQUIREMENTS

This section covers the minimum standard requirement for installation of carpet based upon reliable principles and procedures developed through practical experience, research, and information obtained from manufacturers, retailers, installers, end users, testing laboratories, and others who have specialised expertise. For more detailed information, instructions and training, please contact Stitches and Gauge.

STORAGE AND HANDLING

This section covers the proper storage and handling of carpet products.

STORAGE

Store carpet and related materials in a climate-controlled, dry space. Protect carpet from soil, dust, moisture and other contaminants and store on a flat surface. Double stacking pallets of carpet tile should be avoided unless approved by the manufacturer.

HANDLING

Transport carpet in a manner that prevents damage and distortion. Carpet tiles should not be bent or folded.

NOTE

Failure to observe the preceding storage and handling requirements may result in the following:

- Contamination from soil, grease and/or oil
- Delamination
- Dimensional changes
- Permanent indentation
- Development of wrinkles and bubbles
- Pile reversal
- Pile crushing
- Creases
- Pattern distortion

PLANNING

All facets of the installation are to be coordinated. A scale drawing of the area to be installed is required to determine type of carpet, carpet quantities, quantity per dye lot, installation method, adhesives, transition mouldings, and other accessories, and to identify the proper location of seams.

On new construction, provide architectural drawings that define the entire installation area with space names or numbers and a finish schedule of flooring style, patterns, colours and installation methods. On existing structures, provide new measurements and shop drawings.

Consideration should be given to carpet and adhesive conditioning, material delivery considerations, material reclamations and other trades' schedules.

SHOP DRAWINGS

The carpet shop drawing is required to contain the following information:

- Name of the job, owner and installation company. On new construction the name of the general contractor and architectural firm are required.
- Building address
- Date of drawing
- Scale
- Floor number and location in building
- Compass direction on each sheet
- Drawing for each area to be carpeted (colour coding is preferable)
- Construction of substrate for each area
- Required floor preparation, materials and quantities.
- Type of installation for each area
- Exact notations where dye lot changes occur
- Excess material in each area and how it is to be used
- Carpet pile or pattern direction for each area
- Name of manufacturer, style, backing system and colour of carpet for each area
- Large scale drawings showing treatment of step areas or other detail work
- Location and type of expansion joints and edge transitions
- Type of wall base in each area

TRANSITIONS TO OTHER SURFACES

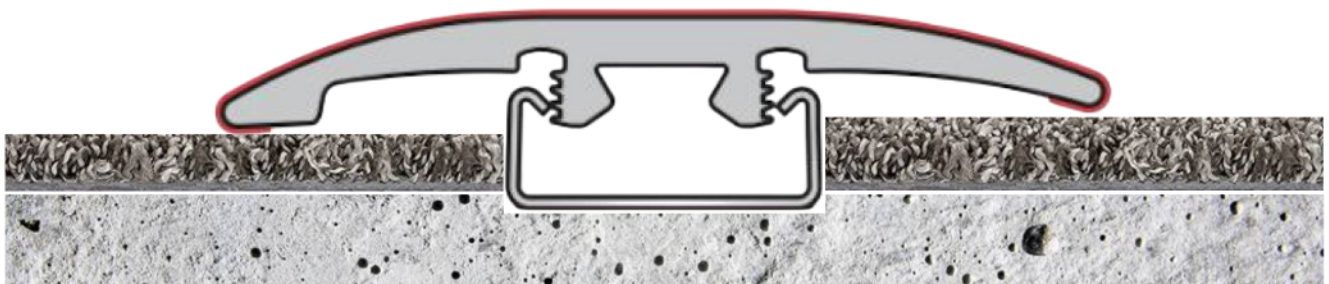
Where carpet transitions to other floor coverings, the carpet edges are required to be protected or covered with appropriate transition mouldings. The edge of the hard surface flooring should not exceed a maximum of 1/16" higher than the total carpet thickness where no transition moulding exists.

CARPET OVER EXPANSION JOINTS

Do not install carpet over expansion joints (refer to the [Definitions of Terms](#) section on pg15). Expansion joints allow separate substrate surfaces to expand and contract independently.

In addition, do not install on any area of a floor that does not provide a stable and mechanically sound surface. This does not include cut or saw joints within a section of the floor. Non-stable/unsound substrate joint conditions are required to be addressed in strict accordance with the appropriate architectural drawing.

If no expansion joint device is specified on the drawing, the building owner, owner's representative, or other responsible party is required to be made aware that failure to address expansion joints will potentially result in installation failure, damage to the carpet and/or safety concerns.



TESTING

Refer to the manufacturer's written instructions for guidelines regarding allowable moisture and pH limits for their products. The Moisture Vapour Emission Rate, Relative Humidity & Alkalinity testing must be performed to give an accurate assessment of the concrete condition and the test results/data of each test shall be within acceptable limits.

Before direct glue-down, free floating carpet tile systems, the owner or general contractor, or their designated testing agent, is required to submit to the flooring contractor a written report on the moisture and alkalinity conditions of the concrete substrates.

Proper testing is essential for a successful installation and any deviation from these industry accepted test methods often results in an installation failure and may void manufacturers' warranties.

NOTE

It is recommended that qualified independent third-party testing agencies be used for determining moisture and alkalinity conditions of a concrete slab. Testing by an independent third party specialist to determine installation suitability is a prudent and necessary safeguard for general contractors, owners, architects, flooring product providers and installation contractors to reduce the risk of concrete slab moisture related flooring problems. As a minimum, testing agencies or individuals are required to demonstrate verifiable experience in concrete moisture testing or be certified by a recognized organisation.



MOISTURE VAPOUR EMISSION RATE (MVER) TESTING

MVER tests must be conducted in accordance with the current version of ASTM F 1869, not to exceed manufacturer's requirements (ASTM F1869 - Standard Test Method for Measuring Vapour Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride).

RELATIVE HUMIDITY (RH) TESTING

Testing for internal relative humidity of concrete slabs must be conducted in accordance with the current version of ASTM F2170, not to exceed manufacturer's requirements (ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In-Situ Probes).

ALKALINITY TESTING

Testing the pH at the surface of a concrete slab must be conducted in accordance with the current version of ASTM F710, not to exceed manufacturer's requirements (ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring).

NOTE

Preparing the surface of a concrete slab for pH testing can be problematic. Make sure the concrete surface is adequately cleaned of adhesives, curing compounds etc. When pH readings are less than 7, it may be an indication of a residue remaining on the concrete surface. Also use care not to over clean the surface of the concrete, consequently removing the (usually) thin layer of carbonation. This can result in pH readings >12.



SITE CONDITIONS

Proper site conditions as outlined in this section are essential for a successful installation and any deviation often results in an installation failure and may void manufacturers' warranties.

NOTE

Installing carpet before other trades have completed their work may result in problems with: overall appearance, visible damage, soiling, adhesive failure, delamination and dimensional stability. These conditions may not be immediately evident.

SUBSTRATE CONDITIONS

The owner or general contractor is responsible for providing an acceptable substrate for the specified installation. Carpet is required to be installed over properly prepared substrates that are suitable for the specific product and installation method selected. All cracks, holes and flooring irregularities are required to be repaired to ensure a flat, smooth substrate, prevent accelerated wear and telegraphing substrate irregularities.

AMBIENT TEMPERATURE AND HUMIDITY SUITABLE SUBSTRATES

The installation is not to begin until the HVAC system is operational and the following conditions are maintained for at least 48 hours before, during and 72 hours after completion. The carpet is to be installed when the indoor temperature is 65-95°F (18-35°C) with a maximum relative humidity of 65%. The substrate surface temperature should not be less than 65° F (18° C) at time of installation. Do not allow the temperature of indoor carpeted areas to fall below 50° F (10° C), regardless of the age of the installation. If these conditions are not attainable, contact the flooring manufacturer for applications to warranty.

NOTE

If the above conditions are not met, installations may be susceptible to moisture related failures including but not limited to dew point condensation.

VENTILATION

During installation, maintain air circulation by operating the HVAC system at full capacity.

NOTE

For acceptable indoor air quality, fresh air ventilation in commercial spaces is recommended to conform to current guidelines specified in ASHRAE Standard 62 published by the [American Society of Heating, Refrigerating and Air Conditioning Engineers](#). Failure to comply could cause negative ramifications to the installation and the indoor air quality.



SUBSTRATE PREPARATION

Substrates are required to be structurally sound and free of foreign substances that may compromise the carpet or its installation. Patching compounds are required to be suitable for the intended application. Select polymer-fortified patching compounds according to the carpet manufacturer's instructions (refer to current version of ASTM E1155).

NOTE

Patched areas may be porous and highly alkaline, which will prevent adequate adhesive bond. For best results, prime patched areas. Consult patch manufacturer for primer recommendations and compatibility with adhesives.

CONCRETE

Concrete must be cured, clean, dried and tested in accordance with the [Testing](#) section of this document (pg6). If the carpet is to be installed using an adhesive, the concrete should be free of dirt, grease, oil, curing or parting agents, and other contaminants, including sealers, that may interfere with the bonding of adhesive.

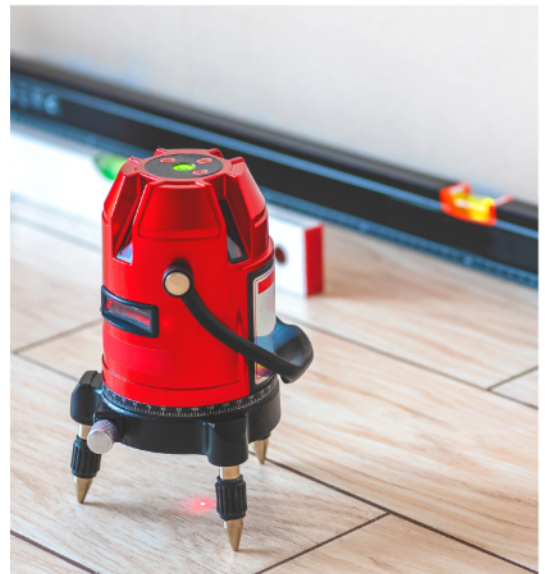
NOTE

It is not recommended to chemically treat (abate) substrates. These chemicals are difficult to completely remove and will adversely affect new adhesive and carpet. Contact your manufacturer for specific information.

Whenever a powdery or porous surface is encountered, a primer/sealer compatible with the adhesive should be used to provide a suitable surface for the glue-down installation. Patching of cracks and depressions shall be made with appropriate and compatible latex or polymer fortified patching compound. Do not exceed manufacturer's recommendations for patch thickness. Large patched areas must be primed (refer to the [Primers](#) section on pg12).

NOTE

Any concrete floor, even when adequately cured and dry, can allow moisture vapour to pass through to its surface. Depending upon the type of carpet and method of installation, the moisture emission rate greatly influences the long-term success of an installation. The use of a properly installed, uncompromised, approved moisture membrane is essential in preventing moisture migration into and through a concrete slab (refer to ASTM F 710).

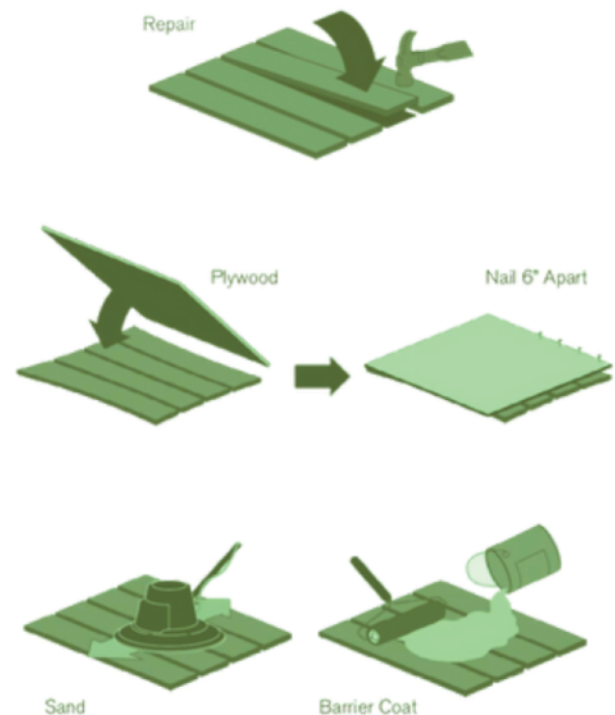


MOISTURE MITIGATION SYSTEMS

Concrete that has been treated with a moisture mitigation system will render the substrate non-porous. Before installation, a bond test is recommended. If the bond test fails, the substrate must be adequately prepared to accept adhesive.

WOOD

Wood substrates are required to be structurally sound, flat, dry and securely anchored. Substrates, such as plywood, hardwood, particleboard, oriented strand board, or other materials, are required to be flooring grade (APA approved) and installed according to manufacturer specifications. Irregularities, imperfections and joints are required to be properly patched and prepared. The use of a primer on the substrate will improve bond strength of the patch.



TREATED WOOD

Wood that is chemically treated to alter properties relating to outdoor exposure or flame resistance is not a suitable substrate for direct glue-down applications. Floor covering adhesives would be subject to chemical degradation when applied to these surfaces.

METAL

It is required that metal floors create a smooth, even plane, and be free of grease, oil, soil and rust.

RAISED ACCESS FLOORING

It is required that raised access flooring be structurally sound, flat and properly secured. For carpet tile installation, tile seams should be offset from access panel seams unless otherwise specified.

CARPET OVER CARPET

Refer to carpet manufacturer for guidance before installation.

RESILIENT FLOORING

Installing carpet over resilient flooring may be acceptable as long as the resilient flooring is securely bonded to the substrate and all waxes, sealers, floor finishes and other foreign materials have been removed. It is not recommended to install over floating, perimeter bonded or cushion-backed sheet goods.

NOTE

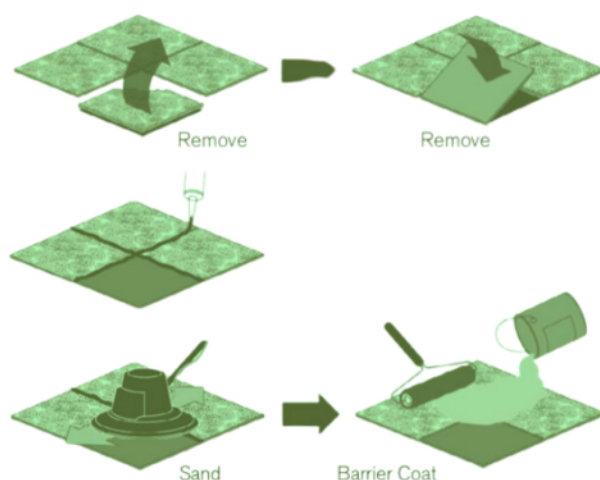
Some sheet vinyl, resilient tile and cut-back asphalt-based adhesive may contain asbestos and/or crystalline silica. Recommended work practices prohibit sanding, dry scraping, bead-blasting or mechanically pulverising resilient flooring, backing or lining felt. Do not use powered devices that create asbestos dust when removing “cut-back” or asphalt-based adhesives. Removal procedures must comply with federal, state and local government agency regulations covering the removal and disposal of asbestos-containing materials (ACM).

RADIANT HEAT FLOORS

Radiant-heated floors require special consideration in the selection of carpet, carpet cushion, installation methods and adhesive. Unless absolutely certain about the location and depth of heating components, use adhesive to attach tack strip and transitions. The maximum surface temperature of radiant-heated substrates should not exceed 85°F/29°C. Refer to [Radiant Professionals Alliance](#) for additional information.

TERRAZZO, CERAMIC, MARBLE, SLATE AND OTHER NONPOROUS SURFACES

Remove surface finishes and abrade flooring surfaces to ensure adhesion. Grout lines must be filled and flush with flooring material surface. Ceramic or other surfaces may require the use of a primer to ensure proper adhesion. Slate and brick surfaces may be too rough and uneven for most installations and may require the use of a self-leveller or smoothing before installing carpet. Attention must be given to the “open time” requirements of the adhesive manufacturer when adhering carpet to these surfaces.



ASPHALT

For approved flooring materials, it is required that asphalt surfaces be clean, dry, free from excessive oil and grease, and in good condition. Cure new asphalt for at least 90 days, or longer, depending upon weather conditions. Follow adhesive manufacturer's requirements.



PAINTED SURFACES

Painted surfaces may be suitable for adhesive application; however, bond tests are recommended. Glossy surfaces must be abraded prior to installation. Contact the adhesive manufacturer for requirements.

NOTE

Lacking documented evidence to the contrary, e.g., current testing, assume that all paints contain lead and treat them in the manner prescribed by existing lead abatement regulations.

PRIMERS

Using primers on floor surfaces generally is not required except for sanded wood sheet products and dusty, porous or acoustical concrete surfaces. Primers are not designed to reduce moisture vapour emissions and should not be used for that purpose. They should be compatible with adhesives, which can only be applied after the primer is cured. Where lightweight or acoustical concrete substrate is present, refer to manufacturer requirements for the proper installation procedure to use before the carpet is installed.

NOTE

Substrate primers are recommended by some manufacturers for specific carpet installations to enhance adhesion.

CHEMICAL ADHESIVE REMOVERS AND ABATEMENT CHEMICALS

These products are not recommended for use on a substrate that will receive a floor covering.

SWEEPING COMPOUNDS

Do not use sweeping compounds prior to adhesive application. The residue from these compounds interferes with adhesive bonding. Be sure to vacuum dusty areas instead. Vacuum cleaners are required to have a properly functioning filter per OSHA and/or EPA requirements.

PRODUCT ACCLIMATION

It is recommended that carpet and installation materials be allowed to acclimate in the installation area for a minimum of 24 hours at a temperature of 65-95°F (18-35°C). Carpet must be adequately protected from soil, dust, moisture and other contaminants. Follow manufacturer's instructions for acclimation.

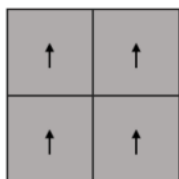
CARPET TILE

Carpet Tile IS defined as various shapes and sizes of carpet precut during manufacturing with applied backings.

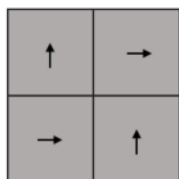
CARPET TILE INSTALLATION

Due to the variation in tile size, shape, backing and installation methods (monolithic, ashlar, quarter turn, etc.) follow the carpet manufacturer's recommendations.

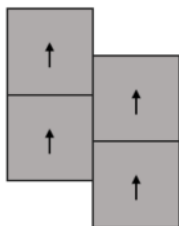
Square carpet tile



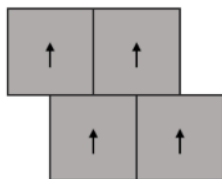
Monolithic



Quarter turn

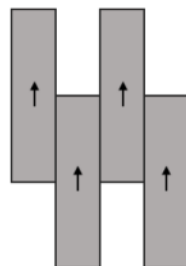


Ashlar

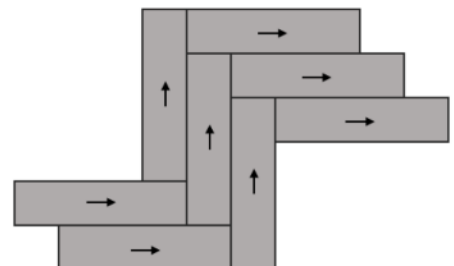


Brick

Plank carpet tile



Ashlar



Herringbone

LAYOUT

Refer to the [Planning](#) section of this document (pg4). To ensure straight-square installations, apply at least two perpendicular chalk lines onto the substrate (at a 90 degree angle to each other). These chalk lines should extend the entire length and width of the area to be covered. A laser line can be also utilised for this purpose. The location and intersection point of the chalk lines should be determined to achieve the design intent and reduce waste.

NOTE

The intersection point mentioned above may or may not be in the centre of a room in order to achieve the design intent.

ADHESIVE APPLICATION

Generally, a thin film of pressure-sensitive adhesive is applied and allowed to completely dry. The design of the adhesive is to prevent lateral movement of carpet tiles and for easy removal/replacement. Due to varying carpet tile backing, adhesive recommendations will differ. Follow manufacturer's recommendations.



NOTE

In order to prevent adhesion issues or contamination, old adhesive residue must be removed and encapsulated prior to application of new adhesive.

TILE JOINTS

Tile in the completed installation should be tight but not compressed. To ensure proper spacing when installing carpet tile, measure the distance covered by 10 tiles installed on the floor with no visible gaps, peaks or overlaps. The measurement should be equal to 10 times the tile size +/- 1/4 inch unless otherwise stated in the manufacturer specifications. This measurement is an indication of correct placement of tiles to prevent compression or gapping between tiles. Take care not to trap yarn between tiles.

ROLLING

Refer to manufacturer recommendation for roller weight. Rolling, if required, should be performed to press the tile into the adhesive.

DEFINITION OF TERMS

TERM	DEFINITION
Adhesive	A substance that dries to a film capable of holding materials together by surface attachment. Applying adhesive to the floor normally is accomplished with a trowel, airless spray, or roller.
Adhesive transfer	The degree of coverage and penetration of the applied adhesive into the back of carpet while still maintaining full coverage of the floor. The degree of coverage may be influenced by adhesive type, method of installation, open assembly time and other factors.
Alkali	Having a pH greater than 7.
Attached cushion	Cushion material permanently bonded to the back of carpet by the manufacturer.
Baseboard	A board skirting the lower edge of a wall, covering the junction of the wall and the floor.
Broadloom	Carpet manufactured in a roll format.
Calcium chloride test	ASTM F1869 test method that is used to obtain measurements of moisture vapour emission rates over concrete substrates.
Carpet cushion	Material placed under carpet to provide resiliency, support, insulation qualities and noise reduction; also referred to as carpet lining, padding, or underlay, although “carpet cushion” is the preferred industry term.
Carpet Tiles	Various shapes and sizes of carpet precut during manufacturing with applied backings.
Conditioning	The process of allowing the substrate, carpet, cushion and sundries to relax or acclimate to the proper environment into which it is to be installed as described in the text.
Curing Compounds	Chemicals used to accelerate the curing time of concrete. These can be adhesive bond breakers.

TERM	DEFINITION
Delamination	A separation of the carpet's primary and secondary backing.
Direct glue down	This is an installation method where carpet is adhered to the substrate using the proper adhesive.
Dry line	This is a length of line or cord, which is stretched slightly above the carpet, but not touching the carpet, and used as a visual reference in pattern alignment. Lasers also may be used in this capacity.
Edge Ravel	A condition of yarn loss in installed carpet when the edges begin to fray.
Expansion Joint	A mid-structure separation designed to relieve stress on building materials caused by building movement.
Gully	The distance between the tack strip and the wall. A gully should always be slightly less than the thickness of the carpet and not exceeding 3/8 inch.
HVAC	Acronym for "heating, ventilating, and air conditioning" referring to indoor climate control systems.
High Moisture Carpet Adhesive	This is an adhesive that will work in a high moisture environment, however it does not act as a moisture barrier. See adhesive manufacturer for warranty information.
Open time	The earliest time interval between the spreading of adhesive on a substrate and the placement of a floor covering material into the adhesive for bonding.
Patching	Floor preparation process of filling holes, cracks, and imperfections, etc., in a floor substrate prior to installation of carpet
pH	A value representing the concentration of hydrogen ions in gram equivalents per litre used to indicate the acidity or alkalinity (base) of a substance on a scale from 0 to 14 with 7 representing neutrality, numbers less than 7 increasing acidity, and numbers greater than 7 increasing alkalinity. Use distilled water for laboratory and field testing for pH.

TERM	DEFINITION
Plasticizer	A substance incorporated into polyvinyl chloride polymer or other polymers to increase flexibility and workability.
Primer	A preparatory coating placed on a substrate or material to promote adhesion and neutralise pH.
Riser	The upright part of a step between two stair treads.
Sealer	A product used to reduce the porosity of the substrate.
Substrate	A general term that means any surface below another surface, but which in the floor covering industry, most often refers to the stabilising layer of material directly beneath the finish flooring.
Tread	The horizontal part (walking surface) of a stair.
Trowel	Hand implement used for metering and spreading adhesive to the floor or other substrate.
Trueness of edge/ Bow in length	It is generally measured as maximum deviation from a straight line, over a defined distance, between common pattern points along the machine direction of the carpet.
Tufted carpet	Carpet manufactured by the process of inserting pile yarns into a primary backing fabric through needles.
Working time / Slip time	The length of time available after covering the adhesive with carpet to make adjustments or manipulate the carpet.

CARPET TILE TROWEL SIZE MINIMUM GUIDELINES

Applicator size	Approx Spread Rate feet ² / gal	Approx Spread Rate yards ² / gal
3/8" (9.5mm) Nap Paint Roller	350 - 400	35 - 45
3/4" (19.0mm) Nap Paint Roller	270 - 360	30 - 40

NOTE

Above dimensions are given as width x depth x spacing. Spread rates vary with texture and porosity of the substrate. Trowels should be held at a consistent 45–60° angle to apply adhesive. Examine notches regularly for wear.

ADHESIVE TYPES

TERM

Multi-purpose
Adhesive

DEFINITION

A latex adhesive designated for use with varying carpet types as well as non-vinyl backed (mineral-felt backed) resilient sheet goods.

Modular-Carpet Adhesive

Pressure sensitive type adhesive for releasable installation of modular carpets. Note: Always consult manufacturer for proper type adhesive.

Polyurethane Carpet
Adhesive

For installing specific polyurethane backings. Refer to adhesive manufacturer.

Contact Adhesive

Used for bonding various carpet edge mouldings to a substrate. It can be used for adhering carpet to difficult or irregular surfaces.

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