# SIGNATURE FLOORS TECHNICAL INFORMATION MANUAL - CARPET TILE



### TECHNICAL INFORMATION MANUAL - CARPET TILE

# ABOUT THIS GUIDE

At Signature Floors, we understand that the long term performance of our products depends on a number of contributing factors. The final floor finish is only one of those factors. A good preparation is essential for a smooth installation.

All Signature Floor products can be installed on concrete, timber, ceramic and many other sub-floors which have been suitably prepared. The effective application is dependent on suitable site conditions, correct subfloor preparation and dryness, the workmanship of the installer, how the product is maintained and the selection of the correct floorcovering are all equally important.

Signature Floors aim is to provide proactive information on to architects, specifiers, designers and consumers to ensure the optimum performance of all Signature Floors products.

If you have any queries regarding product selection, specification, installation, performance or maintenance of any Signature Floors products, then do not hesitate to contact us. Our aim is to resolve problems prior to the installation of our products rather than have problems to resolve after they are installed.



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#### INTRODUCTION

The current AS/NZS 2455.2 provides detailed commentary on the recommendations for the installation of Carpet Tiles on both new and existing floor surfaces. Signature Floors consider AS/NZS 2455.2 to be best minimum industry standard for the installation of all carpet tiles and is fully endorsed by Signature Floors.

This technical manual is intended as a guide to all parties involved in the specification, installation and maintenance of Signature Floors Carpet Tiles. Signature Floors always recommends the use of reputable flooring designers, whose experience in installation and project management will prove invaluable at all stages of a project. Selecting a flooring contractor solely on price can lead to a poor installation and a discontented consumer. A successful installation not only depends on the skills of the floor layer, but also in the planning and management of the project prior and during installation. Open lines of communication between all parties concerned will eradicate any problems and will ensure a successful installation, which meets the design requirements within the allotted time scale.

#### Product selection

Carpet Tiles are incredibly versatile materials, which comes with a long list of benefits such as performance-to-cost ratio, life cycle maintenance costs, Greentag certification, product stewardship, low VOC's, fire resistance, dimensional stability and that it can be recycled.

Selection of the most suitable floorcovering is of utmost importance. Not only must the floorcovering meet the designer's initial colour and design, but the performance criteria of the product must be sustainable for the anticipated life of the product, allowing for foreseeable actions such as general wear and tear and regular maintenance

Consideration at the initial specification stage must be given to the occupational usage of the building and the building type. Particular attention must be paid to the type and density of traffic (both pedestrian and wheeled), any special acoustical, electrical resistance or slip resistance requirements, as well as reaction to chemicals and staining agents, and physical properties such as resistance to point and rolling loads. Colour selection is also critical to the longevity of the installation, light colours will always show more dirt and stains than darker patterned tiles.

If you have any concerns regarding the suitability of your selected product please contact Signature Floors. Our Sales Team and After Sales Department can provide advice on the suitability, performance and application of any of the Signature Floors products.



#### **MOISTURE TESTING**

Signature Floors Carpet Tiles should only be laid on subfloors which do not suffer from rising damp or hydrostatic pressure, and where the moisture level does not exceed that of the levelling compounds and adhesives that are being used when tested in accordance with ASTM F2170.

Relative humidity in-situ probe test carried out as per ASTM F2170 is the only method of testing acceptable to Signature Floors. Subfloors with a relative humidity and surface pH exceeding that of the below chart for PVC backed products, and or any proprietary materials being used will invariably cause failure of the bond between the substrate and floorcovering.

To prevent these situations arising, Signature Floors does not condone the practice of installing Carpet Tiles on subfloors with a moisture content that exceeds the limitations of the levelling compounds and adhesives being used, and accepts no responsibility for non-performance of Signature Floors products in such instances.

MAXIMUM ALLOWABLE RH & PH TEST RESULTS		
	PVC Backing	PET Backing
RH Content	85%	90%
Surface pH	7-9	7-10

For RH and pH test results that exceed the above chart please contact Signature Floors for further technical advice.

Signature Floors does not recommend the use of penetrative moisture barrier systems that cannot be tested for application or performance, or do not have the ability to contain high surface pH. Signature Floors only recommends the use of topical moisture and pH barrier systems, such as epoxy and polyurethane.

NOTE: If the subfloor moisture content falls outside of these parameters please contact Signature Floors for further instructions before commencing the installation. Signature Floors will not be responsible for any moisture related installation failures if these guidelines are not strictly followed.

#### New Concrete

The most common cause of failure in these types of substrate is moisture, either as construction moisture that has not had sufficient time to evaporate, or the absence of an effective vapour barrier used in 'on ground' construction.

#### **Construction Moisture**

Concrete substrate moisture is a significant problem which can be either temporary, caused by the original construction procedures or can be a continuing problem, caused by ground moisture traveling up through the slab on grade.

In new construction the excess water in the concrete needs time and conditions which allow it to dry out before installing floor coverings. Placement methods and curing compounds of the concrete will have a big effect on the moisture evaporation rate, not to be confused curing rate of the concrete surface. Ambient temperature, humidity and the environment are also contributing factors in the drying time of concrete.

Prior to laying any Signature Floors Carpet Tiles, it is essential that all free water, which can affect adhesion, be allowed to evaporate from the base or be treated with a moisture mitigation system. Please contact Signature Floors for further advice in this situation.

CHART 1.

#### **Existing Concrete**

Existing concrete and as described in BCA, if laid directly to ground, must contain an effective DPM. If one is not present or is suspect, a suitable surface DPM (Damp proof membrane) should be applied.

A DPM, as the name suggests, is typically a water proof barrier in the form of a thick plastic sheeting designed to prevent the passage of moisture through it. These are normally used beneath a foundation concrete slab.

The BCA introduced the compulsory use of DPM's on the mid 70's. It is recommended to treat all 'on ground" concrete sub-floors prior to this time as they do not have an effective DPM. Preparatory works should be carried out in accordance with proprietary materials that are being used.

In some instances, a cementicious smoothing compound of at least 3mm thickness should be applied prior to the installation of the Carpet Tiles. The smoothing underlayment supplier will provide details on which product within their range must be used to suit the end use application and subfloor construction, together with details of which primer should be used.

#### **Power Floated Concrete**

A power trowel (also known as a "power float", "helicopter" or "trowel machine" or "whirlybird") is a piece of light construction equipment used by construction companies and contractors, to apply a smooth finish to concrete slabs. Concrete substrates that are 'over worked' with a power trowel can create a crust on the surface of the concrete that slows the drying time of the concrete and creates a smooth dense surface that is difficult to bond to, due to the impervious nature of the surface. It is recommended that highly burnished concrete surface are mechanically prepared with the use of a concrete grinder or shot blasted to remove the top surface and then made good.

#### **Curing Agents**

Surface hardeners or curing agents should not be used with power floated concrete, as these can also impair the adhesion of the floorcovering and should be mechanically removed.

#### Moisture Barriers

Signature floors does not recommend the use of penetrative moisture barrier systems that cannot be tested for application or performance, or do not have the ability to contain high surface pH. Signature Floors only recommends the use of topical moisture and pH barrier systems, such as epoxy and polyurethane.

Facts Everyone Should Know About Flooring Installations - Over Concrete

1. The relative humidity cannot be known simply by visually inspecting a sub-floor and coming to the conclusion it is dry by sight and/or touch.

2. All concrete regardless of age or grade-level emits some degree of moisture and must be tested prior to installation.

3. Signature Floors will only recognise the in-situ probe RH moisture testing as their primary criterion for determining moisture content of a concrete substrate, since it is the only quantitative measurement of moisture.

> 4. Surface tests do not comply with current testing standards, and are only subjective, at best, in their interpretation.

5. Signature Floors do not warrant against substrate moisture, and recognise the limits in chart 1 on page 4 as the maximum allowable amount of moisture content, but this must be also be compatible with any proprietary materials used for the installation.

6. Flooring contractors who do not test for moisture prior to flooring installations run the risk of total liability for a moisture failure

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#### SUB-FLOOR PREPARATION

The finished appearance of a floor covering will only be as good as the quality of the base over which it is installed. Any irregularities in the sub-floor will show through the finished floor. Careful sub-floor preparation is vital for an excellent floor appearance and good installation. The sub-floor must be hard, flat, smooth, clean, dry, and free from defects, contaminants and fit for purpose.

#### Concrete

A suitable levelling compound can be used to ensure that no irregularities show through to the surface of the finished floor. However, the selection of suitable materials, including smoothing and levelling compounds and any ancillary products is dependent upon the end use of the completed flooring, and must be agreed by the supplier of the preparative materials and the flooring contractor.

Any proprietary materials used for floor preparation must be used in accordance with the manufacturers' recommended instructions.

In all cases, the sub-floor must be sufficiently dry and the RH (relative humidity) checked to ensure it is not greater than that of any proprietary materials that are being used when tested in accordance with ASTM F 2170

#### Timber

New timber suspended floors should be constructed of either tongue and groove, plywood or chipboard specifically manufactured for flooring. Spacing of the supportive joists should be in accordance with the manufacturer's recommendations in relation to the board's thickness and the BCA.

When underlayment panels are used, they must be underlayment grade as specified and warranted by the manufacturer. Underlayment panels and joints must be fastened and reinforced according to manufacturer's instructions. Completely sand the floor with a floor sander, so that the floor is smooth and flat before installing underlayment panels. Without sanding properly, timber substrates can have high and low spots throughout the floor that could telegraph through the Carpet Tiles. Signature Floors recommends the use of an underlay or underlayment on all timber substrates, to ensure stability and uniformity.

Any failure of the underlayment or flooring due to the underlayment is NOT the responsibility of Signature Floors.

All timber substrates must have a minimum earth clearance of 400mm in accordance with the BCA and have well-ventilated air space beneath it.

#### General

Where existing timber, plywood or particleboard subfloors are to be used as a substrate worn, rough, cupped or warped surfaces shall be sanded or filled, but must retain structural adequacy. In some circumstances, it may be necessary to re-nail the old floor or to repair it by replacing the worn and unsound sections

Without good ventilation, the application of an impervious floorcovering could lead to dry rot in the structure beneath.

Most smoothing compounds are unsuitable for applying to timber bases due to the movement of the base. Seek advice from the smoothing underlayment manufacturer for the correct grade of product for your specific application.

#### **OTHER SURFACES**

#### **Existing Coverings and Finishes**

Signature Carpet tiles may be installed over other hard floors. Any surface contaminants must be removed prior to installation of new carpet tiles. All other existing floorcoverings such as existing carpet, underlay, loose laid vinyl, cushion back vinyl and existing adhesives must be uplifted and the completely removed.

Existing adhesives must be mechanically removed.

#### Magnesite

Magnesite is made from calcined (or burnt) magnesite and various organic and inorganic fillers such as wood, sawdust, ground silica and talc, mixed together with a solution of magnesium chloride, magnesite flooring is extremely rich in chlorides, resulting in problems of sweating, diffusion of chloride ions into the concrete substrate and metal corrosion and highly absorbent, usually seen as lumps appearing below the existing floor coverings or cracks in the floor tiles.

Signature Floors recommend that any magnesite screed be uplifted and the substrate mechanically prepared prior to the installation of new floor coverings.

#### Terrazzo

The floor must be sound and firmly fixed and any loose or powdery material removed from the joints. The surface should be prepared with a light grind to remove any surface contaminants and any cracks cleaned out and filled with a suitable resin bonded cement/sand mixture. In most instances, a cementitious smoothing or levelling compound of at least 3mm thickness must then be applied to provide surface porosity for acrylic adhesives prior to the installation of the vinyl floorcovering.

#### Screed Bases

Sand/cement screed bases are not a suitable substrate for the installation of floor coverings and a suitable levelling compound should be applied.

#### **Ceramic Tiles**

Before installing over ceramic or quarry tiles, ensure the floor must be in good condition before you can begin installing carpet tiles. Check for loose, cracked or broken areas of ceramic tile. These areas will need to be removed with a hammer and chisel and thoroughly cleaned of all debris.

The floor must be sound and firmly fixed and any loose or powdery material removed from the joints. The surface should be prepared with a light grind to remove any surface contaminants and any cracks cleaned out and filled with a suitable resin bonded cement/sand mixture. In most instances, a cementitious smoothing or levelling compound of at least 3mm thickness must then be applied to provide surface porosity for acrylic adhesives prior to the installation of the resilient floorcovering.

Information of the best method to prepare a ceramic or quarry tile floor should be sort from primer and levelling compound manufacturer

#### Metal Bases

Metal bases are generally, but not exclusively, steel and can be contaminated with rust or oxidisation, oil and grease. The surface should be thoroughly degreased and then abraded or wire brushed to remove the rust or oxidisation. Any high spots may need to be ground off.

In most instances, but not where there is excessive vertical or lateral flexing or movement, a cementicious smoothing compound of at least 3mm thickness must then be applied prior to the installation of the carpet tiles.

#### **Access Panels**

On access floors, the edge of the tile must NOT line up with joins in the access panels. The edge of the of the tile must be sufficiently far enough away from, the access panels joins that it will not be effected by lateral movement.

#### Painted or Epoxy Coated Floors

Before installing over painted or epoxy floors, ensure the floor must be in good condition before you can begin installing Carpet Tiles. Check for loose, cracked or broken areas of the surface. These areas will need to be removed mechanically and thoroughly cleaned of all debris.

The floor must be sound and firmly fixed on any loose or powdery material. The surface should be prepared with a light grind to remove any surface contaminants and any cracks cleaned out and filled with a suitable resin bonded cement/sand mixture.

### **CARPET TILES** TECHNICAL INFORMATION MANUAL

#### TRANSITIONS

#### **Expansion Joints**

Expansion joints are placed in concrete substrates to allow for expansion and contraction of concrete during and after placement. They are designed as a movement joint and as such must never have floor coverings installed on them without an expansion joint cover. It is important that these joints extend through the floorcovering.

Never lay Signature Floors products over expansion joints.

Proprietary expansion joint covers are available which blend with the floorcovering and disguise the joint. Some are made of vinyl that incorporates a flexible portion and are welded to the abutting vinyl to form an impervious layer. Other types are a combination of aluminium and PVC, which again contains a flexible section.

Correct treatment at expansion joints is also essential if the floor is going to last and perform in a safe and hygienic manner. We recommend that expansion joints are covered using either a PVC expansion joint cover, or a cover with a PVC insert.

Filling the expansion joint with sealant which is not specifically designed for expansion joint filling or floor smoothing underlayment will lead to floor failure and is not recommended by Signature Floors.

#### Edge Trims

In many of the areas where Signature Floors Carpet Tiles are installed, other types of floorcovering will also be used. The junction between the Signature Floors flooring and these other types of floorcovering is a potential weak point, if not treated properly. Correct installation minimises problems such as trip hazards and damage to carpet.

The use of proprietary patching and levelling compounds is recommend to make the transition between floor surfaces smooth and gradual.

#### **Ceramic Tile Transition**

In installations where the carpet tiles join with ceramic tiles or the like, it is important that a smooth transition is achieved at the junction. Aluminium edge trims are recommended for this purpose. They enable a flush cut with the trim, while providing an excellent guide to apply patching and levelling compounds.

#### **Carpet Transition**

It is important that the junction between Carpet Tiles and broadloom carpet is clearly visible and that any trip hazard is minimised by using edging strips. A variety of edging strips are available for this junction. The relevant manufacturers can supply further advice on installation and use of these types of trims.

#### **Diminishing Strips**

Diminishing strips should be used at all exposed edges of Signature Floors carpet tiles when they are not abutting another flooring material to minimise trip hazards.

**ADHESIVE** 

The list of Signature Floors approved adhesives can be found at www.signaturefloors.com.au.

There is no single adhesive that's suitable for all types of Carpet Tiles.

The selection of the most appropriate adhesive is generally made by the floor covering manufacturer and specified in the installation instructions.

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#### **Pressure Sensitive Adhesive**

Pressure Sensitive Adhesives are solvent free and low odour. They are specially formulated for installing PVC backed and fibre backed, cushion backed Carpet Tiles. There are many acrylic adhesives on the market. Most are water based, which means that the curing action occurs when the water evaporates into the porous substrate after the adhesive is applied. They can classified as semi-soft set or pressure sensitive for a semi-permanent installation.

#### **Contact Adhesive**

Contact adhesives have a solvent, neoprene or water base and are classed as soft set. The adhesive is applied to both surfaces and allowed to dry before the two surfaces are brought together.

When the surfaces contact each other the bond is instant. This makes them suitable for use on vertical surfaces, such as vinyl skirtings and covings. Note that the adhesive is not waterproof, so the exposed edges must be sealed to stop water penetration.

#### **Application of Adhesive**

If the subfloor is porous, it should be primed using a primer compatible with the adhesive, as recommended by the adhesive manufacturer.

Signature Floors Australia recommends the use of a 10mm to 12mm nap roller to be used to apply the adhesive. This roller needs to be maintained during the application of the adhesive in order to ensure an even coverage of adhesive.

#### Installation of Signature Shapes<sup>™</sup>

Where five or more tiles meet at any single junction, Adhesive must be applied with a V1 notch trowel. Roller application is not permitted.

It should be noted that Signature Floors do not approve any methods of applications of adhesive such as direct spraying that cannot guarantee the amount of adhesive applied.

Adhesive manufacturers provide details of the open time, and their instructions should be followed. Ideally, the floor area should be divided into workable sections.

#### Installation of Comfi Bak Tiles

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Adhesive manufacturers provide details of the open time, and their instructions should be followed. Ideally, the floor area should be divided into workable sections.

#### **Removal of Excess Adhesive**

Ideally all excess adhesive should be removed as work proceeds. Water based adhesive can, before it is dried, be easily removed using a damp cloth. For removal of specialist adhesives follow the manufacturer's guidelines. Dried adhesives are more difficult to remove and the majority should be removed using a spatula without damaging the flooring. Once this is done, a proprietary cleaning agent, as recommended by the adhesive manufacturer, can be used sparingly. Always test a trial area first in an unnoticeable area, as many of the stronger cleaners contain solvents which can cause staining and softening of the vinyl.

#### **INSTALLATION OF CARPET TILES**

	Site Lay
1.	The starting point in a modular installation must be be positioned to utilise the largest perimeter cut m
2.	Snap a chalk line parallel to one major wall bisectic center chalk line to assure perimeter modules will
3.	A second chalk line must be snapped from the sta accomplished using a 3-4-5, 6-8-10, or larger trian Meters or feet may be used to lay out the triangle

#### Illustration A:



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be as near to the center of the room as possible and must nodule size.

ting the starting point. It may be necessary to offset the I be at least half size.

tarting point at 90° to the first line. This can be ngle, depending on the room size (see Illustration A). in these proportions.

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## **CARPET TILES** TECHNICAL INFORMATION MANUAL

#### Installation

Each module has directional arrows on the backing. This allows for one-directional or multi-directional installation. Please refer to each product specification sheet to determine the allowed method of installation.

NOTE: Lineal patterns when installed directional may produce an undesired effect when lines of the same colour meet on two edges. Installers need to monitor this during installation and reposition tiles where appropriate. Patterns that are random in nature may contain additional colour ways to the ones displayed on the samples. Please consult your commercial sales consultant for further information.

- Installation must begin at the intersection of two chalk lines. Installation must continue until completed in one quadrant, and then proceed to an adjoining quadrant until all four quadrants are completed. Larger areas may require chalk lines bisecting the original four quadrants.
- Install modules using the pyramid technique. This allows multiple alignment checks. If the edges do not align and the misalignment increases with progression of the installation, the source of the problem must be identified and corrected. It is even more critical in non-square shapes to regularly check the alignment of the modules are in alignment.
- The pyramid theory should be used also in non-square shapes see below for details by shape
- A third chalk line should be used as directed below for particular shapes as an added guide.
- Slide modules into position to prevent yarn from being trapped between the modules. Trapped yarn will adversely affect the appearance of the installation and will cause alignment problems.
- Modules must fit snugly, but not be compressed. Check for fit by measuring the length of ten (10) full modules after installation. The measurement must not be less than, or exceed by more than 6mm, the length of the modules being multiplied by ten (10) For example: if 500mm X 500mm modules are being installed, the measurement should be between 5000mm and 5006mm.

#### Post Installation Care



#### Installation on Stairs

Signature Floors Carpet Tiles can be installed on stairs. It is highly recommended that separate pieces be cut and applied to the step and riser. The junction should be covered with an appropriate nosing, both for aesthetic value and safety. Size of cuts and types of nosing will depend on the style of stairway and type of environment.

The square and rectangle are the only 2 shapes allowed for installation over stairs. See below for directions. It is not recommended to install triangle, right-angle, hexagon, and trapezoid to stairs.

#### Riser

Always ensure that the arrow on the back of the Carpet Tile is pointing down the riser. The riser of the Carpet Tile is securely held in position by the stair nosing and adhesive.

#### Tread

Arrow must run into the step at a right angle. Apply adhesive to the entire tread. Then fit stair nosing.

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#### **Carpet Tile Installation Methods**

When selecting the installation method for carpet tiles, consideration must be given to the design and construction of the Carpet Tiles, as well as the level of foot traffic they will be subjected to. Consideration of the above points will assist in maximizing the performance and appearance retention of carpet tiles. Please contact your local area sales representative to discuss the installation options prior to the installation and always refer to the recommended Carpet Tiles installation quidelines.

NOTE: Each Carpet Tile has a directional arrow printed on the backing to show the pile direction



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#### QUARTER TURN

In guarter turn, the arrows on each second tile should be turned 90°. Each tile will appear to be slightly different colour when quarter-turned due to varying pile directions.

This installation method is suitable for Heavy Duty Commercial traffic areas.

### DIRECTIONAL

All arrows must point in the same direction when directionally installing Carpet Tiles. Please note that lineal patterns when installed directional, may produce an undesired effect when lines of the same colour meet on two edges.

This installation method is suitable for Light-Medium Commercial traffic areas.

#### **ASHLAR**

This type of installation requires all arrows to point in the same direction with each column of carpet tile shifted 1/, the length of the previous column.

This installation method is suitable for Heavy Duty Commercial traffic areas.



### BRICK

This type of installation requires all arrows to point in the same direction, with each row of carpet tiles shifted  $1/_{2}$  the width of the previous row.

This installation method is suitable for Light-Medium Commercial traffic areas.

### RANDOM

As the name suggests, all tiles must be installed in a random manner without paying attention to arrow direction, creating a unique pattern.

This installation method is suitable for Heavy Duty Commercial traffic areas.

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#### SHAPES: HEXAGON INSTALLATION

application is not permitted.

### PLANKS: BRICK BOND



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PLANKS: BASKETWEAVE



SHAPES: PENTAGON INSTALLATION



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