



ORIGINALSTYLE

# Earthworks FIXING GUIDE

# Earthworks

## FIXING GUIDE

### Contents

Introduction	3
Successful tiling	4
Glossary of tiling terms	5
The right tools for the job	6
Selecting your tiles / suitability	7
Before fixing	8
Special notes on individual products	9
How many tiles will you need?	12
Pattern repeats	13
Preparation	14
Underfloor heating	16
Marking out the work area – floors	17
Planning – floors	19
Planning – walls	20
Marking out the work area – walls	22
Adhesives and grouts	23
Grouting	24
Sealing	24
Maintenance and cleaning	25
Photography	25
Limits of liability	25

## Introduction

Original Style wall and floor mosaics in a wide range of colours, sizes and finishes, to suit every taste.

### **Using this guide will help you to:**

- Choose a suitable product for your project
- Calculate how many tiles you require
- Prepare and plan for the installation
- Mark out the work area
- Fix, grout and seal
- Clean and maintain your finished installation

Other fixing guides can be downloaded from [www.originalstyle.com/guides](http://www.originalstyle.com/guides)

# Successful tiling

## The key to success is to:

Gather together all the tools, tiles and materials you need before you start  
Plan the installation  
Thoroughly prepare the surfaces to be tiled; time spent on this will save time later  
Keep the work area clear and clean as you go along  
Work methodically and avoid mistakes by allowing sufficient time for each task

**This guide is not intended to be a definitive guide to fixing tiles. If you are uncertain about anything having read this guide you should consult a professional tile installer.**

## PLEASE NOTE

Specifications for natural stone tiles can be found in EN12057.

It is the purchaser's responsibility:

To check the tiles by laying them out and viewing them prior to installation.  
Please be advised that installation constitutes acceptance of the quality, colour, texture, shade and size of the tiles. This applies even if the home owner is not present during the installation process

To store products in an adequate, clean, dry and secure space that is free from frost and moisture

To ensure that installation is carried out in adequate artificial lighting conditions

To ensure that work is adequately protected during and after fixing

If you are in doubt about anything stated within this Fixing Guide please ask your Tile Company retailer for further information.

# Glossary of tiling terms

<b>Adhesive</b>	The glue used to fix tiles to the substrate. There is a wide choice available, we recommend a white fast setting C2 cement based type of adhesive.
<b>Grout</b>	A hardening compound used to seal the joints between tiles. There is such a wide choice available, it is best to seek advice from your stockist on your particular project and type of tiles to be used.
<b>Movement joints</b>	Where tiles meet another surface, the joint is filled with silicone sealant, not grout, to allow for minor expansion and contraction. Should be placed according to architect's specifications, over existing joints and any changes in plane. Movement joints eliminate stress transferring from the substrate.
<b>Pointing</b>	Where grout is mixed to a thicker consistency than usual and applied into the joints with a squeegee, pressed in firmly and finished off with a grouting tool to give a neat finish. Any excess is removed using a damp sponge and the surface wiped clean.
<b>Silicone sealant</b>	A material with elastic and waterproofing properties used to fill movement joints instead of grout.
<b>Substrate</b>	Any surface on to which tiles are laid.
<b>Thin set</b>	A layer of adhesive applied to a depth of less than 5mm / ¼"

# The right tools for the job

These tools will help you complete your tiling project to a professional standard. Most are readily available to buy or hire.

<b>Adhesive spreader/ bedding trowel</b>	The notched edge of this tool ensures an even spread of adhesive of an even depth.
<b>Chinagraph pencil</b>	For marking any tiles that need cutting. This will not stain the tiles and will resist being washed away when using a water-fed cutting machine. Never use a felt tip pen as they can leave permanent marks.
<b>Drill</b>	Use a masonry drill bit.
<b>Electric water-fed diamond wheel cutter</b>	A diamond wheel cutter is the best way of cutting difficult tile shapes. These are available from tool-hire companies, tile shops, or DIY stores. Follow the manufacturer's advice regarding protective goggles, masks and gloves.
<b>Epoxy squeegee</b>	A rigid squeegee specifically designed for the application of epoxy grouts.
<b>Eye protection, gloves and dust mask</b>	It is vital that you use all possible protection when using any cutting instructions/ machinery. Always use personal protective equipment as advised by the HSE. Visit <a href="http://www.hse.gov.uk">www.hse.gov.uk</a> for further health and safety advice.
<b>Gauging trowel</b>	For removing the grout from its container, or the vessel used for mixing the grout. Use it to place adhesive onto a bedding trowel.
<b>Grout finishing tool</b>	This tool is run along the grout lines before they set completely to give consistent, neat finished grout lines. A piece of dowel can work just as well. NB: NOT to be used on epoxy grout.
<b>Spacers</b>	These small pieces of plastic are inserted between the tiles to provide consistent spacing. Push them in side-on so they are at right angles to the surface, and place them at regular intervals to maintain the spaces, and remove them before the grout is applied.
<b>Spirit level /laser level / plumb line</b>	One or more of these tools will be necessary to ensure that your tile installation is level and that verticals are straight. A plumb line can be made from a small weight on a length of string.
<b>Sponges</b>	Use to remove grout residue and for smoothing joints. Always use new sponges and grouting tools rather than old sponges and tools which may have adhesive or grout residue which could scratch tiles.
<b>Squeegee or rubber trowel</b>	Used for spreading grouting compound into the spaces between the tiles.
<b>Steel ruler/ tape measure</b>	For accurate measuring.
<b>Wedges</b>	These are wooden or plastic for minute tile adjustment.

## Selecting your natural stone tiles and mosaics

This is obviously the most important and enjoyable task. With such a large range of tiles to choose from, you may like to order some samples to see how they fit in with the rest of your furnishings and decorations.

Tiles differ in size and thickness and choosing the right size is just as important as choosing which type. Small tiles are often better suited to covering small areas, whereas larger areas look better with larger tiles. Suitability of your chosen tiles is also an important factor.

### Suitability

Suitability of your chosen tiles is an important factor. Please refer to the suitability symbols for each individual product in the most current Earthworks brochure at [www.originalstyle.com](http://www.originalstyle.com)

If you are uncertain please ask your Original Style retailer for further information.

As stone is a natural product it can subject to colour variation, pitting, blemishes, chipped edges, size variation and on occasion staining. It can also fade in UV light. No guarantee can be made against this.

Natural stone tiles for installing externally need to be a minimum of 20mm / ¾" thick, to reduce the risk of frost damage.

Most natural stone tiles and mosaics can be used for wet walls although they are NOT suitable for installation in steam rooms or spas due to its porous nature and the harsh environment of such installations.

Polished natural stone is NOT suitable for use on the floor in wet areas due to its slippery nature. It can, however, be used for dry floors providing adequate matting is provided to remove excess water from footwear prior to walking on the tile.

## Before fixing

Please refer to the latest version of the brochure at [www.originalstyle.com](http://www.originalstyle.com) for special notes regarding suitability, sealing, grouting, cutting and other appropriate information and warnings.

It is important that your tile installer understands any blends or patterns you want, the requirements for surface preparation and protecting newly installed tiles from on-going work. Floors and walls may require expansion joints.

Always check the tile weight is suitable for your substrate adding 3.5kg per m<sup>2</sup> /6.4lb per yd<sup>2</sup> for adhesive and grout per m<sup>2</sup>. The following table has typical wall substrates and their maximum tile weight.

### Storage

Before installation, please make sure you store any fixing materials and your tiles in their packaging in a clean and dry area. All tiles must be dry before installation.

**Natural stone tiles and mosaics may be wet on arrival so will need to be fully dry and then sealed to prevent staining.** To dry lay them out in an aerated room. Make sure they are fully clean and dry then impregnate (seal) before and after grouting. Lithofin MN Stainstop and LTP Mattstone are suitable.

### Important Note

All surfaces must be allowed to dry out completely before tiling. Failure to do this can result in moisture being trapped behind the tiles which can react with some tiles causing them to deteriorate over a period of time.

### Thickness

Always lay the thickest tile first and adjust the adhesive thickness for the other natural stone tiles to achieve a perfectly level floor.

## Special notes of specific products

### **Limestone/travertine**

For light coloured porous stone products such as limestone and travertine use a white, fast setting highly deformable cement based C2-S2 type of adhesive. This will reduce the possibility of water staining on the surface of the tile from the adhesive during the curing process. It will also reduce colour show through on the light coloured stone tiles.

**Travertine** tiles have voids or pinholes that can appear after installation. No guarantee can be given against this occurring. Any voids that do appear can be filled with either grout or an epoxy resin.

**Limestone** needs particular care when installing on a timber substrate.

The installation surface needs to be rigid and strong or the tile could be damaged or crack. **Grey Friars Abbey** is prone to surface scratching. Any scratches will blend in over time.

**Alexandrian Sun** can contain areas of iron oxide and if this comes into prolonged contact with water the iron content may expand causing delamination of the tiles surface. This stone must be completely dry before sealing and the correct amount of sealer applied following manufacturer's guidelines.

**Marble** tiles inherently have a natural veining effect. As the marble is cut into the various different formats of trims, flats, bevelled edges and mosaics there will be differences in shades, tones and veining. This may be more noticeable if the flat tiles and the smaller pieces such as the smaller bevelled formats are placed next to one another. They may differ but the overall effect will be stunning.

**Natural slate** can suffer from delamination due to the laminar structure of the natural stone. If this happens during installation remove all the loose pieces, clean and then re-seal the affect portion.

**Terracotta** tiles are extremely porous and will require a lot of sealing. Newly installed tiles will be very light and can take some time to achieve a richer colour although this can be sped up with the use of modern sealers. See Sealing section, below.

**Pebble** mosaics may require the removal and adjustment of individual pebbles so that the sheets interlock avoiding visible grout lines. They can also suffer from iron staining, if this occurs remove the pebble affected from the sheet and replace it with one of a similar size from a spare sheet.

### **Mixed format borders containing metal**

Some mixed format borders contain metal. Extreme caution must be taken when using metal mosaics or borders in an electric shower. Always consult a qualified electrician prior to installation. Metal pieces are prone to scratching, so use a fine or un-sanded grout on an unfixed tile to test, before grouting the whole installation.

# How many tiles will you need

Please refer to the latest version of the brochure at [www.originalstyle.com](http://www.originalstyle.com) for special notes regarding suitability, sealing, grouting, cutting and other appropriate information and warnings.

It is important that your tile installer understands any blends or patterns you want, the requirements for surface preparation and protecting newly installed tiles from on-going work. Floors and walls may require expansion joints.

Always check the tile weight is suitable for your substrate adding 3.5kg per m<sup>2</sup> /6.4lb per yd<sup>2</sup> for adhesive and grout per m<sup>2</sup>. The following table has typical wall substrates and their maximum tile weight.

## Tiles

Nominal tile size	Per m <sup>2</sup>	Nominal tile size	Per m <sup>2</sup>
10 x 10cm	100	31 x 31cm	10.4
14.7 x 7.2cm	94.5	40 x 20cm	12.5
15 x 7.5cm	88.9	40.6 x 20cm	12.3
16 x 27cm	43	40.6 x 20.3cm	12.1
20 x 10cm	50	40 x 40cm	6.2
20 x 20cm	25	40.6 x 40.6cm	6.1
20.3 x 20.3cm	24.3	45 x 45cm	4.9
22 x 36cm	12.6	55 x 27.35cm	6.6
27 x 27cm	13.7	60 x 30cm	5.5
23 x 7.5cm	58	60 x 40cm	4.1
30 x 10cm	33	60 x 40.6cm	4.1
30 x 15cm	22.2	60.5 x 40cm	4.1
30 x 20cm	16.7	61 x 30.5cm	5.4
30 x 30cm	11.1	61 x 40.6cm	4.1
30 x 31.2cm	10.7	60 x 60cm	2.8
30.5 x 10cm	32.8	61 x 61cm	2.7
30.5 x 12cm	27.3	80 x 40cm	3.1
30.5 x 15cm	21.9	90 x 30cm	3.7
30.5 x 26.1cm	12.6	90 x 60cm	1.8
30.5 x 30cm	10.9	91.5 x 61cm	1.8
30.5 x 30.5cm	10.7		

## Borders

Nominal border length	Per m <sup>2</sup>
10cm	10
26.5cm	3.7
27cm	3.7
28cm	3.6
28.5cm	3.5
29cm	3.4
29.5cm	3.4
30cm	3.3
30.5cm	3.3
31cm	3.2
33cm	3.1
34cm	3

# How many tiles will you need

Once you have decided on your tiles, calculate how many you will need by measuring the area to be tiled. Recommended grout gaps vary depending on personal taste and the look you wish to achieve, and also the uneven nature of the tile edge. Generally, the more rustic the tile base, the wider the grout gap.

## **How to calculate the square metre/square foot measurement of the area to be tiled:**

**Wall:** measure the height of your room or the height you will require the tiling to end and multiply by the width.

**Floor:** measure the length of the area to be tiled and multiply by the width. The result will be the square metre/square foot measurement of the area to be tiled.

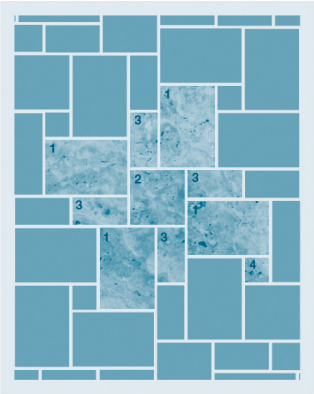
## **How to calculate the number of tiles required:**

If the shape of the area to be tiled is a simple square or rectangle you can simply calculate the area of each tile and divide it into the area of the floor or wall. This assumes that the area being tiled is square at the edges, if not you will need to allow some extra for part tiles.

An alternative method is to make a scale drawing of the floor and/walls on a piece of graph paper, draw the outline of each tile (including dados, trims and borders where appropriate) and add them up.

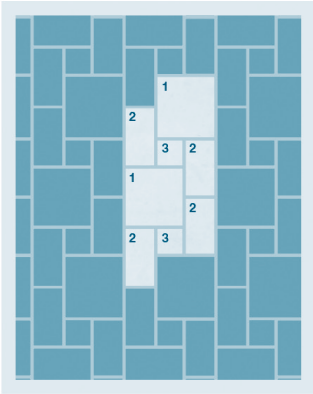
We recommend that you allow for part tiles, wastage and any imperfections by adding at least five per cent to the total for mosaics and ten per cent for larger tiles. It can be a false economy to only order the exact quantity. You may break some tiles when cutting or you may end up with awkward shapes that take more tiles than anticipated. It can be frustrating to get near the end of the job only to find that you are short of one or two tiles, especially as colours can vary between different batches.

# How many tiles will you need – pattern repeats



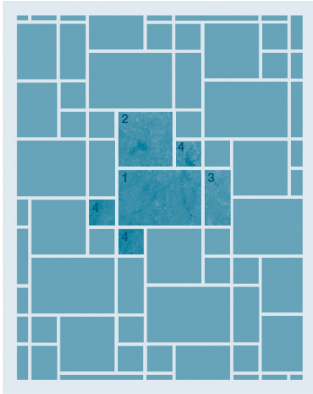
**A** Tiles shown above  
Umbrian Gold Filled & Honed

No.	Size (cm)	Pieces	m²
1	61 x 40.6	4	0.96
2	40.6 x 40.6	1	0.16
3	20.3 x 40.6	4	0.32
4	20.3 x 20.3	1	0.04
Total		10	1.48



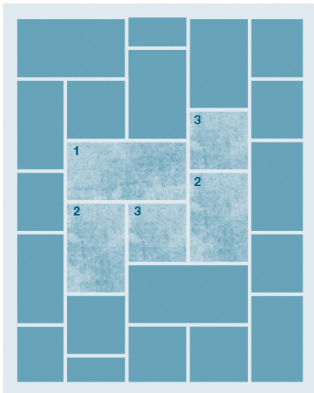
**B** Tiles shown above  
Levantine Ivory Unfilled

No.	Size (cm)	Pieces	m²
1	40.6 x 40.6	2	0.33
2	20.3 x 40.6	4	0.33
3	20.3 x 20.3	2	0.08
Total		8	0.74



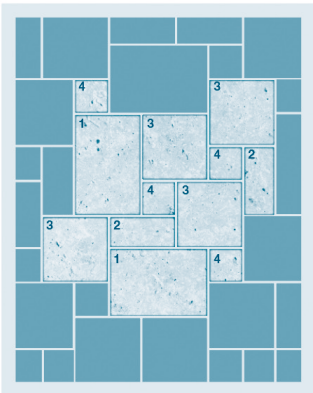
**C** Tiles shown above  
Umbrian Gold Filled & Honed

No.	Size (cm)	Pieces	m²
1	61 x 40.6	1	0.24
2	40.6 x 40.6	1	0.16
3	20.3 x 40.6	1	0.08
4	20.3 x 20.3	3	0.12
Total		6	0.60



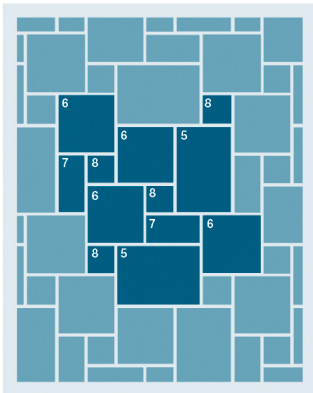
**D** Tiles shown above  
St Sermin

No.	Size (cm)	Pieces	m²
1	80 x 40	1	0.32
2	60 x 40	2	0.48
3	40 x 40	2	0.32
Total			1.12



**E** Tiles shown above  
Levantine Ivory Manor Set

No.	Size (cm)	Pieces	m²
1	91.5 x 61	2	1.12
2	61 x 30.5	2	0.37
3	61 x 61	4	1.49
4	30.5 x 30.5	4	0.37
Total			3.348



**F** Tiles shown above  
Greyfriars Abbey Set

No.	Size (cm)	Pieces	m²
5	82.5 x 55	2	0.91
6	55 x 55	4	1.21
7	55 x 27.35	2	0.3
8	27.35 x 27.35	4	0.3
Total		12	2.72

## How many tiles will you need – pattern repeats

You can use individual tiles to make up the patterns if they match the dimensions, there are two sets available: **Levantine Ivory Manor Set** and **Grey Friars Abbey Set**. When fitting any patterns, you will find that you will have to adjust grout gaps to ensure the tiles tessellate. You may find you have to cut some tiles to enable them to fit.

### IMPORTANT

Try and avoid cutting tiles with pillowed or chipped edges as this will be noticeable in your finished design. We recommend that you use a professional stone fitter to fit your floor tiles, and that they should check and confirm actual dimensions before fitting. Please note that due to the nature of these designs the dimensions set out above are approximate only. For larger areas there will be greater variances due to grout gaps and fitting to irregular edges of the room being tiled.

Please note that the large pieces of stone and the sets are extremely heavy. Care must be taken when lifting and carrying these tiles, so we strongly recommend that installations of pattern sets are carried out by two people to avoid personal injury.

# Preparation

It is essential to first mix tiles from different boxes so that variations in colour are blended together thoroughly. Please note, variations in shade and pattern are an inherent feature of natural stone. Do not fix tiles if an acceptable blend cannot be achieved as fixing constitutes acceptance of quality, colour, size, texture and shade of the tiles, even if the home owner is not present during fixing.

It is important to plan the installation of your wall or floor before starting to fit any tiles. You need to consider the following in the planning stage.

## Important Note

All surfaces must be allowed to dry out completely before tiling. Failure to do this can result in moisture being trapped behind the tiles which can react with some tiles causing them to deteriorate over a period of time.

The secret to a perfectly laid wall or floor is to lay the tiles as flat and as evenly as possible. To do this successfully you need the firmest, flattest and driest possible surface to work on. Some surfaces are ideally suited for tiling, others require a certain amount of preparation first, and a few are totally unsuitable.

Tiles are completely inflexible. With this in mind, it is important to ensure that the substrate will not move otherwise cracking will occur.

## Floors

Before installing any mosaics or tiles suitable for floors please read the guidelines below. The satisfactory installation of all tiles and mosaics depends on their application to a sound, level surface and use of the correct adhesive for that surface. Laying directly into wet cement is not recommended.

The secret to a perfectly laid floor is to lay the mosaics or tiles as flat and as evenly as possible. To do this successfully you need the firmest, flattest and driest possible surface to work on. Some surfaces are ideally suited for tiling, others require a certain amount of preparation first, and a few are totally unsuitable.

Natural stone mosaics and tiles may be wet on arrival so will need to be fully dry and then sealed to prevent staining. To dry lay them out in an aerated room. Make sure they are fully clean and dry then impregnate (seal) before and after grouting. Lithofin MN Stainstop and LTP Mattstone are suitable.

# Preparation

**ALL floors must be primed prior to installation.**

**Sand and cement (screed)** floors must be completely dry. Allow seven days to cure then another 14 days to dry. Please be aware that certain installations may require a longer drying time, due to thickness of the screed, humidity within the room and weather conditions. Use a hygrometer to test for moisture.

**Anhydrite screed and asphalt surfaces:** always seek professional advice before installing over anhydrite screeds and asphalt. The laitance (dusty surface) must be removed and special sealers such as Mapei Primer G and Ardex P51 must be used prior to tiling.

**Timber and joist floors** must be rigid and solid without movement. The best way to achieve this is to lay marine plywood boards measuring 15mm or thicker over the entire floor, screwing it down every 150mm in each direction. Before screwing the marine ply down, apply PVA to the reverse and sides (but not on the surface to be tiled). We advise employing a tiling professional to tile onto all wooden surfaces, as it is essential that any movement or flexing in the floor is removed and special flexible adhesives are used.

**A wooden floor substrate** will require over boarding with a minimum 15mm thickness of water boiled proof (WBP) marine ply. It is advisable to seal the back and sides of the board with PVA so that moisture cannot penetrate and deform the sheet. **Do not seal the face of the board** as the bonding adhesive will not set properly and will remain as a mush.

Fix the boards with screws at 300mm centres in both directions at right angles to the existing floor. A decoupling matt such as DITRA matting should then be fixed using a C2FT-S adhesive, this will help to eliminate thermal expansion lateral movement differences between the substrate and tile preventing cracking of the tiles. Mapei Keraquick or Mapei Keraquick with Latex Plus adhesives are suitable.

**Old stone, or quarry tiles** are best removed. If this is impossible or impractical, and they are completely sound, they should be thoroughly cleaned of any contaminants i.e. dirt, grease, oil, waxes etc. Vinyl tiles should always be removed. If tiled over they can sweat and cause debonding of the adhesive.

## IMPORTANT:

**Do not lay mosaics or tiles directly onto a bed of wet sand and cement.**

This may give rise to efflorescence on the surface of some tiles. Efflorescence (which is a natural chemical reaction) is the name for a whitish bloom that can appear if there is moisture within the tile.

# Underfloor Heating

Underfloor heating is an excellent and extremely efficient way of heating, either as the sole source of heat in a room or as a backup to an existing heating system. There are two types, electric and piped water. The electric method is extremely simple to install. A length of wire and rolled out mat is laid out on the substrate prior to tiles being fixed. A wall mounted thermostat enables complete control over the temperature. Natural stone, ceramic and porcelain floor tiles can be used effectively with underfloor heating systems providing expansion joints are incorporated. These absorb thermal expansion and contraction between the tiles and substrate. Electric underfloor heating will heighten the floor by approximately 5-6mm so this should be planned into your installation.

NB The underfloor heating manufacturers' guidelines must be followed.

When installing underfloor heating, please note that the adhesive and grout manufacturers' instructions must also be followed. It is very important to obtain all information concerning installation, particularly regarding delay times before and after installation, before the actual work begins. If the installation is done incorrectly, the tiles may be subject to cracking, due to thermal expansion and contraction, and drying.

A decoupling membrane is installed to minimise the effect substrate movement will have on the tiles during heating and cooling. The electric cable system fixes onto the decoupling matt beneath the tiles. Use deformable (flexible) fast setting adhesives for fixing. Mapei Keraquick with Latex Plus (C2FT S2) is suitable.

## Important.

Underfloor heating systems **must** be turned off and the floor must be cool before tile installation commences. Following tiling the heating system must not be turned on for 28 days to allow the adhesive to fully cure and then at 5 degrees C per day until the maximum operating temperature is attained.

## Marking out the work area – floors

Begin by taking a good look at the room. Establish the centre of the room by measuring the midpoints of two opposite walls and drawing a line between these points. Now find the centre of this line.

1. You may have to adjust the midpoint mosaic to reduce wastage as you reach the edges of the room. You can use the midlines as edges or centres of the first row of mosaics.
2. Now lay out the mosaic sheets loosely, allowing for the joints. The joints will depend on what you are trying to achieve and on your choice of mosaics.

### How wide should the joints be?

Floor mosaics must be laid with a grout gap the same as the gap between the tesserae that make up the sheet.

If you are using more than one product, check the thickness of the tiles and mosaics – you may have to adjust levels with extra adhesive to ensure an even and flat surface when the tiling is completed. Different levels can also be built up by using Marmox or Wedi boards.

The aim is to achieve a pleasing pattern whilst avoiding unnecessary cutting or thin slivers at the edges of the room. It is desirable to maintain whole mosaic sheets in the doorway. If you are tiling through a doorway (i.e. installing in two different rooms), make sure you install a movement joint at the threshold. This will allow for differing substrates and ambient temperatures between the rooms.

Once you have marked out where the tiles are going, begin laying at the centre end of the room i.e. furthest from the door.

The first row is the most important; get this straight and level and laying the rest will be easy. Get it wrong and it will become progressively more difficult to obtain a pleasing result.

### Bathrooms

Baths and shower trays must be perfectly level before you start tiling. To ensure a visually pleasing result, use the window as your centre point, and place larger cuts rather than smaller ones into the corners, floors and ceilings.

## Planning – Floors

The initial thing to do is to establish the levels in the room to ensure you have sufficient thickness to lay the tiles and adhesive bed in order to lay a level floor and still meet adjoining floors without having a step up or down. Always use your thickest tile to do this otherwise you will run into problems later.

Probably the simplest way to do this is to use a wooden block to represent the thickness of your tile and adhesive, place a straight edge on it (or on the surface of the adjacent floor if that's what you're working from). Pack up the other end until, by using your spirit level, you know that it is dead level. By measuring down from the straight edge you will be able to see the thickness you have for your floor.

If you now move the first end of the straight edge onto the second packing levelling once again then repeating around the room you will be able to assess how good the level of your substrate is. For example if you need 20mm for your tile and bed and you find at any point you have only 10mm under the straight edge, you know your substrate is 10mm high and you're either going to have to raise your floor by 10mm or remove material to get the required depth.

Once the levels have been checked you can now set out laterally to find out the best layout for the tiles so you'll know about any difficult bits and plan accordingly to accommodate or eliminate them from the final layout.

This job is much easier with two people but can be accomplished with one. First thing is to establish the 'centre lines' of the floor. They are a base to measure from and nothing else, they are often called 'centre lines' but are often no such thing unless in a perfectly square or rectangular room.

In a rectangular room, start by finding the mid-point of the two shorter walls at each end of the room. If there is a particular wall to which you want your tiles to be parallel, mark the approximate mid points but equidistant from that wall. Join up the marks with a chalk line stretching it between the marks and lifting it as close to the middle and letting it twang back onto the floor leaving a clear straight line. This is your baseline.

## Planning – Floors

The next stage is your cross line. This goes roughly in the middle of the room and has to be exactly at right angles to your baseline. Do not try to establish this by measuring from walls we do not want to work from something that just happens to be there. The usual method is to construct a 3-4-5 triangle. This method has the advantage of being both accurate and capable of being used over any distance. It doesn't matter the units you use they can be feet, yard or metres providing they are the same. The triangle should be as large as you can comfortably manage.

For example firstly mark the centre of your baseline, then using your tape measure as a trammel, mark an arc on the floor exactly 4m from this centre point and roughly at right angles to your baseline. Then go back to your baseline and mark a position exactly 3m from your centre point. Now with the end of the tape on this mark swing the tape until the 5m mark meets the arc that you drew earlier.

Mark the place they meet. If you have worked accurately, a straight line drawn through this point and your centre point will be exactly at right angles to your baseline. Do the same thing on the opposite side of your baseline, this will act as a check.

All you have to do now is again using your chalk line, strike a line through all three points extending it right across the room, if they don't line up something is wrong. This is a basic setting out for a square or rectangular room. Rooms will come in all shapes and sizes – some will be out of square, some walls may be curved or have nooks and crannies, but with a few exceptions the principle is the same for them all.

# Planning – Walls

## Weight

Make sure that the wall substrate is able to take the weight of your mosaics or tiles, plus adhesive and grout. Add 3.5 kg/m<sup>2</sup> or 6.4 lb/yd<sup>2</sup> for the weight of the adhesive and grout to the tile weight in kg/m<sup>2</sup> or lb/yd<sup>2</sup> and compare to the weights that the substrate will support:

Wall Substrate	Maximum tile weight	
Gypsum plaster	20kg/m <sup>2</sup>	37lb/yd <sup>2</sup>
Plasterboard (gypsum) unskimmed	32kg/m <sup>2</sup>	74lb/yd <sup>2</sup>
Sand cement render	40kg/m <sup>2</sup>	74lb/yd <sup>2</sup>
Gypsum fibre boards	40kg/m <sup>2</sup>	74lb/yd <sup>2</sup>
Tile backer boards	40kg/m <sup>2</sup>	74lb/yd <sup>2</sup>
Glass reinforced cement sheets	50kg/m <sup>2</sup>	92lb/yd <sup>2</sup>

## ALL walls should be primed before tiling.

Painted surfaces are unsuitable for natural stone mosaics and tiles. You will need to scrape off all loose paint and rub the whole surface down with coarse sand paper until all the paint is removed.

Plasterboard walls may be suitable, depending on their weight and how well the plasterboard is fixed to the stud wall underneath. You may need to seek advice on this. Normally a plasterboard wall which has not been skimmed has a load bearing of 32kgs per m<sup>2</sup>/59lb/y<sup>2</sup>. These walls should be primed first, left to dry and then the adhesive applied directly to the wall.

Plaster is a suitable surface as long as it is dry and in good condition. Normally a plaster wall has a load bearing of 20kgs per m<sup>2</sup> /37lb/y<sup>2</sup>. Remove any loose or crumbling plaster and repair it with new plaster or filler before rubbing down to a level finish. Prime the walls and leave to dry before commencing to tile. Mapei Primer G is a suitable primer for gypsum plaster. It is important to check weight restrictions before fixing tiles. Always seek professional advice if you are tiling over plaster.

# Planning – Walls

Rendered walls can be tiled but new rendering must be allowed to dry out completely before tiling; normally a period of 21 days is recommended. Rendered vertical walls are a good base for tiles up to 15mm / 5/8" thick with a maximum height of 3.6 metres / approximately 12 foot. For tiles thicker than this the render must be reinforced with metal mesh screwed to the wall. Professional advice regarding this is recommended.

Papered walls cannot be tiled. Strip the paper completely, check for loose plaster or other damage, repair as necessary and then allow the wall to dry out thoroughly before priming.

Old ceramic wall tiles; we do not recommend tiling over old tiles because of weight restrictions and stability. Old tiles should be removed and the exposed surface should be prepared as appropriate (see above).

## Wet rooms and showers

Natural stone tiles and mosaics can be used in showers provided you take certain precautions in preparing the surfaces and use the correct white, fast setting C2FT-S adhesive and low water absorption grout. The stone will need to be sealed prior to and after grouting to prevent staining and the ingress of water. It is vitally important to prepare all substrates in any area subject to frequent water (such as around a bath, basin or shower) carefully to protect them from water absorption. Mapei and Ardex CG2 WA reduced water absorption grouts are suitable. Mapei and Ardex C2 F fast setting adhesives in white are suitable.

The best substrates are normally water resistant boards such as Wedi or Marmox. The underlying surface must be waterproofed first, using a waterproofing kit known as a tanking system (see below), to prevent the ingress of water into the substrate. There must also be sufficient falls for water to drain away. Both Mapei and Ardex supply waterproofing kits.

## Tanking Systems

We recommend using a tanking system for power showers, shower cubicles, steam rooms and wet rooms in hotels, guest houses, leisure centres, fitness centres and in domestic homes. These normally consist of a primer, a liquid waterproofing membrane that you brush on to the wall and floor, and a tape for reinforcing all internal corners. Please refer to specific manufacturer instructions or, preferably, get a professional to do this job. Tanking a previously painted surface is not recommended. You can usually apply the tile adhesive 24 hours after the wall is waterproofed. We recommend that all waterproofing processes are carried out by a professional.

## Marking out the work area – walls

### First, make a tiling gauge.

Use approximately 1m/39" length of straight, planed, wooden batten approximately 30 x 20mm / 1 1/8" x 3/4" in cross-section. Use a pencil to mark off the length of your tiles, plus the space between them. For instance, if you are fixing tiles that measure 150 x 150mm / 6" x 6" and have gaps between each tile of 2mm / 1/16" you will mark every 302mm / 11 7/8".

Mark out the work area. You must always check to see whether the ceiling is level first. Aim to position the tiles so that they fit either at the top or at the bottom. This way you will be cutting one edge. This can only be achieved if the floor or ceiling is level.

The first row you fix is the most important. If this is sloping or uneven, then all the other rows will be uneven too.

If the skirting board or floor looks even you may be tempted to start tiling directly up to it. This is not recommended. Few properties, old or new, have walls and floors that are perfectly square so you will need to set the level for the first row. Here's how:

Take a straight length of timber batten (dimensions as above).

Using a spirit level, make sure the top of the wooden batten is perfectly level then lightly nail it horizontally along the area to be tiled.

NB. Check for concealed plumbing or electrical wiring before nailing into any walls.

Place your homemade gauge vertically against the wall, its end on the top edge of the fixed wooden batten. Work up the wall making pencil marks as you go, making sure that you won't have to cut lots of fiddly small tiles at the top.

Now use a measure to find the horizontal mid-point of the wall. Put your gauge against this point and work horizontally to determine the location of the last whole mosaic sheet and mark the batten. Again, make sure you are not left with small slivers of tesserae at each end and, if necessary, adjust the 'mid-point' slightly to avoid this.

Next hang the plumb line so that the line hangs directly over the batten mark. Alternatively, you can use a laser level, a long set-square or an upright spirit level to produce a vertical line. Once you have the precise starting point for your first mosaic sheet you can begin tiling.

# Adhesives and grouts

## We recommend:

- a white, fast setting, highly deformable S1 or S2 TYPE adhesive which has a 'T' modification (this stops the tiles slipping down the wall).
- a CG2 type grouts appropriate for the size of grout gap in normal installations and a CG2-WA in a wet installation (WA = low water absorption and abrasion resistant)
- joints of 2-12mm (1/8" – 1/2") between tiles. The exact width will depend on the size and type of tile and personal preference. In general, rustic tiles such as slate, some travertines and terracotta tend to look better with wide joints whereas quarry tiles, finished stone tiles and machine cut tiles need narrower joints.

Stone mosaics can be laid with grout gaps the same as the gap size between the tesserae that make up the sheets.

## Weight

Make sure that, if fixing to a wall, it is able to take the weight of your tiles and adhesive. See table above.

## Control joints

There are numerous reasons for movement and expansion joints. Divide a larger tiled area into a series of smaller ones with sealant and bond breaker between them. Designers may show points at which joints are needed but these are mandatory where tiles adjoin walls or some other building material and where there is an expansion joint in the substrate, among other circumstances. Always seek advice on this.

## Applying the Adhesive

Once your substrate has been prepared (above), spread adhesive over as much of the wall or floor as you can work on, within about 15 minutes; approximately one square metre (one square yard) is usually about right. Spread an even layer about 6mm (1/4") thick using a notched trowel to form parallel lines. Work to the lines you have drawn on the walls or floor for centre points and level lines. Fully back-butter the tiles (approximately 2 mm) before applying the tile into the ribbed adhesive.

Place the first whole tile on the adhesive and press it down firmly. Check the first tile is straight and level. Now lay the adjacent tiles in the same way, using spacers to create an even joint between them. When you get to the edges of the room cut the tiles to fit the gap if necessary with a wet cutting disc or angle grinder. Extreme care should be taken especially when cutting small pieces.

Clean away any excess adhesive from the corners of the tiles with a trowel. The corners will receive silicone for expansion purposes following grouting. Be careful to keep adhesive off the face of the tiles. Wipe away any surplus with a clean damp sponge as you go.

Remove spacers that have been used during the fixing process from the joints before the adhesive set-ting time is reached, before grouting.

# Grouting

Make sure all the grout joints are clean and free of debris before grouting. Use a light coloured grout to reduce the possibility of staining. Always test the grout on a spare tile or an area where it won't be seen in case it scratches the tiles surface, this is particularly important when dealing with a polished finish.

Push the grout into the joint using a grout float and work methodically along the installation. Take care to ensure the surface of the tile is as free from grout as possible. Once the grout has started to form a skin, wash down carefully with a clean sponge and water. Change the water regularly to prevent scratching. When it is nearly dry give it a final wash down, changing water regularly to prevent scratching.

When the installation is fully dry seal as before to prevent water ingress and ingrained dirt. Ensure the tiles are clean as any grout or adhesive still present at this stage would be sealed into the tile.

## Sealing

### Impregnating

Natural stone MUST be impregnated before and after installation when the tiles are fully clean and dry. Lithofin MN Stainstop and LTP Mattstone are suitable impregnators.

### In wet areas

Seal prior to and after grouting to prevent the ingress of water.

### Terracotta

Terracotta tiles are a more porous material than the natural stone tiles. Boiled linseed oil is the traditional impregnating fluid used. This soaks into the product and reduces its porosity. It also gives the option of choosing the colour you want. By adding more boiled linseed oil the colour and appearance of the tiles will be enhanced. Linseed oil can be used as it is or diluted with white spirit. You normally need to apply more than one coat and sometimes as many as four to saturate the tile. The number of coats can vary from tile to tile, so do not allow any excess to dry on the surface. Remove any excessive oil using clean, lint-free rags. Take care when disposing of the rags and leave them unfolded, as they can combust. Leave the tiles for 24 hours, and then grout using a flexible wide joint grout, removing any residue as you go. All grouting must then be left to dry before applying two coats of neutral beeswax, using a lint-free cloth. After application buff to the required finish.

To keep the natural look of terracotta tiles, impregnate them without using any oils or enhancers. Using silicone, potassium or sodium silconate sealers offer only a short time for oils to penetrate through the seal, whilst water-reactive polysiloxanes and flouropolymers offer increased reaction times – hours rather than minutes. There are numerous products on the market, so we strongly advise that you contact your nearest sealant supplier.

LTP ([www.ltp-online.co.uk](http://www.ltp-online.co.uk)) Tel: +44 (0) 1823 666213  
H.G.Hagesan ([www.hg.eu](http://www.hg.eu)) Tel: +44 (0) 1206 795200  
Lithofin ([www.lithofin.com](http://www.lithofin.com)) Tel: +44 (0) 1962 732126  
Fila ([www.filachim.com](http://www.filachim.com))

## Cleaning and maintenance

Sweep or vacuum regularly to remove loose dirt. Wipe off any spillages immediately with a clean, damp cloth. Stubborn marks can often be removed with a little white spirit. The use of certain acid based cleaning products may cause some of the stone to react and change in character.

### **Terracotta**

Clean as above. Polish regularly with wax polish. Polish new floors once a week for the first six weeks and apply more polish every two to four months after this. Apply the polish with a clean cloth, allow it to harden for 30 minutes then buff the floor by hand or with an electric polisher. If the wax starts to build up on the surface, reduce the frequency of polishing, whereas if the floor begins to look dull, polish more often.

## Photography

Owing to variations in studio lighting and printing inks, the tile colours shown in the Original Style brochure and website may differ slightly from those of the actual tiles.

## Limits of liability

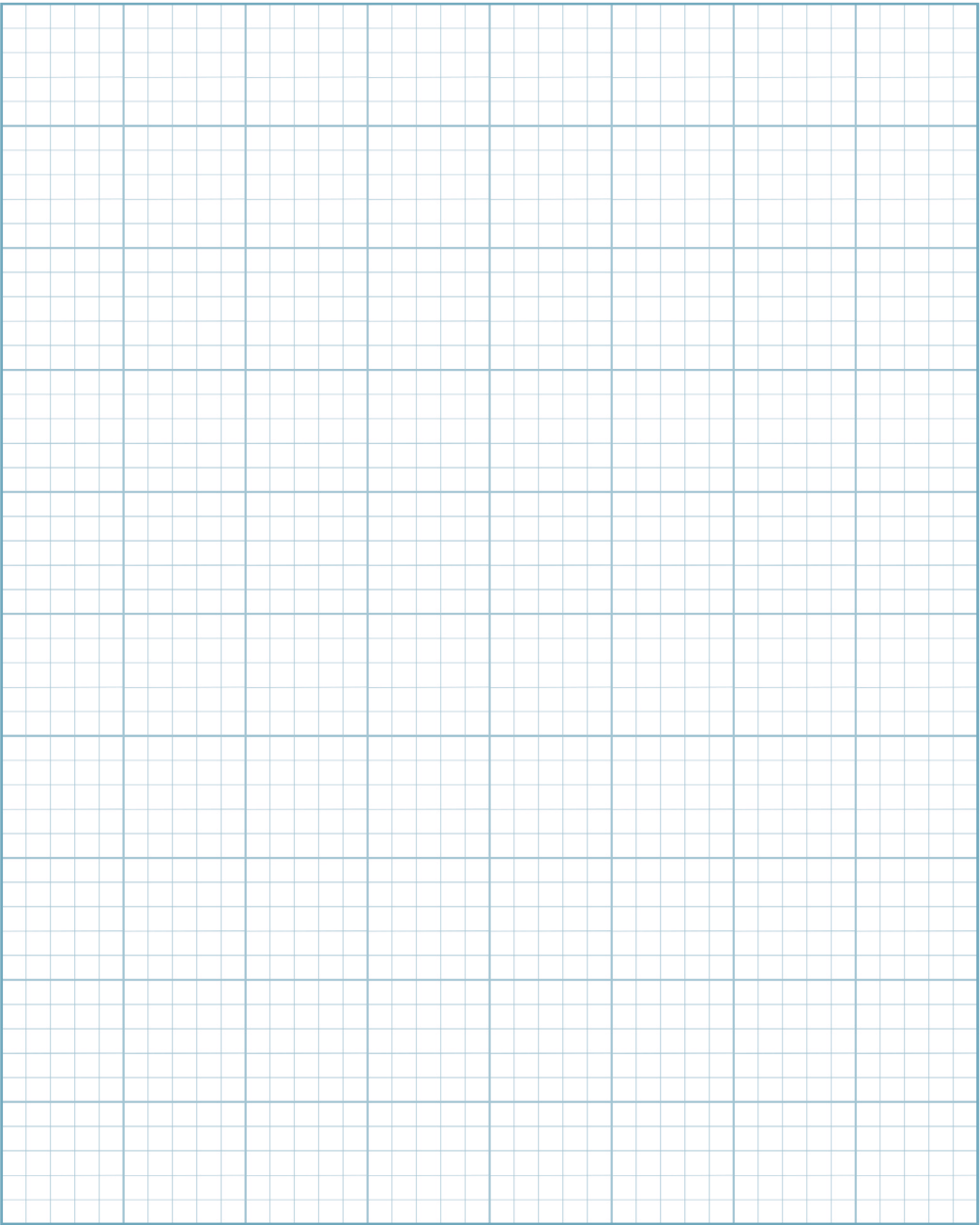
Before making your choice it is always advisable to ask your Original Style dealership to show you samples.

Original Style Ltd. accepts no liability for the faulty installation of its tiles. In the case of any claim relating to the tiles themselves, Original Style's liability, to the extent permitted by law, is limited to either the replacement of the product or a refund of the cost of the product, and does not extend to cover any consequential loss. Claims must be reported within seven working days from receipt of the tiles. Tiles must be inspected prior to installation and claims cannot be considered after the tiles have been installed. Please be advised that installation constitutes acceptance of the quality, colour, texture, shade and size of tiles.

Original Style Ltd. warrants that its tiles conform to their description and are fit for their purpose. Original Style Ltd. makes no other express or implied warranty as to fitness or suitability of the products for particular installations. We extend no guarantees, express or implied, as to wear resistance or maintenance procedures.

Please note, the use of certain acid based cleaning products may cause some of the tiles to react and change in character. In addition, abrasive cleaners must be avoided as they will scratch the surface of the tiles. Particularly if they have a polished surface finish.

Please note: In the USA please follow the recommendations of reputable product manufacturers in conjunction with this Fixing Guide, and always comply with American National Standards Institution (ANSI) specifications as set out in the Handbook for Ceramic Tile Installation published by the Tile Council of America. Useful links: [ctioa.org](http://ctioa.org), [tileusa.com](http://tileusa.com)







  
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