

CAVALIO

EXCEPTIONALLY STYLISH FLOORS

CONCEPTLINE



PROJECTLINE



LOC



TECHNICAL GUIDE

INTRODUCTION

Cavalio luxury vinyl tiles and planks create superb looking floors, combining the latest print film technology with the benefits of a vinyl wear layer.

The aim of this guide is to take you through all the aspects of installation to ensure your work meets the highest standards. Success is based on good preparation, communication between parties, attention to detail and by following instructions.

Each stage of the installation is explained starting with the subfloor, progressing through to the hand over to the customer and post installation maintenance.

Selecting the right product for the end use location is critical. The main classification feature is the thickness of the wear layer. The thicker the wear layer, the higher the use area classification and the more traffic it can withstand. If in doubt, select the thicker wear layer product which, if over specified means that the product will last longer.

By using standard borders and corners or complementary feature strips or design strips, both traditional and contemporary designs can be produced to suit the end use location.

At Cavalio all we ask is that if you are having problems with your installation you stop work and contact our Cavalio Technical Service staff who will advise you on how to solve your problem and maybe give you some practical hints and tips to make your job easier.

CONTACT US

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1. PREPARATION OF SUBFLOORS

The quality of a finished installation can be very much dependent upon the preparation of the subfloor and the attention paid to the recommendations made in various local codes of practice and by the manufacturers of the component parts.

The information in this section is provided as guidance based on many years of experience in this field. Ensure reference is always made to local and national standards of the country where the product is to be installed.

It is important to avoid problems at the outset and as such if you are unsure of any of the information listed below, we recommend that you contact the Cavalio Technical Services either directly in the UK, through your local distributor for other countries or through our website cavalio.com. Alternatively, discuss your requirements with your preferred supplier of smoothing compounds and adhesives.

1 NEW CONCRETE AND SCREED BASES

The most common cause of failure in these types of substrate is moisture, either as construction moisture or the lack of an effective moisture barrier on direct to earth subfloors. Failure to adequately control the moisture can subsequently result in debonding of smoothing compounds, adhesives and may promote adhesive related staining of the floor covering.

2 CONSTRUCTION MOISTURE

Prior to laying any Cavalio products, it is essential to ensure that all free water, which can affect adhesion, is allowed to evaporate from the base. The rate of drying is influenced by many factors including design of the base, ambient temperature and humidity, concrete quality, amount of construction water used, surface finish attained, use of special concrete additives and especially the thickness of the base. Exact drying out times cannot be provided due to these variabilities, however, as a guide,

allow one month per 25mm for the first 50mm and an increasing time for each millimetre above this thickness.

For example, a base 150mm thick in monolithic construction, drying from one face only, can take up to twelve months to dry sufficiently in order to take a floor covering. At the planning stage if it is obvious that there will be insufficient drying time, then the situation should be discussed with Cavalio Technical Services, who can offer proven alternatives to suppress the construction moisture.

3 MOISTURE TESTING

Unless specifically stated within the individual product range literature Cavalio flooring should only be laid on subfloors which do not suffer from rising damp or hydrostatic pressure, and where the moisture level does not exceed 75% RH.

The Hygrometer is the only method of test acceptable to Cavalio, and only readings taken over at least a 72 hour period should be considered to represent the moisture content of the subfloor.

KEY POINT

Solid substrates should NEVER exceed 75% RH

Subfloors with a relative humidity in excess of 75% will invariably cause failure of the bond between the substrate and the floor covering, and in some cases, discolour the flooring. To remedy such situations, the whole floor covering will have to be removed, the subfloor treated to resolve the moisture problem and a new floor covering laid. In an occupied building, this can cause severe disruption to the work routine.

To prevent these situations arising, Cavalio does not condone the practice of laying luxury vinyl tiles on subfloors with moisture content readings above 75% RH and accepts no responsibility for non-performance of Cavalio products in such instances.

4 EXISTING CONCRETE AND SCREED BASES

Existing concrete and sand/cement screed bases as described in BS 8204, if laid directly to ground, must contain an effective DPM. If one is not present or is suspect, a suitable surface DPM should be applied.

KEY POINT

When installing Cavalio luxury vinyl tiles it is ESSENTIAL to apply a cementitious smoothing compound of at least 3mm thickness.

In all instances, a cementitious smoothing compound of at least 3mm thickness must be applied wherever the Cavalio luxury vinyl tiles is to be installed; this must be done prior to the installation of the floor covering. The smoothing underlayment supplier will advise on the correct product to use from their range that suits both the end use application and subfloor construction. If applicable, they will also advise on the correct primer to apply.

5 POWER FLOATED CONCRETE

Power floated concrete bases as described in BS 8204, if laid directly to ground, must contain an effective DPM. If one is not present or is suspect, a suitable surface DPM should be applied.

Smooth dense concrete subfloors — such as those created by a power floated finish — can prove difficult to bond to, due to the impervious nature of the surface. In such instances, the floor should initially be shot blasted to remove the top surface and then made good.

In all instances, a cementitious smoothing compound of at least 3mm thickness must be applied wherever the Cavalio luxury vinyl tiles is to be installed; this must be done prior to the installation of the floor covering. The smoothing underlayment supplier will advise on the correct product to use from their range that suits both the end use application and subfloor construction. If applicable, they will also advise on the correct primer to apply.

Surface hardeners or curing agents should not be used with power floated concrete, as these can also impair the adhesion of the floor covering.

6 MASTIC ASPHALT UNDERLAY

Mastic asphalt underlays as described in BS 8204: Part 5 should conform to BS 6925 Comprising asphaltic cement and suitable aggregates, the asphalt is applied in its hot state onto a glass fibre quilt.

KEY POINT

Never apply Cavalio floor coverings directly onto a mastic asphalt subfloor.

Normally a thickness of 15mm to 20mm is applied and the asphalt brought to a finish with a wooden float. The resulting underlay is impervious to moisture and, if continuous with the DPC in the walls, makes an excellent subfloor for Cavalio luxury vinyl tiles, providing a 3mm thick smoothing underlayment is first applied.

The asphalt must not just be skim coated it is important to ensure that the smoothing underlayment is of a type recommended for use on asphalt floors and that a suitable primer key coat is applied if directed.

7 MAGNESITE FLOORS

Composition floors which are composed of magnesium oxychloride cement or polyvinyl acetate/cement are highly absorbent. As such, if overlaid with an impervious material, they can break down due to the effects of rising moisture, as the majority of these floors do not incorporate an effective DPM.

In all instances where the material is laid directly to ground, Cavalio recommend that the screed be uplifted and relaid incorporating an effective DPM.

For floors that are on the first floor or above, cracks and small hollows should be patch filled and a cementitious smoothing compound of at least 3mm thickness must then be applied, prior to the installation of the vinyl floor covering. The smoothing underlayment supplier will advise on the correct product to use from their range that suits both the end use application and subfloor construction. If applicable, they will also advise on the correct primer to apply.

8 TERRAZZO

Terrazzo has a dense hard surface, which is normally impervious. The floor must be sound and firmly fixed and any loose or powdery material removed from the joints.

The surface should be thoroughly washed/degreased to remove any surface contaminants and any cracks cleaned out and filled with a suitable resin bonded cement/sand mixture. The surface may also need some mechanical abrasion to enable the smoothing underlayment to key to the surface.

In most instances, a cementitious smoothing compound of at least 3mm thickness must then be applied prior to the installation of the vinyl floor covering. The smoothing underlayment supplier will advise on the correct product to use from their range that suits both the end use application and subfloor construction. If applicable, they will also advise on the correct primer to apply.

9 QUARRY TILES/CERAMIC TILES

Heavily glazed surfaces are quite common with these types of flooring and tiles must be sound and firmly fixed with all loose and powdery grout removed from the joints.

Generally the tiles will require mechanical abrasion of the surface in order to provide a key for the application of a smoothing underlayment.

The surface should be thoroughly washed/degreased to remove any surface contaminants and then a cementitious smoothing compound of at least 3mm thickness must then be applied prior to the installation of the vinyl floor covering. The smoothing underlayment supplier will advise on the correct product to use from their range that suits both the end use application and subfloor construction. If applicable, they will also advise on the correct primer to apply.

10 SYNTHETIC ANHYDRITE/CALCIUM SULPHATE/GYPSUM SCREEDS

These types of screed can be difficult to identify — if in any doubt check with one of our approved adhesive manufacturers or the subfloor preparation products manufacturer prior to commencing the installation.

Always check the screed for moisture prior to installation. Should you suspect the screed to contain excessive moisture seek advice from one of our approved adhesive manufacturers or the subfloor preparation products manufacturer prior to commencing the installation.

These types of screed can also be affected by laitance and moisture in the smoothing compound, resulting in the

loss of bond. Any such laitance should be mechanically abraded and fully removed.

Anhydrite/Calcium Sulphate/Gypsum screeds also require the application of a special primer before the installation begins. In all instances installations on these types of substrate should be discussed beforehand with one of our approved adhesive manufacturers. If a failure occurs, it is normally below the vinyl floor covering and as such Cavalio will not accept responsibility for failure.

11 EXPANSION JOINTS

Expansion joints are incorporated into buildings to permit movement without cracking. It is important that these joints extend through the floor covering.

KEY POINT

Never lay Cavalio LVT's over expansion joints

Proprietary Expansion joint covers which blend with the floor covering and disguise the joint. Some are made of vinyl that incorporates a flexible portion. Other types are a combination of aluminium and PVC which again contains a flexible section.

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 Cavalio.

12 TIMBER SUBSTRATES

New timber suspended floors should be constructed of either 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.

12.1 Chipboard

Chipboard floors are widely used as load bearing substrates; however Cavalio recommends that this type of substrate should be overlaid with plywood sheets conforming to EN 636-3 with a minimum thickness of 5.5mm, as described in Section 16.

For joist centres up to 450mm use 18mm thick load bearing chipboard.

For joist centres of 610mm use 22mm thick chipboard.

All chipboard should comply with EN312, be P grade P4, P5, P6 or P7.

Boards must be conditioned on-site by loose laying them individually or loose stacking them in the temperature and humidity conditions which will prevail in service, for at least 3 days prior to fixing.

Do not lay boards with a moisture content of less than 7% or greater than 18% (when tested using an electrical resistance moisture meter).

12.2 Chipboard floating floors

Cavalio recommends that the chipboard floating floors should be overlaid with flooring grade plywood conforming to EN636-3 with a minimum thickness of 5.5mm, as described in Section 13 below; with the plywood laid half bonded over the chipboard joints, screw fixed or nailed as described in Section 16.

12.3 Plywood

Plywood should be External Grade Class 3 conforming to EN 636-3 with one side sanded.

The boards should be 1200mm x 2400mm and of minimum thickness 18mm.

The boards should be laid with the longer side at right angles to the joists and the shorter side must have solid bearing on the joists.

Fixing should be carried out at 300mm centres with annular (ring-shanked) nails or lost head nails of length at least five times the thickness of the board or divergent staples.

For joist centres of 610mm use 18mm thick plywood.

Plywood sheets must be conditioned on-site by loose laying them individually or loose stacking them in the temperature and humidity conditions which will prevail in service, for at least 3 days prior to fixing.

12.4 Woodblocks/Granwood Flooring

KEY POINT

Do not use sheets with a moisture content of less than 7% and greater than 14% (when tested using an electrical resistance moisture meter)..

Although many woodblock floors appear sound, even when overlaid with plywood, the application of an impervious floor covering on a direct to earth subfloor can cause expansion and lifting of the base.

Cavalio recommends that, in all cases, the woodblock floor be removed and the subfloor brought up to the required standard to accept Cavalio luxury vinyl tiles.

12.5 General

All nail and screw heads must be below the surface of the board and any indentation filled with a suitable flexible underlayment, as should the joints between any boards that have been used to overlay the existing floor.

Due to the extensive choice available of these types of smoothing compounds and differing opinions on priming; Cavalio recommends that advice is sought beforehand with a suitable subfloor preparation manufacturer.

Please note that priming will minimise adhesive usage and maintain the open time of the adhesive and prevent preferential absorption.

12.6 Existing wooden floors

Existing wooden floors may have received a preservative treatment that will cause poor bonding, due to a chemical interaction between the preservative and the adhesive. In such cases, they should not be laid onto directly.

All loose boards should be firmly nailed to the joists and any worn or broken boards replaced. The floor should be sanded to remove high spots and any hollows or cracks filled with a suitable flexible underlayment.

The existing wooden floors should then be overlaid with suitable flooring grade plywood of a minimum thickness of 5.5mm which conforms to EN636-3.

The sheets should be laid with staggered joints.

The plywood should be fixed to existing floorboards using suitable annular ring shank nails of minimum 20mm length; or suitable countersunk wood screws.

Fixings should be at 100mm centres along the edge of each sheet, with a fixing line 12mm from the edge and thereafter at 150mm centres throughout the entire area of the sheet.

Perimeter fixings must not be more than 18mm from the board edges.

Plywood should be conditioned as described in Section 12.3 prior to application of the floor covering.

With suspended timber at ground level, it is of vital importance to obtain good ventilation below the floor through the existence of air bricks. Without good ventilation, the application of an impervious floor covering could lead to dry rot in the structure beneath.

Always seek advice from the smoothing underlayment manufacturer for the correct product for your specific application.

13 OTHER SUBSTRATES

13.1 Metal bases

Metal bases are generally, but not exclusively, steel and can be contaminated with rust or oxidation, oil and grease.

The surface should be thoroughly degreased and then abraded or wire brushed to remove the rust or oxidation.

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 suitable cementitious smoothing compound of at least 3mm thickness must then be applied prior to the installation of the vinyl floor covering. The smoothing underlayment supplier will advise on the correct product to use from their range that suits both the end use application and subfloor construction. If applicable, they will also advise on the correct primer to apply.

13.2 Painted or epoxy coated floors

Epoxy and polyurethane surface coatings should be

removed, in order to ensure that no breakdown of the sub-floor occurs after installation of the resilient floor covering.

Painted floors will impair the adhesion of the LVT and should be removed prior to the application of the floor covering. Mechanical methods such as grinding or blasting are the most suitable methods for removing these coatings. However, where the paint proves difficult to remove, the floor may need to be scabbled. If the epoxy coating is well bonded to the subfloor, it is possible to apply the floor covering after grinding or blasting.

In both instances, the surface should then be made good with a 3mm minimum coating of a suitable cementitious smoothing underlayment applied in accordance with the manufacturer's recommendations, which may include the application of a primer key coat.

13.3 Existing floor coverings

Unless specifically stated within the individual product range literature Cavalio luxury vinyl tiles should never be laid over existing floor coverings and in such instances where this is carried out, Cavalio accepts no responsibility for non-performance of its products.



All existing floor coverings must be uplifted and as much as possible of the old adhesive removed from the subfloor.

Special care must be taken on very old floors, as some products — but not Cavalio — contained asbestos. In these instances, contact Cavalio for further information.

The removed floor coverings should be reclaimed and recycled, providing that there is no heavy contamination.

A suitable floor smoothing underlayment with a minimum thickness of 3mm should then be applied to the whole floor. Failure to remove sufficient adhesive can lead to premature failure of the underlayment.

After uplifting existing floor coverings laid on plywood, used as fabricated underlay, replacing the plywood is almost always necessary.

After uplifting existing floor coverings laid on suspended chipboard; hardboard or plywood subfloors, plywood sheet with a minimum thickness of 5mm should then be applied to the subfloor as described in Section 12.6.

13.4 Access Panels

When access is no longer required beneath a floor and it is proposed for access panels to be overlaid, provided the

panels are sound and level, Cavalio would recommend that a minimum 5.5mm Ply sheet as described in section 12.6 is installed over the access panel and adequately fixed.

A suitable smoothing compound should then be used to fill any joints and hollows as described in section 12.

13.5 Subfloors

In common with the installation of any type of flooring, the subfloor should not only be in sound condition, but also free of any contaminants, like oil, paint, preservative treatments in fact anything that may impair adhesion must be removed prior to installation. Other forms of marking, such as a permanent marker pen must also be removed.

13.6 Surface Regularity

Close attention must also be paid to subfloor levelling. Level, smooth subfloors will vastly improve the aesthetic appearance of any finished floor covering installation.

Cavalio's recommendation would be that the surface regularity should not deviate by more than 3mm when measured using a slip gauge or similar accurate measuring device under a 2m straight edge.

2. TOOLS & EQUIPMENT

As in all trades, a skilled floor layer should have at his disposal a basic set of tools that should be clean and in good condition. The specific choice of tools is dependent upon the individual floor layer's preferences, the size of installation and the amount of preparation required.

The following tools should be considered as part of the basic kit for the operations indicated.

MARKING OUT & FITTING

- Rule
- Chalk line and chalk
- Pencil
- Trammel

INSTALLATION

- Adhesive trowels
- Triangular file
- 68kg articulated roller
- Hand roller
- Bar of long scribe
- Recess scribe (unders & overs)
- Straight edge
- Various trimming knives

PREPARATION

- Long handled broom
- Vacuum
- Hand brush
- Dust pan
- Hygrometer
- Screeding trowel
- Electric drill (slow speed) & rotary paddle
- Bucket
- Spiked screed roller

MISCELLANEOUS

- Claw hammer
- Screwdriver
- Hacksaw
- Handsaw
- Cordless drill & drill bits

SAFETY EQUIPMENT

- Knee pads
- Safety goggles
- Dust mask
- Circuit breaker

OPTIONAL EQUIPMENT

- Bevelling tool
- Mitre shears
- Guillotine tile cutter
- Spotnailer
- Profile template

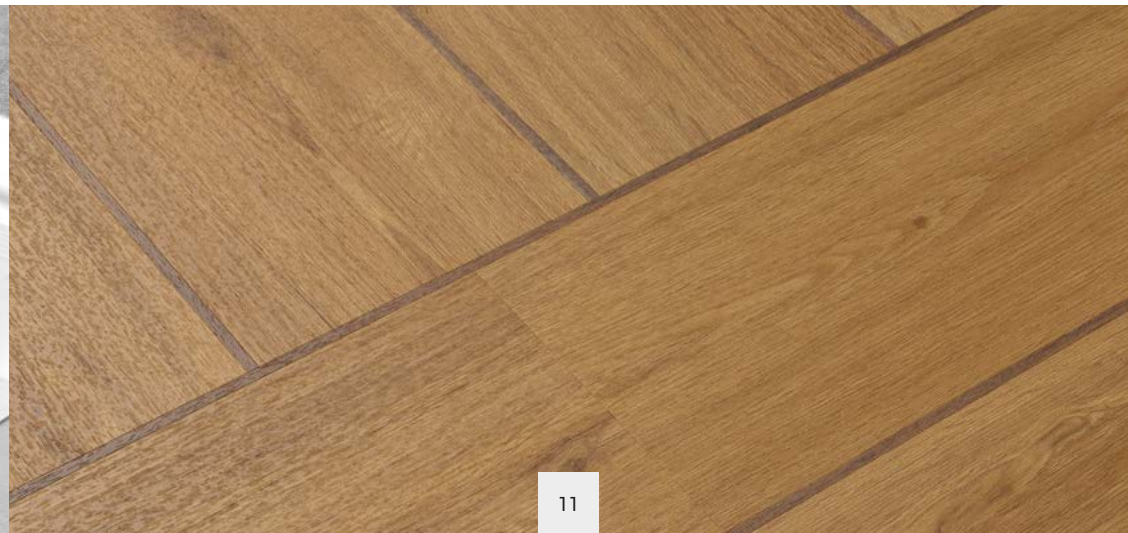
3. FEATURE STRIP CALCULATION

The following information will enable you to calculate how much feature strip is required for the application described. As an approximate guide, the number of strips per full box of tiles is given as well as the approximate length of strip for each tile.

Plank or Tile size	Strip Decoration	No. Strips per box *	No. tiles/planks per box	Calculation for number of Inlay Strips	
304.8 x 609.6mm	All 4 sides	20	18	20 x no. of boxes	1.12 x no. of tiles
457.2 x 914.4mm	All 4 sides	13	8	13 x no. of boxes	1.63 x no. of tiles
152.4 x 914.4mm	Along length only	27	24	27 x no. of boxes	or 1.13 x no. of tiles
152.4 x 1219.2mm	Along length only	27	18	27 x no. of boxes	1.5 x no. of tiles
184.2 x 1219.2mm	Along length only	20	15	20 x no. of boxes	1.3 x no. of tiles

* All strips except Cross Grain Marquetry
 10mm = 50 strips per box
 25mm = 25 strips per box

Please note this information is provided as a guide and does not allow for wastage.



4. INSTALLATION OF LUXURY VINYL TILES

1 RECEIPT & STORAGE

On receipt of tiles and/or planks:

Check that colours correspond to those ordered, that quantities are correct and there is no damage.

In particular, check that tiles/planks are from one batch, if that was requested on the order.

On arrival at site, the tiles/planks should be stored indoors, together with the adhesive, at a consistent temperature of between 18°C and 27°C for at least 24 hours prior to laying.

Following off-loading, boxes should be stacked no more than **five** high during the conditioning period. The boxes should be opened and conditioned in the area where they are to be installed.

For Design Floors, identify and check each element before work proceeds.

To achieve best results, site conditions should be prepared as described in BS 8203 or prevailing local or national standards. A working temperature of between 18°C and 27°C is required for at least 48 hours prior to, and during, the installation period; and for 24 hours afterwards. Conditioning should be carried out in the same room or area as the installation, to prevent thermally induced dimensional changes.

2 PRIOR TO INSTALLATION (UNDERFLOOR HEATING)

On installations where underfloor heating is used:

The system should be fully tested and commissioned prior to the flooring installation commencing.

Underfloor Heating systems should be switched off and be fully cooled for a minimum of 48 hours prior to the installation commencing. The system should remain

off and fully cooled during the installation and for a minimum of 48 hours afterwards. It should then be slowly brought back up to the working temperature incrementally over several days.

A maximum subfloor temperature; (at the adhesive line) of 27°C should never be exceeded.

Only specialist high temperature or epoxy adhesives should be used in areas with underfloor heating, direct sunlight, and areas of high solar gain. Please refer to the Cavalio Approved Adhesive List or contact your adhesive manufacturer for more information.

3 PREPARATION FOR INSTALLATION

The decoration of tiles is randomly distributed and can be heavier on some tiles than others. To prevent 'heavy' and 'light' areas, the tiles should be unboxed and, if required, 'shuffled'. Alternating the direction of tiles may be required to avoid repeat patterns.

4 PRODUCT CONDITIONING

The majority of installation failures are not caused by poor fitting but instead simply by failure to condition the vinyl tiles and planks correctly prior to installation.

The tiles and planks plus any other products such as borders, feature strips, design strips, tozzettos and adhesives and new plywood bases; should be conditioned together for at least 24 hours prior to installation.

Boxes of tiles/planks must be stacked less than 5 boxes high and planks/tiles removed 30 minutes before use.

The room temperature should ideally be between 18°C and 27°C but more importantly should be constant and not varying by more than 2°C.

Conditioning should ALWAYS take place in the area that is to receive the installation.

The conditioning time should be increased to at least 48 hours where the planks/tiles have been stored and /or delivered at temperatures below 10°C.

As extremes of temperature can occur between day and night time, temperatures will fluctuate. It is essential that the effects of these fluctuations be avoided.

South facing and full height windows; (Inc. patio & bi-fold doors) and all conservatory windows should be shaded or covered both during the conditioning period; the installation period; and for 24 hours after the installation has been completed to minimise this effect.

NOTE Complaints arising from the failure to correctly condition the tiles and planks, which result in shrinkage or lipping, will not be accepted by Cavalio Ltd.

5 PREPARATION OF THE WORK AREA

The work area should now be prepared to receive the tiles.

- Ensure that all other trades have completed their work and removed all their equipment and materials.
- Remove all debris and vacuum the whole subfloor area. Check the condition of the subfloor and make good as necessary.
- Stone or power grind any cementitious subfloor to remove any 'nibs' or ridges. Remove any surface contaminants that may affect adhesion.
- Sweep or vacuum again prior to laying.

KEY POINT

Commencement of work is deemed by many as acceptance of the site conditions as suitable for laying floor coverings.

- If required by the contract, or if in doubt, check the moisture content of the subfloor and record the results and method used.
- Good lighting is essential.
- Further information on subfloors and subfloor preparations can be found in Section two.

6 SETTING OUT AND INSTALLATION FOR TILES/PLANKS STRAIGHT FITTING

The optimum appearance can be produced by carefully planning and setting out of tiles and/or planks.

- It is advantageous to dry lay a section of the floor so that it can be determined whether the appearance of the pattern is acceptable and also to ensure any graining/texture within individual tiles is correct.
- Traditionally the starting point for tiling is the centre of the room.
- Before adhering confirm that the overall appearance of the flooring is acceptable.
- If the room is irregular in shape it may be necessary to square up the tiles off the most important wall or a specific feature.



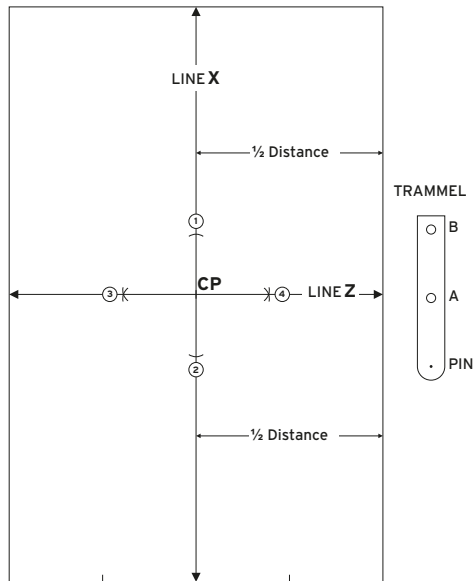
6.1 To set out Planks for straight fitting:

Prior to laying the first plank, ensure all cuts are of an acceptable length (Min.150mm).

As the planks are not required to be laid 'in bond' in the length, it is possible to begin installing from an end wall.

Planks must be staggered to obtain a random finish, however ensure that plank ends are not within 150mm of adjacent planks.

6.2 Setting out and installation for straight tiling



- Measure the room to be laid, in both directions, including any alcoves etc.
- Mark a centre line X. Ensure it is central to the room dimensions.
- Loose lay tiles to ensure there are no small cuts at the perimeter. If small strips are evident, move the centre line across half a tile in either direction to create an acceptable sized cut.
- Find the centre of line X and mark the Centre Point (CP).
- Mark arcs 1 & 2 at equal distances from CP on the centre line using point A on your trammel.
- With points 1 & 2 as centres, use point B on your trammel to draw further arcs intersecting at 3 & 4.

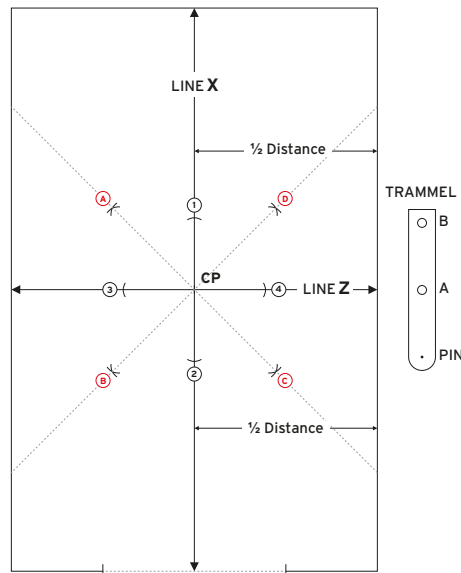
- Strike a line through point 3 & 4 ensuring it passes through CP.
- Line Z is now 90° to line X. Double check using the 3,4,5 method.

6.3 Setting out and installation for diagonal tiling

Set out as explained earlier in 6.1 for straight tiling.

Ensure both lines are at 90° to each other.

- At CP (Centre Point), use point B on your trammel to mark arcs at 1, 2, 3 and 4.
- With points 1 & 3 as centres using point B on your trammel draw arcs to intersect each other at A.
- With points 2 & 4 as centres using point B on your trammel draw arcs to intersect each other at C.
- Strike a chalk line from wall to wall through points A & C; if no error has been made, this line will pass through CP.
- With points 1 & 4 as centres using point B on your trammel draw arcs to intersect each other at D.
- With points 2 & 3 as centres using point B on your trammel draw arcs to intersect each other at B.
- Strike a chalk line from wall to wall through points B & D; if accurate, this line should pass through CP. Double check using the 3,4,5 method.



7 SPREADING THE ADHESIVE

Once the start point has been established, depending on the size of the area and the type of adhesive to be used, it may be necessary to section off the area so that the adhesive can be applied to areas that can be laid within the open time.

Always follow closely the approved adhesive manufacturer's instructions.

Spread the adhesive using a suitable trowel to the manufacturer's recommendations ensuring that the correct notch size is maintained throughout the installation. If the notch on the trowel shows signs of wear it should be renewed immediately.

If using a Cavalio approved pressure sensitive adhesive it may be necessary to flatten out any resultant serrated adhesive ridges using a lambswool roller pre-wetted with adhesive to prevent 'grin through' once the installation has been completed.

Always read carefully the adhesive manufacturer's application instructions as these can change from brand to brand. NB: This can be especially important when planks/tiles are being bonded to an absorbent substrate such as sand and cement screeds; plywood etc. in order to ensure an adequate bond strength.

When a section has been laid, except for the perimeter, it should be thoroughly rolled in both directions with a 68kg articulated floor roller. Repeat for each section until the main field of tiles has been laid.

It is advantageous to leave the last full tile or plank and the cut at the perimeter without adhesive until all planks have been cut to size.

8 SETTING OUT AND INSTALLATION OF BORDERS

The inclusion of borders or design strips is a simple way of enhancing the appearance of an installation. Borders and design strips come in various widths and styles but the installation technique is similar in all cases. Borders fit around the field tiles but do not attempt to abut pre-made borders to a wall.

Most designs will have a contrasting yet complimentary border. It is preferred, where possible, that full tiles are fitted up to the borders, in the case of diagonal, exactly half tiles should be used. This gives a more geometric appearance to the installation. It does,

however, mean that, in almost all cases the border will have to be adjusted on adjacent walls.

In the case of diagonal tiles and for the sake of appearance, the colour of the cut half field tile should contrast with the border.

Mark a centre line as described earlier.

Determine width of borders.

Dry tile to ensure cuts are acceptable and of the correct colour and adjust where necessary.

Using centre lines as guides measure to the position of the border and mark with chalk lines.

Spread adhesive up to the border lines and fit field tiles. (Remember only spread adhesive to areas that can be laid within the open time).

Dry fit perimeter cuts before adhering, as described earlier.

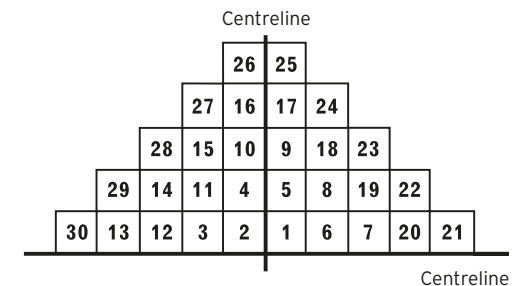
NOTE This is the normal method of setting out for borders, however it is also possible to set out off a prominent wall or unit, for example. If there is any doubt the border should be discussed with the end user prior to installation.

9 INSTALLING IN LARGE AREAS

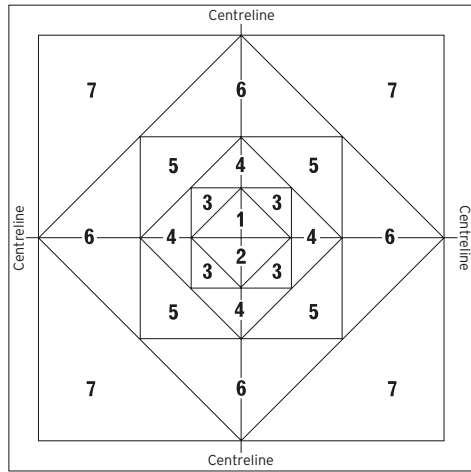
Maintaining a clearly defined straight line over long distances can be difficult and often leads to inaccuracies. To eliminate this problem, an alternative technique is used when laying in large areas.

Establish the central starting point as described previously, minimising small cuts on perimeter tiles.

Lay the first pyramid of tiles from the centre lines, using the sequence shown. Ensure a close bond is maintained at all times, refer to figure below.



Repeat this sequence on the opposite side of the centre line. Continue working in larger and larger pyramids until only the perimeter tiles require fitting, referring to the figure below.



Fit perimeter tiles as described in section 10.

10 INSTALLATION OF PERIMETERS (Straight Laid)

10.1 Cutting the perimeter tiles/planks (Straight Laid)

To avoid run out of the bond, cutting of perimeter row should start at the centre of the wall and work out towards corners (fig.1).

The choice of technique used for cutting perimeter tiles or planks is largely dependent upon the straightness of the wall.



Figure 1

10.2 Overlapping Method (Straight Laid)

Used when there is little or no run out of the abutting wall. Place the tile to be cut exactly over the last tile laid, ensuring the colour is correct and the decoration runs the correct way.

Place another full tile on top of the tile to be cut with its 'top edge' against the wall or skirting/base board.

Scribe a line onto the tile to be cut, using the 'bottom edge' of the top tile as a guide.

Cut the tile to the scribed line, loose lay into position and check the fit. Repeat along the whole wall.

10.3 Scriber Method (Straight Laid)



Figure 2

Used when the wall run out is quite severe or when the wall profile cannot be picked up using a straight edge (fig.2).

Place the tile to be cut exactly over the last tile laid, ensuring the colour is correct and the decoration runs the correct way.

Set the bar scriber to the size of tile being laid.

Trace the profile of the wall onto the tile to be cut, ensuring the bar scriber is kept flat to the floor and square to the edge of the tile.

Cut the tile to the scribed line, loose lay into position and check the fit. Repeat along the whole wall.

11 CUTTING THE PERIMETER TILES (Diagonal Cut)

11.1 Overlapping Method (Diagonal Cut)

Used when there is little or no run out of the abutting wall.

- Place the tile to be cut exactly over the last tile laid, ensuring the colour is correct and the decoration runs the correct way (fig.3).
- Place another full tile on top of the tile to be cut (diagonally) with the 'top edge' against the wall or set-in coving.



Figure 3

- The corresponding point of the tile should then be followed to mark the underlying tile.
- The overlapping tile should then be moved over to mark the second part of the underlying tile.
- Following both marks, a straight edge can be used to line both marks and a cut can be made.
- Cut the tile to the scribed line, loose lay into position and check the fit. Repeat along the whole wall.

11.2 Template overlapping method (Diagonal Cut)

- Cut a template exactly to the size between the diagonal points (e.g. 428mm for 305mm tiles).
- Place the tile to be cut exactly over the last tile laid, ensuring the colour is correct and the decoration runs the correct way (fig. 4).
- Place the template tile on top of the tile to be cut with its 'top edge' against the wall.
- Scribe a line onto the tile to be cut, using the 'bottom edge' of the tile as a guide.
- Cut the tile to the scribed line, loose lay into position and check the fit. Repeat along the whole wall.



Figure 4

11.3 Scriber Method (Diagonal Cut)

Used when the wall run out is quite severe or when the wall profile cannot be picked up using a straight edge.



Figure 5

- Place the tile to be cut exactly over the last tile laid, ensuring the colour is correct and the decoration runs the correct way (fig. 5)
- Set the bar scriber to the size of tile between the diagonal points of tile being laid.
- Trace the profile of the wall onto the tile to be cut, ensuring the bar scriber is kept flat to the floor and square to the edge of the tile.
- Cut the tile to the scribed line, loose lay into position and check the fit. Repeat along the whole wall.

12 ADHERING THE PERIMETER TILES

Once a wall edge has been fitted and loose laid, turn all the tiles inward so as not to lose their position.

- Spread the adhesive right up to the edges. When the adhesive is ready, lay the perimeter tiles.
- Wipe up excess adhesive as work progresses.
- Roll well with a 68kg articulated roller. Use a small hand roller in areas that are inaccessible.
- Repeat the process for all four walls.
- Finally, the whole floor should be given a second rolling, approximately one to four hours later.

13 ADHESIVES

In areas subjected to direct sunlight or with extremes or fluctuations in temperatures, Cavalio always recommend the use of an approved polyurethane, epoxy or suitable high temperature adhesive.

Cavalio provide this information only as guidance and the legal responsibility for the supply and performance is that of the adhesive manufacturer.

Use of the correct adhesives is important if the installation is to be successful. Contact Cavalio Technical Services for our comprehensive approved adhesive list

14 INLAY STRIP CALCULATION

Grouting Strips, Marquetry Strips, Cross Grain Marquetry Strips and Feature Strips have been developed to add fine detailing and authenticity to floor designs.

Due to the extensive range of tile and planks sizes currently available in the Cavalio ranges we recommend that you call Cavalio Technical Services for advice regarding Inlay Strip Calculation on 0845 345 5404

15 TILE AND PLANK FLOOR DESIGNS

Decorative design floors such as 'Brickwork with strip' (fig. 7) can be achieved quite simply on site with little or no cutting required; whilst more ambitious and sophisticated designs like figures 6 and 8 can be created with the help of Cavalio's bespoke cutting service.

These diagrams represent only a small selection of flooring designs possible with Luxury Vinyl Tiles, discover more ideas and designs in the product brochures.



Figure 7 Rectangular tile – brickwork with strip

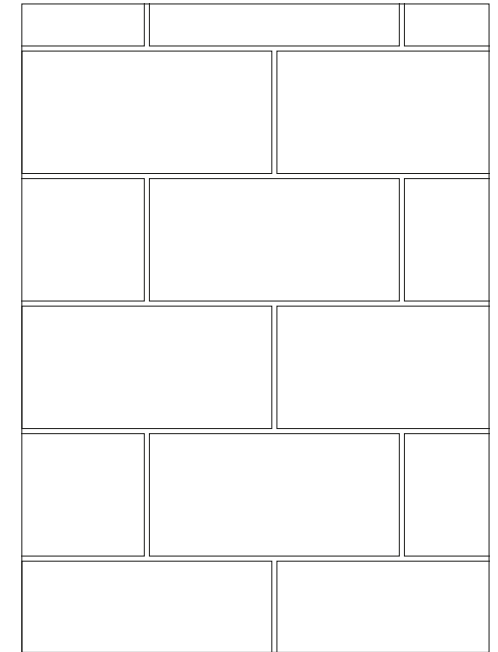


Figure 6 Cut third length herringbone

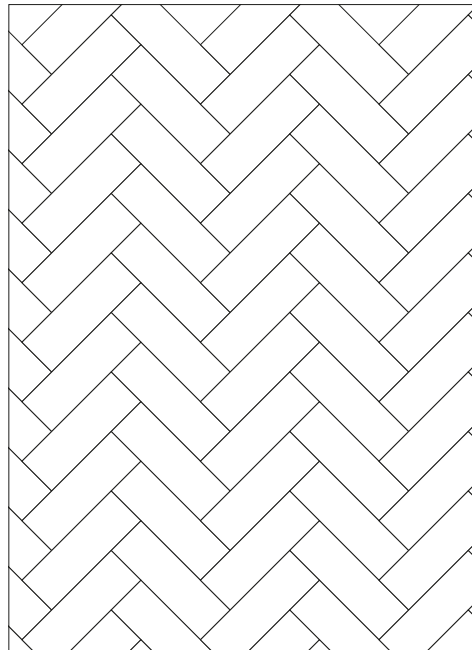
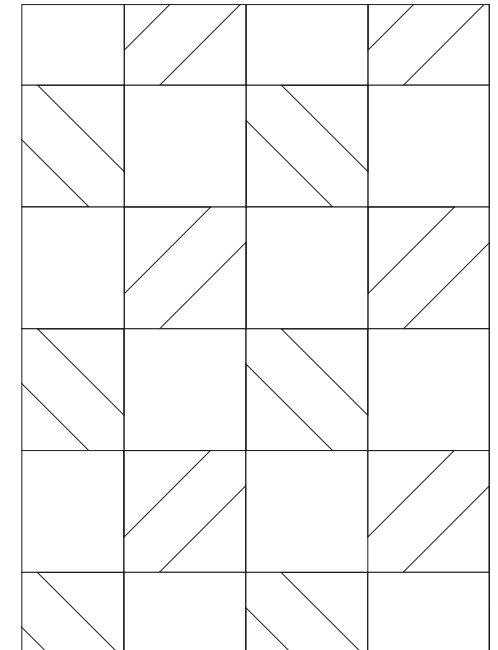


Figure 8 Bespoke Design



5. CAVALIO LOC UNDERLAY

Cavalio LOC Underlay is designed to meet the installation requirements of interlocking vinyl flooring for use in both the home and light commercial interiors. The pressure resistant and joint-friendly foam core of Vinyl Loc Underlay provides an even flooring structure that is stable and comfortable to walk on.

IMPROVED ACOUSTICS & IMPACT SOUND REDUCTION

- Impact sound reduction level of **19dB**
- Shock-absorbing flooring structure reducing walking noise in the room by 3dB.
- Ideal for use in apartments and bedrooms reducing the noise that is transmitted to neighbouring rooms.

SIMPLE TO USE

LOC Underlay is very simple to use, as it is available in the form of fanfold panels with a cutting pattern and a connection system that slots tightly together. Supplied in a convenient box for ease of handling.

UNDERFLOOR HEATING

LOC Underlay is suitable for use with underfloor heating. The low thermal resistance allows efficient transmission of heat.

HEAVY LOAD

The high compression strength and unique surface of LOC Underlay allows the supported floor to absorb an increased load. We do however always recommend taking precautions to protect flooring by using furniture pads and cups to avoid creating scuffs, scratches and indentations.

CHARACTERISTIC	STANDARD	RESULT
Gauge		1.5mm
Fold out panel size		8.5 x 1.18m = 10m ²
Ability to level out uneven areas	ISO 868	~1 mm
Compression strength	EN 826	> 400kPa ≈ 40 t/m ²
Dynamic load	EN 13793	>100.000 cycles
Coefficient of friction μD	ISO 8295	>0.8
Impact sound reduction	ISO 10140	up to 19dB
Water absorption	EN 12087	< 1 %
Thermal resistance	DIN 4108	~ 0.043m ² K/W

6. INSTALLATION OF LOC

We recommend that your new LOC floor is fitted by a professional flooring installer over the approved Cavalio LOC underlay. This is designed to prevent the planks or tiles from sliding or becoming damaged due to unevenness in the subfloor.

GENERAL INFORMATION

When installing an interlocking product always follow current local and national standards for the installation of floor coverings. The best current installation practice incorporating the latest technical developments should be employed. The preparation of the subfloor, the installation of the floor covering and the measures taken to safeguard value are key factors in ensuring optimum suitability and performance of resilient floor coverings.

2G interlocking plank and tiles are loose lay materials and are not recommended for use in areas where large temperature and/or humidity fluctuations can occur, such as heavily glazed areas or areas exposed to direct sunlight for long periods of time.

Additionally, they should not be installed in unheated areas.

RECEIPT & STORAGE

On receipt of materials:

Check that colours correspond to those ordered and that there is no damage or visual defects in the material.

In particular, check that the material is from one batch. Claims for visual defects can only be accepted prior to installation and cutting.

The interlocking plank/tile system must be protected against dirt and moisture during storage.

During storage and installation the room temperature should be 20°C (minimum 15°C) and have a relative humidity of 50-60%.

Prior to laying the floor, open the boxes and place them in the room in which they are to be installed for a minimum of 48 hours BEFORE the installation commences, so the material can acclimatise correctly together with the underlay and any plywood sheet to be used, in order all materials acclimatise equally.

KEY POINT

Interlocking tiles & planks should not be stacked more than **THREE** boxes high.

PRIOR TO INSTALLATION (Underfloor heating)

Where underfloor heating has been installed within the subfloor: The system should be fully tested and commissioned prior to the flooring installation commencing. Underfloor Heating systems should be switched off and be fully cooled for a minimum of 48 hours prior to the installation commencing. The system should remain off and fully cooled during the time of the entire installation and for a minimum of 48 hours afterwards. Then over several days slowly and incrementally brought back up to the working temperature.

A maximum subfloor temperature of 27°C should never be exceeded.

PREPARATION OF SUBFLOOR

KEY POINT

Carpets and soft floorings are unsuitable as a base for the installation of the interlocking plank/tile system. These will need to be removed.

The Interlocking plank/tile system can be laid over : Mineral subfloors prepared in accordance with accepted trade standards. It must be clean, durable, permanently dry and flat.

Existing floor coverings of ceramic, vinyl and linoleum as long as they are clean, flat and there is no dampness under the floor covering.

Wooden floors, floorboards and chipboard floors as long as they are flat, firmly fastened and free of protruding nails etc. Remove any unevenness in the subfloor prior to installation. Subfloor levels should be in accordance with

local/national standards and in any event, should never exceed a maximum deviation of 5mm when measured under a 3m long straight edge. Higher deviation can cause permanent damage to the locking mechanism. High spots and ridges should be removed to prevent damaging the locking mechanism of the planks/tiles. Please note that while the Vinyl LOC Underlay will mitigate against minor undulations in the subfloor, it should not be used in place of a proprietary leveling compound. Solid subfloors should demonstrate a maximum damp content of 75% RH before the installation can begin. Residual moisture contents for solid cementitious and screeded subfloors max. 2.0 CM % with underfloor heating 1.8 CM %. Anhydrite floor max. 0.5 CM % (With underfloor heating 0.3 CM %).

NOTE Once the subfloor has been prepared the **Interlocking plank/tile flooring must be laid over the approved Cavalio LOC Underlay.**

CONDITIONING

The Interlocking plank/tile system must be protected against dirt and moisture both before and during the installation.

The climatic conditions acceptable for the installation of interlocking planks/tiles are:

- Floor temperature > 15°C
- Room temperature > 18°C
- Air Relative humidity < 50-60%

INSTALLATION

During storage and installation the room temperature should be 20°C (minimum 15°C) and have a relative humidity of 50-60%.

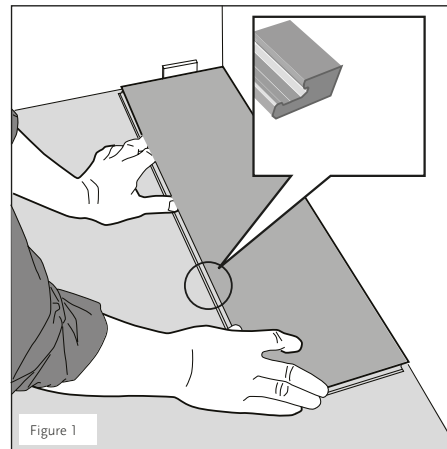
In the event of extended deviations from the aforementioned room conditions < 30% or > 80% for relative humidity or temperatures of (< 10°C or > 30°C) a change in the dimensions, gap formation is a typical characteristic for this kind of product; the expansion gap required can therefore increase from those described herein.

In such instances please seek advice from Cavalio by calling 0845 345 5404 or email info@cavaliofloors.com.

MAXIMUM INSTALLATION SIZE

Areas larger than 10 x 10m require the inclusion of an expansion joint and then every subsequent 100m².

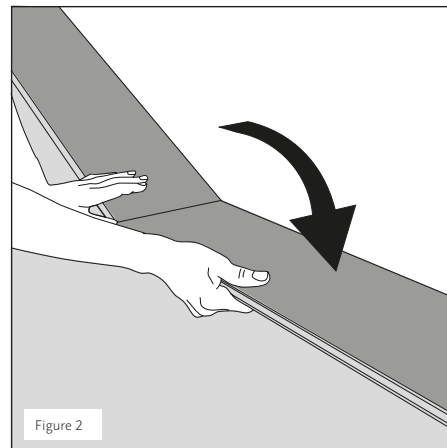
FIRST TILE or PLANK, FIRST ROW



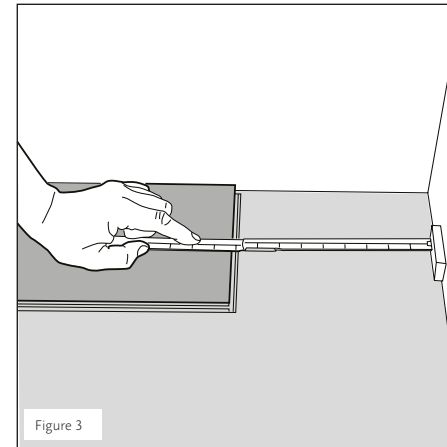
The boards are laid without glue/adhesive. Start to lay the floor in the left-hand corner of the room. A minimum expansion gap of 4mm should be left around the installation perimeter and anything protruding from the subfloor. For larger installations an expansion gap of 1mm per linear metre of room length should be used. e.g. A room with an area of 8m x 4m would require an expansion gap of 8mm around the entire perimeter of the room and around anything protruding from the floor.

Use small offcuts of the tile/plank as spacers between the planks and the walls to help achieve the correct size gap.

SECOND TILE or PLANK, FIRST ROW

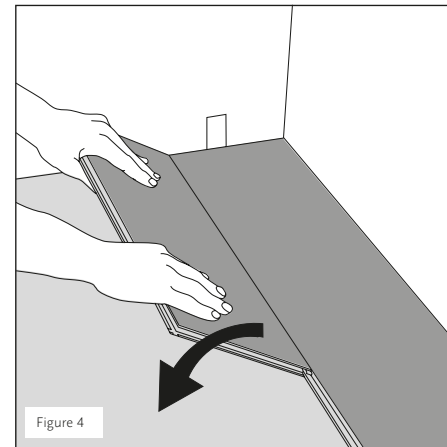


Press the short end of the next tile/plank at an angle to the first one, and then lay down. Complete the first row in the same way.



LAST TILE or PLANK, FIRST ROW

Insert correct sized spacer between the end of the first row and the wall to ensure the correct expansion gap is left. Measure the length of the last tile/plank to fit. Cut the last panel to correct length, recommended minimum length is 350mm.



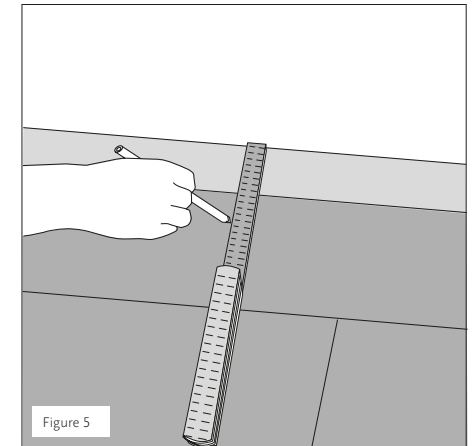
FIRST TILE or PLANK, SECOND ROW (fig.4)

Insert spacer between the end of the first row and the wall (expansion gap). Start the new row with the leftover piece from the last row. Insert the tile/plank at an angle against the plank in the previous row, press forward and fold down at the same time. Always try to stagger the short joints approx. 150mm from a short joint in the previous row.

MANAGING UNEVEN WALLS (fig.5)

If the wall is uneven, the floorboards should be marked or scribed to its contours. Mark the floorboards with the

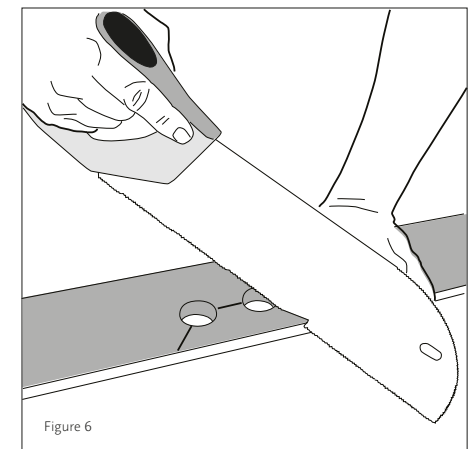
contour of the wall. Don't forget to include the required expansion gap to the wall.



To cut the planks to fit the last row, position them one at a time directly over the previous row in the direction you'll be laying them. Hold them firmly in place. Then line up a third board on top. Use the edge of this board to mark the cutting line with a pencil on the board beneath. Remember to allow for the expansion gap.

RADIATOR PIPES (fig.6 & 7)

Principle cut out — mark the centre of the holes on both the long and short sides using a carpenter's square and a pencil. Where the marks cross drill a pilot hole using a thin #6 or #8 drill bit. Further drill the hole with a spade bit wide enough to accommodate both the diameter of the pipe and the required expansion gap.



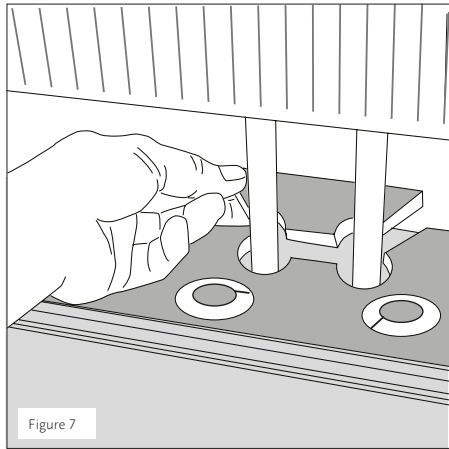


Figure 7
Cut around as shown with a saw or with a sharp utility knife. Install the floor plank. If necessary, put a bead of contact glue on the cut piece and replace. Insert a spacer directly behind the inserted piece to wedge it in place ensuring that the correct sized expansion gap has been left. Leave this in place until the glue has hardened.

DOOR FRAMES (fig.8)

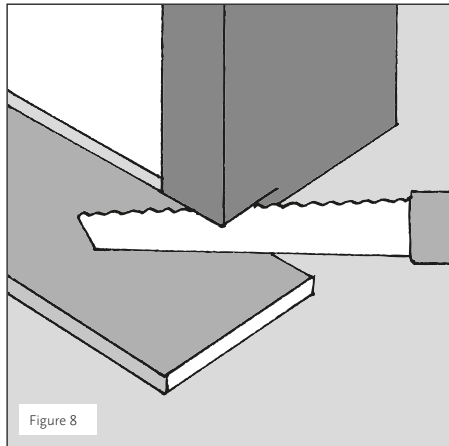


Figure 8
When installing interlocking plank/tile around a door frame, cut into the door frame with a handsaw, using an off cut plank/tile and some underlay as a guide for the height and the amount to trim off the door frame. Slide the cut piece under the door frame.

ADJOINING OTHER FLOOR COVERINGS

When adjoining other floor coverings, finish the interlocking plank/tile in the doorway. An appropriate

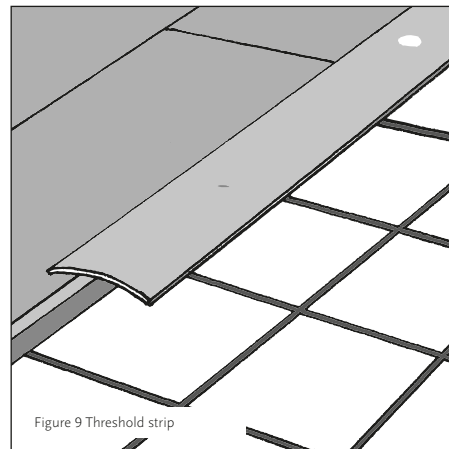
expansion gap should be left between the interlocking plank/tile and the adjoining floor covering. This can be covered using a suitable threshold or diminishing strip later.

INSTALLING ACROSS MULTIPLE ROOM (fig.9)

Finish the interlocking plank/tile in the doorway on either side and allow a break between the two floors of double that left around the perimeter.

A suitable threshold strip can then be installed to cover the resultant gap. Place two small off cut pieces of interlocking plank/tile back to back to gauge the correct gap size.

When installing a threshold never mechanically fix direct to the interlocking plank/tile; instead affix to the subfloor and allow sufficient space between the top edge of the threshold and the surface of the interlocking plank/tile so as to allow movement into the expansion gap.



COMPLETION WORK

Interlocking plank/tile are designed as floating floors hence the floor covering can be walked on directly after it is installed. Remove all the spacers and wedges from the edge expansion gaps.

Skirting boards, base boards, quadrants or scotia can be used to conceal the expansion gap, however they should never be fitted directly onto the surface of the interlocking plank/tile. Leave a small gap (min. 2mm) between the two, allowing for the natural movement of the plank underneath the skirting or scotia.

TECHNICAL GUIDE

7. RESISTANCE TO CHEMICALS

Cavalio vinyl floor coverings are suitable for use in all areas where most chemicals are used and there is only risk of accidental spillage. However, some chemicals contain very strong dyes, which even after a short period of contact, will stain the vinyl used, it is suggested that an appropriate dark colour be selected to minimise the staining effect.

Cavalio vinyl floor coverings show an above average resistance to mild and dilute acids, alkalis, soaps and detergents. Petrol and strong acids are not harmful, provided any spillage is cleaned off immediately. Ketones, chlorinated solvents, acetone and similar solvents should not be

allowed to come into contact with Cavalio vinyl flooring. However, if this should happen, the effect can be minimised by removing the spillage immediately and leaving any solvent residue to evaporate, prior to allowing any foot traffic.

A SUMMARY OF THE GENERAL CHEMICAL RESISTANCE OF CAVALIO VINYL FLOORING (Refer to the footnote for brief description of test procedure).

Type of chemical	Effect	Action
ORGANIC LIQUIDS		
Aldehydes, Esters, Ketones Halogenated hydrocarbons	Floor attack occurs after several minutes	Wipe up immediately
Alcohols, Ethers, Glycols, Hydrocarbons (aromatic & aliphatic), Petroleum spirit, Vegetable oil	After several days, plasticiser extraction occurs, with associated problems of shrinkage & embrittlement	Wipe up immediately
AQUEOUS SOLUTIONS		
Mild acids and alkalis NO EFFECT	No effect	
Strong alkalis	Will strip polish and may cause discolouration in some shades.	Dilute and remove.
Strong acids	Prolonged contact can cause discolouration.	Dilute and remove immediately
Dyes (indicators)	Contact can cause discolouration	Dilute and remove immediately

Note: Cavalio floors test for resistance to chemicals is evaluated over a 24 hour contact period at a room temperature of 21°C, followed by rinsing with cold water. Cavalio Floors believe this stimulates the worst situation where spillages are not removed immediately and are only cleaned by normal maintenance. Some stains can be removed by abrading with a nylon pad during maintenance.

8. FLOORCARE

The following maintenance instructions are designed to minimise cost, help you retain a satisfactory level of cleanliness and appearance, and to ensure optimum long-term performance of the floor covering.

INITIAL CLEAN

1. Avoid walking on your newly installed floor covering for at least 24 hours following completion of the installation.
2. Sweep or vacuum to remove any loose dirt, grit etc.
3. Remove any residual adhesive and / or rubber heel scuff marks from the surface using a few drops of neat cleanser on a nylon web/sponge pan scourer (do not use steel wool pads such as Brillo), rinse thoroughly using clean, warm water and allow to dry.

APPLICATION OF FLOOR DRESSING/POLISH

1. Apply two or three thin coats of emulsion floor dressing/polish using a clean sponge mop. The floor dressing should be applied 150mm (6") from the edges of the room, and subsequent coats should be applied at right angles to the previous, allowing each coat to dry before the application of the next coat (approx. 20 mins). The final coat should be applied right up to the edges of the room. Allow to dry thoroughly before walking on the floor.

ROUTINE CLEANING

1. Sweep or vacuum to remove any loose dirt, grit etc.

KEY POINT

Regular cleaning is more beneficial to the floorcovering and more cost-effective than occasional heavy cleaning.

2. Using a Floor Maintainer diluted to the manufacturer's instructions, mop the floor thoroughly using a clean mop, (either Micro-fibre type or traditional).
3. Collect any excess in the mop-bucket and allow to dry.

FLOOR DRESSING/POLISH REMOVAL

(Recommended at least once every 6 months)

1. Periodically – generally every six months – assess the appearance of the floor.

- If there is an unacceptable build-up of polish, this should be stripped and reapplied, as per the instructions below.
2. Apply a solution of Polish Stripper/remover diluted to the manufacturer's instructions, to the floor and leave for sufficient time to react with floor dressing/polish. (Normally 5 -10 mins).
3. Using a traditional mop or stiff bristle brush, remove the layers of floor dressing/polish and collect the slurry in the mop-bucket.
4. Rinse the floor thoroughly with clean warm water, collect the excess in the mop-bucket and allow to dry.

NOTES

Black scuff marks can be removed by using a moistened cloth with the correctly diluted Maintainer. Use a non-abrasive nylon scrubbing pad for more persistent marks.

Furniture can cause scratches to a vinyl floor, therefore felt pads should be attached to the feet of tables and chair legs. Keeping dogs nails well clipped will reduce scratching from pets.

Some rubber backed mats are treated with an antioxidant, which can stain a vinyl floor. PVC backed mats can cause plasticiser migration with prolonged contact and should therefore be avoided.

Always follow the Health and Safety guidance provided, and dilute cleaners and detergents in accordance with the manufacturers' instructions.

For further information about cleaning products speak to your flooring retailer or call us directly on **0845 345 5404**.

At the date of issue the data presented is correct. However, Cavalio Floors reserve the right to make changes which do not adversely affect performance or quality.



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