

A modern bathroom interior featuring a white freestanding bathtub with a chrome faucet. To the left, a round wooden side table with a black metal base holds a potted plant and a small tray. A white conical pendant light hangs from the ceiling. The background wall is composed of large, light-colored rectangular tiles.

designworks:tiles

Tileworks FIXING GUIDE

Tileworks

FIXING GUIDE

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Introduction

Porcelain and ceramic tiles in the Tileworks Collection are available in a wide range of types, sizes and finishes, with a design to suit every taste and every home. All porcelain floor tiles are measured for slip resistance and wear rating and all porcelain and ceramic tiles conform to the European Standard BS EN14411.

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 impregnate
- Clean and maintain your finished installation

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

It is the responsibility of the purchaser/installer of Original Style products to adhere to the following guidelines in accordance with the British Standards Institute Wall and Floor Tiling Codes of Practice:

BS 5385-1:2018 Code of Practice

Wall and floor tiling. Design and installation of ceramic, natural stone and mosaic wall tiling in normal internal conditions.

BS 5385-3:2014 Code of Practice

Wall and floor tiling. Design and installation of internal and external ceramic and mosaic floor tiling in normal conditions.

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.

Glossary of tiling terms

Adhesive	The glue used to fix tiles to the substrate. There is a wide choice available, so always ask your stockist for advice on your particular project and type of tiles.
Grout	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.
Movement joints	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. Internal: Please refer to BS5385-1 2018, 6.4-6.4.4 External: Please refer to BS5385-3 2014, 71.6.1-71.6.4
Pointing	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.
Render	A wall finish made up of sand and cement, usually made up of sand/cement in the ratio of 4:1.
Screed	A floor screed is usually a cementitious material made from 1:3, 1:4 or 1:5 ratio of cement to sharp sand.
Silicone sealant	A material with elastic and waterproofing properties used to fill movement joints instead of grout.
Solid bed	A method of tiling where there are no voids under the surface of the tile.
Slurry grouting	Where the grout mix is runnier than normal and is spread across a large area at a time using a spreader. Care is needed to ensure the grout goes right into the joint and no areas are missed out.
Stud wall	Internal walls in a home, usually constructed of plasterboard over a wooden framework.
Substrate	Any surface on to which tiles are laid.
Thin set	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.

Adhesive spreader/ bedding trowel	The notched edge of this tool ensures an even spread of adhesive of an even depth.
Chinagraph pencil	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.
Drill	Use a water fed carbide tipped drill bit or a water fed hollow tipped diamond coated drill bit.
Electric water-fed diamond wheel cutter	A water fed diamond wheel cutter is the best way of cutting porcelain and ceramic tiles. These are available from tool hire companies, tile shops, or DIY stores. Follow the manufacturer's advice regarding protective goggles, masks and gloves.
Epoxy squeegee	A rigid squeegee specifically designed for the application of epoxy grouts.
Eye protection, gloves and dust mask	It is vital that you use all possible protection when using any cutting or drilling machinery. Always use personal protective equipment as advised by the HSE. Visit www.hse.gov.uk for further health and safety advice.
Gauging trowel	For removing the grout from its container, or the vessel used for mixing the grout. Use it to place adhesive onto a bedding trowel.
Grout finishing tool	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.
Spacers	These small pieces of plastic are inserted between the corners of the tiles or mosaic sheets 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.
Levelling clips & wedges	A system of clips and wedges used to achieve accurate levelling of tiles. They compensate for the slight bowing or warping that is common in some larger format tiles to prevent lipping at the grout joints.
Spirit level/laser level/ plumb line	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.
Sponges	Use to remove grout residue and for smooth 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.
Squeegee or rubber trowel	Used for spreading grouting compound into the spaces between the tiles.
Steel ruler/tape measure	For accurate measuring.
Scribe and snap straight cutter	A simple scribe and snap machine for straight cuts.
Tile gauge	A device for accurately measuring and shaping your tiles.
Tile nippers	A specialist tool for 'nibbling' away unwanted sections of tiles.
Wedges	These are wooden or plastic for minute tile adjustment.

Selecting your tiles

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 and mosaics 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 of tiles for your installation

Each tile in the Tileworks brochure has a suitability symbol with it to enable you to select tiles that are suitable for your application. Please refer to the latest version of the brochure for the most up to date range of products.

Slip testing floor tiles

It is very important that you take note of these symbols particularly those that show the suitability of the tiles for floors in wet and dry areas. Every tile for floor applications has been measured for slip resistance in wet and dry areas in shod conditions and wet areas in barefoot conditions to ensure suitability in accordance with the Health and Safety Executive's guidelines using the **Pendulum Test Method BS7976-2**. This test is designed to simulate the action of a slipping foot and uses a weighted swinging arm which contacts the surface of the tile with a standard rubber slider that represents the rubber sole of a shoe in both dry and wet conditions. The slip resistance is the upswing measured from a scale on the instrument. The greater the upswing, the lower the slip resistance and the greater the slip potential. Accepted limits for flooring using this technique are:

Slip potential	Slip resistance value using 4S96 rubber slider
High	0 to 24
Moderate	25 to 35
Low	36+

Pendulum test BS7976-2 (Transport & Road Research Laboratory)

As above, to determine the wet co-efficient of friction using a TRRL rubber slider to represent barefoot in wet conditions (to test as appropriate).

Accepted limits for flooring using this technique are:

Slip potential	Slip resistance value TRRL 55 rubber slider
High	19 and below
Moderate	20 to 39
Low	40 to 74

The testing is conducted in-house.

Suitability of tiles for your installation

Wear ratings for glazed floor tiles

Different glazed floor tiles will have different wear ratings dependent on their glaze composition. Each glazed floor tile in the Tileworks Collection will have a published PEI wear rating quoted. The PEI wear rating (ISO 10545-7) indicates the tile wear usage area suitability as follows:

PEI 2 Floor coverings in areas that are walked on by soft soled or normal footwear with low traffic and occasional scratching such as bedrooms.

PEI 3 Floor coverings in areas that, with normal footwear, are walked on more often with small amounts of scratching and dirt. Suitable for residential kitchens, halls and corridors.

PEI 4 Floor coverings that are walked on by regular traffic with some scratching dirt. Suitable for entrances, commercial kitchens, restaurants and public houses.

PEI 5 Floor coverings that are subject to severe pedestrian traffic over sustained periods with some scratching dirt. Suitable for shopping centres, airport concourses, hotel foyers etc.

Frost resistance

Porcelain tiles are suitable for external use and are frost resistant. Floor tiles in the Tileworks Collection are suitable for installation over both water piped and electrical underfloor heating systems. See installation section.

Types of porcelain explained

All porcelain tiles are dense, strong, and resilient. They have a low water absorption of <0.5%. They are made from naturally occurring raw materials that cause full vitrification (melt down) when fired at approximately 1200°C.

Porcelain tiles are versatile and are manufactured in slightly different ways. They may have different surface finishes created by the top die in the tile pressing process. Always refer to the symbols next to the products in the Tileworks brochure for their suitability for dry and wet area walls and floors.

Through bodied or full bodied porcelain

These are the same all the way through the tile and any minor chipping to the tile is not noticeable. They have a matt appearance on the tile face. Most are suitable for wet and dry area installation.

Glazed porcelain

These are through bodied types that have a glazed finish on the face of the tile. The glaze is like a glass and is stain and chemical resistant. These have PEI wear ratings for the glaze. There are a multitude of glaze colours and printed ink jet applied designs may be added to the glaze finish. Some are suitable for wet area floor installations and all are suitable for dry floor areas. All are suitable for wet and dry wall installations.

Double loaded porcelain

These are composed of two layers of dust pressed together to form the tile. The top layer typically has a coloured pigment added to give a random design finish on the face of the tile. This top layer, typically 2 to 3 mm in thickness, is pressed over a normal layer of dust that forms the base of the tile. Most are suitable for wet and dry area installations.

Polished porcelain

The flat porcelain tiles are subjected to a polishing process following firing at approximately 1200°C using finer and finer polishing pads until a mirror-like finish is achieved on the face of the tile. This polishing process opens up the closed pore structure on the face of the tile and this is the reason they must be impregnated when clean and dry before and after grouting. Through bodied, double loaded and glazed porcelain can all be polished. Polished tiles are never suitable for wet area floor installations as they have a high slip potential in wet conditions. If impregnated they are suitable for dry and wet wall applications.

Semi polished

As above for polished but not such a shiny mirror finish. They are not subjected to as many polishing processes as polished porcelain. They must always be impregnated before and after grouting when they are clean and dry. Semi polished porcelain tiles are never suitable for wet floor area installations. They are suitable for dry floor installations. If impregnated they are suitable for wet wall area installation as well as dry wall areas.

Shade variation / polished and semi polished tiles

Shade variation may be an inherent feature of some Original Style ceramic and porcelain tiles. We recommend that your tiles are loosely laid out and 'blended' prior to fixing to achieve the most pleasing distribution of shades. Differences in shade between batches can be more marked, so for this reason we recommend that you buy all the tiles at one time. It is advisable to add an extra five to ten percent for wastage. No liability for shading issues can be accepted after installation.

Polished tiles

Optical haze is a phenomenon that can occur with polished tiles and it is also known as 'diffused reflection'. In relatively rare occurrences it can appear as a haze or dull patch under certain lighting conditions. Porcelain tiles with optical hazing still conform to all aspects pertaining to EN14411.

If at all unsure, please place a number of tiles in situ and view them in different lighting conditions prior to fixing, to check if any of the tiles are affected.

Please note that claims cannot be considered after the tiles have been installed as installation constitutes acceptance of the tiles.

How many tiles will you need?

Once you have decided on a type and size of tile, calculate how many you will need by measuring the area to be tiled.

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 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 room. 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 and add them up.

We recommend that you allow for part tiles, wastage and any imperfections by adding 10 per cent to your order. 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 shade can vary between different batches. Keeping spare tiles in case of issues in the future (such as breakages and damage) is good practice.

The Tileworks brochure also includes 'how many tiles will you need' tables for your information. Please refer to the latest version of the brochure for the most up to date range of products.

If you have any problems calculating the number of tiles required please do not hesitate to email our Customer Services Team at info@originalstyle.com.

Preparation

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.

Storage

Please store all Original Style tiles and any fixing materials such as grouts and adhesives in a cool and dry storage area. All tiles must be dry before installation. Original Style cannot guarantee that any products will be delivered completely dry.

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.

Tiles are completely inflexible. With this in mind, it is important to ensure that the substrate will not move otherwise cracking will occur. If there is movement in the substrate, we strongly advise that you seek professional advice before proceeding any further.

Please look at www.schluter.com/6_1_ditra.aspx for further information.

Floor 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 floors must have the laitance (dustiness) removed from the surface by brushing and vacuuming. The anhydrite floor must be dried to below 0.5% moisture as measured by a hygrometer. Then the floor must be fully primed with a product such as Mapei Primer G or Ardex P51. The primer prevents the gypsum based floor reacting with the cement based adhesive (forming a slush) thereby causing the tile to de-bond.

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 / 5/8" or thicker over the entire floor, screwing it down every 300mm / 12" in each direction. Before screwing the marine ply down, apply PVA to the reverse and sides (but not on the marine ply 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. It is also advisable to use a de-coupling membrane such as Ditra matting, particularly if the floor is large in size. Mapei Keraquick with Latex Plus, an S2 deformable adhesive is suitable.

Floor preparation - continued

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 de-bonding of the adhesive.

Important note:

Do not lay 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.

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 adjoining surfaces. Electric underfloor heating will heighten the floor by approximately 5-6mm / ¼", so this should be planned into your installation.

The use of a de-coupling membrane such as Ditra matting is also recommended to accommodate for expansion and contraction differences between the substrate and the tile on heating and cooling.

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. Flexible cement based adhesive such as Mapei Keraquick with Latex Plus is suitable.

Underfloor heating should not be switched on until 28 days after installation of the tiles, to allow the adhesive to cure fully. On the first day after the 28 day curing period, turn up the heating to 5°C and then raise it by 5°C per day for the next five days.

This is extremely important.

Wall preparation

All walls should be primed before tiling.

Make sure the wall to which you are fixing tiles is able to take the weight of the adhesive and tiles. Add 3.5kg/m² or 6.4lb/yd² for adhesive and grout weight. The weights of the tiles can be found in the brochure and online.

Substrate	Weight per m ²	Weight per yd ²
Gypsum Plaster	20kg max	37lb max
Gypsum Plaster board direct	32kg max	59lb max
Sand cement render	40kg max	74lb max
Tile backer boards (polystyrene foam with cement base lattice outer)	40kg max	74lb max
Glass reinforced cement sheets	50kg max	92lb max

Painted surfaces are unsuitable for 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 for tiles, 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 32kg/m². These walls should be primed first, left to dry and then the adhesive applied directly to the wall. Add 3.5 kg/m² for adhesive and grout to the tile weight in kg/m² when calculating weights for wall load bearings.

Plaster is a suitable surface as long as it is dry and in good condition. Normally a plaster wall has a load bearing of 20kg/m². 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. It is important to check weight restrictions before fixing tiles. Always seek professional advice if you are tiling over plaster. Plaster walls must be primed. Ardex P51 or Mapei Primer G are suitable.

Rendered walls can be tiled but, as with floors, 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 3.6m / 12ft approx. 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).

Wall preparation - continued

Wet rooms and showers

Ceramic and porcelain tiles can be used in showers provided you take certain precautions in preparing the surfaces, and use the correct adhesive and grout. 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. 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.

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 and floors are waterproofed. Both Ardex and Mapei supply tanking systems.

We recommend that all waterproofing processes are carried out by a professional.

Protecting your installation

We advise that you do not install any tiles until heavy construction has been completed. In between the installation and putting a floor into service, it is important to protect the tile and grout in order to avoid construction related cleaning issues. Do not use plastic covers as this may induce sweating and discolouration by not allowing the grout and bedding material to dry adequately.

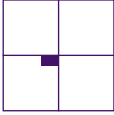
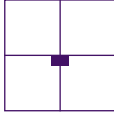
Protecting your tiles

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

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.

<p>1</p> 	<p>You may have to adjust the midpoint tile 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 tiles.</p>	<p>2</p> 	<p>Now lay out the tiles loosely, allowing for the joints. The joints will depend on what you are trying to achieve and on your choice of tiles.</p>
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Grout Gaps

If you have chosen a tile with a straight edge finish (which should be fairly even), tiles can be laid with thinner grout lines.

If you have chosen a rustic style tile, the tile edges can be uneven and to allow for this you will need thicker grout lines.

- Tile facial area <math><0.1\text{m}^2</math> min of 2mm grout gap as long as the tile has no side over 600mm.
- Tile facial area - Joints for panels should be increased pro rata (e.g. for 3m long ceramic panels the recommended min grout gap is 5mm)

Make sure your tiles are all from the same batch and are all the same calibre size. These will be marked on each box.

Some tiles are cut to precisely one calibre size and these are known as rectified tiles. Make sure they are all from the same batch. Grout gaps for these tiles can be smaller.

All installations MUST have a grout gap and the tiles must NOT be butted up against one another.

Also, if you are using more than one product, check the thickness of the tiles – 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 Pecedor, Marmox or Wedi boards.

The aim is to achieve a pleasing pattern whilst avoiding unnecessary cutting or thin slivers of tile at the edges of the room. It is desirable to maintain whole tiles in the doorway. If you are tiling through a doorway (i.e. installing tiles 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.

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 larger cuts rather than smaller ones into the corners, floors and ceilings.

Once you have marked out where the tiles/mosaics 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 of the tiles will be easy. Get it wrong and it will become progressively more difficult to obtain a pleasing result.

Marking out the work area - continued

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/mosaic sheets, plus the space between them. For instance, if you are fixing tiles that measure 300 x 300mm / 11 13/16" x 11 13/16" and have gaps between each tile of 2mm / 1/16" you will mark every 302mm.

Mark out the work area. You must always check to see whether the ceiling is level first. Aim to position the tiles/mosaic sheets 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. We don't recommend this. Very 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 tile, and mark the batten. Again, make sure you are not left with small slivers of tiles 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 tile you can begin tiling.

If you are placing a patterned border to run around a room, you need to choose one centre point on one wall, and align all the borders to that one point.

Cutting and drilling porcelain and ceramic tiles

Cutting porcelain and ceramic tiles with a scribe and snap machine

Recommended scribe and snap tile cutters are Rubi TS-40, TS-60, with a suitable carbide scoring wheel 6mm / ¼", 8mm / ⅝" or 18mm / ⅞".

Wet water cutting disc machines for cutting porcelain and ceramic tiles

Tiles should be cut with diamond coated water cooled discs mounted on manual electric grinders or on a cutting station. For precision cuts use a water jet cutting facility. Search online for your nearest facility.

Drilling porcelain tiles

Porcelain is a very hard product which needs a special drill bit. We strongly recommend that you always use a cordless drill.

First mark the centre of the hole to be drilled into the tile with a chinagraph pencil then attach a sticky adhesive drive pad. This drive pad will act as a gauge for a hollow diamond tipped drill bit. It may also have a water attachment to ensure that there is a constant supply of cold water aimed directly at the drill bit, in order to keep the diamond core cool and to help remove any debris that may build up whilst drilling the tile.

It is not advisable to try to cool the diamond drill bit by using a hand held aspirator or drilling through a wet sponge. These methods will not keep the drill bits cool enough, and will drastically shorten the life of the drill bit.

If you use a self adhesive drive pad, simply start the drill in a vertical position and the sticky pad will ensure that the drill does not slip. Once you have finished drilling the tile, simply peel off the self adhesive drive pad.

Sealing

Impregnating polished/semi polished porcelain:

Polished and semi-polished porcelain tiles have open pores due to the polishing process and MUST be impregnated before and after grouting. They must be fully clean and completely dry prior to impregnating. The impregnation enables the grout to be more easily removed and reduces the possibility of staining in use as well as making the tile water resistant.

Suitable impregnators are LTP MPG, Lithofin KF Protective Impregnator, FILA MP90 and Moeller S243.

The correct application of penetrating sealers is important. Follow the manufacturer's application guidelines. The tile surface must be thoroughly clean, dry and free of any material that may prevent the sealer from penetrating. Apply the sealer following the manufacturer's instructions. A lint-free roller should be used. Do not allow the penetrating sealer/ impregnator to dry on the surface. Apply before and after grouting on the clean, dry tile. Penetrating sealers have a life expectancy of five years. Please seek advice on this from the sealer manufacturer. Suitable impregnators are LTP MPG, Lithofin KF Protective Impregnator, FILA MP90 and Moeller S243.

Switch off any underfloor heating and wait until the floor completely cools before applying any impregnators.

Sealing - continued

Special notes for Dream Beige CS523-4040, CS523-6030, CS523-6060

Certain polished porcelain products may have wax or nano coating on the surface of the tiles. Some batches of Dream Beige polished porcelain may have been treated with a nano coating after manufacture, which means they do not need to be sealed. The wax can be removed with LTP Grimex, Lithofin Wexa. The Nano coating removal can be achieved with LTP Fullers Earth as follows:

Cleaning

Approx coverage 150g per 10m² / 5oz per 108 sq.ft

After fixing and before grouting remove excess nano coating from the polished surface of the tile using LTP Fullers Earth. Dust surface with an even coat of fuller's earth and leave for 5-10 minutes. Buff well using a soft cloth or buffing machine and soft white pad. Vacuum up excess fullers earth and then rinse surfaces with warm water.

Approx coverage 1ltr per 20m² / 4¼ cups per 215 sq.ft

If grouting has occurred prior to removal of excess nano coating, it may be necessary to use a residual grout remover after the Fullers Earth to successfully remove all traces of residual grout.

Apply LTP Grout Stain Remover to the surface and agitate immediately using an emulsifying pad. Rinse well using a sponge and plenty of clean fresh water. Use these products in well ventilated areas and use gloves. When using fullers earth do not breathe the dust. Wear a dust mask and use eye protection. Allow to dry.

Maintenance

Use LTP Waxwash to regularly clean surfaces. This detergent has been especially formulated to clean nano treated surfaces without compromising the protection. It is highly concentrated so only a small amount is required for each application.

Daily/weekly cleaning

Approx coverage 1ltr per 800m² / 4¼ cups per 8611 sq.ft

Add 1-2 caps full of LTP Waxwash to a bucket of water and apply to the surface of the tiles using a mop/scrubber dryer and leave to dry. This product does not require rinsing. Leave to dry before allowing traffic. N.B this product will not leave a waxy film on the surface of the tiles, however on highly polished surfaces it may require a light dry buff to finish.

Adhesives

Porcelain and ceramic floor and wall tiles are suitable for fixing with cement based modified adhesives (C2) and grouts (CG2). There are many different reputable adhesive and grout suppliers.

For wet area installation it is advisable to use a CG2 grout with a reduced water absorption (type CG2 WA).

For tiling onto wooden substrates or floors with underfloor heating use a deformable C2 adhesive such as Mapei Keraquick with Latex Plus (C2 FT S2). This will allow for expansion and contraction movements and will stop tiles and grout from cracking. However, some changes of plane will require expansion joints.

Gypsum pink plaster walls and gypsum anhydrite screeds MUST be primed prior to tiling. Mapei Primer G or Ardex P51 are suitable.

Adhesive is available as standard set or rapid set. Standard set takes up to 24 hours to go off, whereas rapid set can take up to two hours depending on the thickness, temperature and humidity conditions. All tiles should have a 2mm / 1/16" layer of adhesive spread onto the backs before laying, in addition to the adhesive spread on the floor/wall. This method is known as the solid bed fixing method. It is essential for large porcelain and ceramic tiles.

For power showers, saunas and steam rooms we recommend epoxy grouts as the conditions are harsh. Epoxy grout and adhesive can be difficult to use and because of the nature of epoxy, can be extremely hard to remove once cured. For this reason, we recommend keeping lots of clean hot water and a supply of clean sponges at hand to remove excess epoxy quickly and safely.

Applying the adhesive

Acrylic-prime the surface to be tiled and leave to dry. Spread the adhesive over as much of the wall/ floor as you can work on, within about 15 minutes; approximately one square metre /one square yard is usually about right.

Spread the adhesive as a solid, even layer (rather than using spots of adhesive). Use a notched trowel to form parallel lines. The thickness should be approximately 6mm / 1/4" for 152mm / 6" ceramic tiles, 8mm / 1 5/8" for large format wall tile and 8-10mm / 1 5/8" - 3/8" for floors.

If you are installing thick/large tiles, spread a 2mm layer of adhesive on the back of the tiles as well as the surface of the substrate, making sure to always spread the adhesive over the entire back surface of the tile rather than spotting it on, otherwise the tiles may break after installation.

Place the first whole tile on the adhesive, press it down firmly.

Check the first tile is straight and level. Now lay the adjacent tiles in the same way, using spacers (see Using spacers section below) to create an even joint between them.

Using spacers

If spacers are used by inserting them vertically on floors and horizontally on walls (i.e. they stick out at right angles to the tiled surface) they need to be removed from the joints as soon as the adhesive setting time is achieved.

When you get to the edge of the room, cut the tile to fit the gap. Where floor and wall tiles meet, a neater finish will be achieved if the wall tiles sit over the floor tiles.

Leave a gap between the edge of the floor tile and the wall to allow for expansion and fill with acetoxycure silicone for ceramic/porcelain (high modulus silicone for floors and low modulus silicone for walls).

Be careful to keep adhesive off the face of the tiles – wipe away any surplus with a clean, damp sponge as you go.

Work to the lines you have marked on the walls for centre points and level lines and then begin applying the tiles.

Where there is any chance of movement from the substrate it is important to use a flexible adhesive. This will allow for small contraction and expansion difference between the tiles and the substrate and will stop tiles and grout from cracking. However, some changes of plane will require expansion joints. Always seek professional advice.

When you get to the edge of the room, you can either cut the tiles to fit the gap (if necessary) or leave it until the end of the job, but you must clean away the excess adhesive before it dries from the open spaces for easier installation.

When you have covered the first square metre prepare another area, and so on. If there are any untiled areas around the edges of the wall you will need to cut the tiles to fit.

Levelling clips for large format tiles

Due to the firing process, all ceramic and porcelain tiles may exhibit a small amount of bowing or warping. The effect is more noticeable on larger format tiles due to the increased surface area. For the installation of tiles that are 600mm or larger, we recommend the use of a Levelling clip system. This will help reduce lipping at grout joints and assist in achieving the most level result.

Levelling clips can also be used to compensate when different thicknesses of tiles are used together in one installation.

Grouts

Grouting gives a neat appearance to the tiled surface, it stops dirt or grease building up between the tiles. Grouting should always be finished flush with the tiled surface.

Allow the adhesive to dry out for a minimum of 24 hours before grouting. Thick layers of adhesive, cool temperatures and other factors can prolong drying.

How to grout tiles

Always try a small amount before grouting your entire tiled area to check you are happy with the look of the grouted tiles before grouting the complete area. Clean the surface where you are going to tile and allow it to dry before proceeding.

If the tile is a polished or semi polished type impregnate the clean dry tiles prior to grouting and after grouting following cleaning and drying.

Regardless of the grout colour chosen it is advised that you test a tile prior to grouting to ensure the grout pigment will not contaminate the surface of the tile.

Mapei UltraColor grouts are suitable. There are many suitable alternative suppliers.

Useful Tip

Always aim to complete whole sections of grouting in one session to ensure an even finish with no colour variation. Wash down with clean water and a sponge every square metre to avoid any excess grout drying on the surface.

Never grout corners of rooms. These must be grout-free and filled with a suitable silicone to allow for wall/floor expansion.

It is very important to mix the grout following the manufacturers' instructions. Once mixed, let the grout stand for two minutes, then apply to the wall/floor using a squeegee working in a diagonal motion across the tiles.

We recommend you cover about one metre at a time and leave for five minutes before removing any excess grout with a squeegee. Wait another five minutes before wiping the tiled surface with a clean sponge. Always check that there are no lines left in the grout.

Repeat until the whole wall/floor is complete.

Once the whole work is completed, leave for two hours, wash down all the tiles with clean water and sponge, and correct any faults. If a grout haze remains use a mildly acidic cleaner to remove. LTP Grout Stain Remover, Lithofin KF Cement Residue Remover and FILA Deterdek are suitable.

Important Note

If using Mapei Ultra Colour Plus grout, it must be mixed with an electric mixer using 1-1.1 litres of water per 5kg bag (4¼ cups per 11 lb) of Ultra Colour Plus. Pour all the water in to the bucket and then add all the grout and mix on a slow setting. Leave to stand for two minutes and remix. Do not add more water. If the material begins to harden after 15-20 minutes, remix with just the paddle but do not add any more water. The grout has a pot life of one hour.

Finishing off

Once your tiling is complete, inspect it carefully for any joints that the grout has missed, and refill if necessary. Wipe over the entire wall with a damp sponge or cloth and allow it to dry out completely. We also recommend sealing grout seven days after installation with a grout protective sealer, which can be purchased through any reputable tile outlet.

Always test a small inconspicuous area before proceeding. Always follow manufacturers' instructions. Use the utmost care when grouting to preserve the beauty of your tiles.

Movement Joints

Where tiles meet another surface, the joint is filled with silicone sealant, not grout, to allow for minor expansion and contraction. Movement joints should be placed according to any architect's specifications, over existing joints and any changes in plane. Movement joints eliminate stress transferring from the substrate.

Internal: Please refer to BS5385-1 2018, 6.4-6.4.4

External: Please refer to BS5385-3 2014, 71.6.1-71.6.4

Cleaning porcelain and ceramic floor tiles

Cleaning large floor areas

Appropriate cleaning and maintenance routines are essential for any wall and floor surface to maintain them in good condition and to retain their attractiveness. Floor surfaces in particular require an effective cleaning regime to ensure the risk of slips and trips are eliminated. Each material has specific cleaning and maintenance requirements which should be taken into account to ensure the correct cleaning equipment and products are used. Lithofin and LTP have a full range of cleaning products and provide method statements for a full range of tile types (please refer to their websites).

Unglazed porcelain and ceramic

Unglazed tiling is generally extremely hard wearing; however, this does not mean that the floor will not show marks. By following the guidance notes below the floor will offer an attractive and durable surface for many years.

Unglazed tiles

Daily maintenance cleaning regime

On newly laid floors there may be residual cement on the tile surface. All traces must be removed by application of a mildly acid de-cementing solution followed by thorough rinsing, then proceed as follows. LTP Grout Stain Remover, Lithofin KF Cement Residue Remover and FILA Deterdek are suitable.

Regular cleaning with water which is warm-hot, particularly if oil or grease is present, and a pH neutral detergent, mixed in the proportions recommended by the manufacturer, will remove all but the most stubborn dirt. NB all under floor heating must be turned off.

The water/detergent mixture must be allowed to remain on the floor for sufficient time (5-15 minutes) to allow it to penetrate and emulsify the dirt, after which it should be rinsed thoroughly with clean water to remove all traces of the mixture.

Large areas of plain or textured surface tiles are most readily cleaned with rotary, cylindrical or reversing mechanical scrubbing machines. These should rotate at slow to medium speed.

If the machine has a suction drying facility, first use with the suction facility switched off to permit the water detergent mix used in the scrubbing process to remain on the floor to penetrate the dirt layer. Once emulsified, use the suction function with clean fresh water to remove the remaining contaminates and place visual wet signage on areas that are not dry.

Spillages of oil, fat or material likely to stain or cause a slippage hazard should be removed immediately by using detergents and hot water, followed by rinsing with clean water.

Cleaning porcelain and ceramic floor tiles - continued

Periodic maintenance

Periodically clean the floor using rotary, cylindrical or reversing scrubbing machine. Remove the residue with clean water, rinsing before it has been allowed to dry out. High velocity water jets are sometimes available for general use in wet areas for the removal of stubborn dirt. These will not damage the tiles, but may erode the joints if used regularly. If oil or grease is present, use the jet with warm or hot water and with a pH neutral detergent. Care should be taken to note site specific conditions i.e. floor inset sockets and other electrical installations.

Glazed tiles

The glazing on a tile acts as a protective and mostly impervious hard wearing finish to the surface. This does not mean that the floor will not show marks, it does however mean that by following the guidance notes below the floor can easily be maintained offering an attractive and durable surface for many years.

Daily maintenance cleaning regime

Loose dirt should be swept with a soft broom or ideally a 'v' shaped scissor mop. Floors should be scrubbed using a solution of clean water with a neutral (pH-7) cleaning agent mixed strictly in accordance with the manufacturer's instructions always allowing the detergent and apparatus used to emulsify the dirt.

Best results are obtained using automatic mechanical scrubbing machines. A two tank machine with a suction drying facility is preferred, one for clean water/ detergent and one for rinsing and picking up soiled water. If this is not practical and the hand mopping technique is used, the cleaning water should be changed at regular intervals. After mopping ideally the floor should be wet vacuumed to pick up the rinsing water and allowed to dry.

Acids and alkaline based cleaning agents, scouring powders, metallic brushes or wire wool pads must never be used. Degreasing agents which contain wax, sodium silicate or other additives must also be avoided.

Care should be taken to note site specific conditions i.e. floor inset sockets and other electrical installations.

Photography

Owing to variations in studio lighting and printing inks, the tile colours shown in our brochures may differ slightly from those of the actual tiles. It is always advisable to ask your Original Style supplier to show you a sample.

Limits of liability

Original Style 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. Tiles must be inspected prior to installation and claims cannot be considered after the tiles have been installed. Claims must be reported within seven working days from the receipt of the tiles. Tile sizes may vary slightly from the stated nominal dimensions within internationally accepted standards.

Please be advised that installation constitutes acceptance of the quality, colour, size, texture and shade of the tiles. Please note, the use of certain acid-based cleaning products may cause some of the tiles to react and change in character. Original Style warrants that its tiles conform to their description and are fit for their purpose. Original Style 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.

It is imperative to follow all manufacturers' instructions regarding their suitability with our products. If in doubt please consult your grout/adhesive/sealant stockist from whom you purchased the products. Original Style makes no representations as to the fitness for purpose of third party products.

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, tileusa.com



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