

# INSTALLATION GUIDELINES PORCELAIN

## TOP TIPS FOR PORCELAIN PAVING

- All porcelain paving tiles can have variations in size and colour between batches, we advise purchasing all your tiles at the same time to avoid mixing and shade variation.
- Installing your porcelain products is equally important as choosing which product you want. We provide general information on laying/fixing which should be used in conjunction with competent porcelain installers and recommended products.
- We recommend installing your porcelain paving on a wet mortar bed of "6:1" grit sand to Portland cement or a concrete bed. Adhesive is strongly advised to form a bond bridge between the wet bed and the paving. If an adhesive is not used the porcelain will not stick to the base and become loose.
- Follow all guidelines regarding cutting to help minimize cracking and chipping
- Do not "butt joint" your porcelain paving. We recommend using a 4mm minimum gap to avoid chipping edges and the use of "tile spacers" to create uniform spacing.
- Use a weather repellent grout as it is generally non-permeable and unlikely to discolour or suffer algae/weed growth. A permeable or porous grout is not suitable for use with porcelain.
- You do not need to seal your porcelain, due to its extremely low porosity
- No special cleaners are required, a mild detergent should be sufficient for this very hard wearing paving.

## LAYING GLOBAL STONE PORCELAIN PAVING

### PREPARATION - PRODUCT CHECK

Before laying, all products should be carefully inspected, so that time is available for products to be replaced if found to be defective. Please check batch codes to ensure that they are the same for each product you use. No responsibility will be accepted for any delays, re-laying or removing costs if this has not been done.

### ESSENTIAL TOOLS

Professional landscapers would consider the following list of items essential for any porcelain paving tile project: Gloves, goggles, spade and/or shovel, wheelbarrow, rubber backed trowel, rubber mallet, long spirit level, string line, line pins or stakes, soft brush, tape measure, straightedge timber, small cement mixer, plate compactor ('wacker' plate) and a water fed power saw specifically made for cutting stone or concrete. However, it would probably be more appropriate for a DIYer only planning a single project at home to hire the larger, powered equipment.

## SETTING-OUT

Porcelain paving tile should be laid at a level that is at least 150mm below the damp proof course (DPC) of any adjacent building except where level access is required at a doorway (eg: for disabled access). If working against a building, it may be possible to use the horizontal brickwork jointing as a guide to level. Alternatively, a taut string line or a temporary chalk line can be used as a guide.

## FALLS

All porcelain paving tiles must be drained. This is usually achieved by sloping the porcelain paving tiles in one direction or another to direct the surface water towards a suitable disposal point, which might be a gully, a linear drain, or the edge of the garden. Whenever possible, surface water is directed away from any buildings. When determining levels away from a building, a taut string line set between driven ranging stakes is a good guide to both level and alignment. The simplest way to create an accurate perpendicular (90° or right angle) line from a building is to use a 3-4-5 triangle.

## BASE

All porcelain paved tiled areas, whether they be used as driveways, paths or terraces, require a stable base. The depth/strength requirement of this base varies according to the planned use of the paved surface. For example, a private driveway will require a base layer of concrete at least 100mm thick, and this may need to be spread over a strengthening layer of compacted stone or hardcore. However, a mortar bed approximately 50mm thick, laid directly onto firm ground could be sufficient for a lightly trafficked walkway. Every project site is different and a judgement will have to be made at the start of the project as to the long term stability of the existing ground. Please bear in mind that it is always best to err on the side of caution and lay a stronger base at the outset, than have to lift and reinstate a sunken area in the future.

## TYPES OF PORCELAIN INSTALLATION

Due to its nature Global Stone supplies porcelain paving tiles in a calibrated thickness of 18mm and 20mm, which means it is suitable to be laid on several bed types;

### INSTALLATION ON A WET BED

The most common technique known as 'screeding' is generally used to prepare the bed for porcelain paving tiles. Use a shovel to spread the freshly-mixed bedding material (a mortar bed of 6:1 or stronger mix of grit sand with ordinary Portland cement is recommended) over the base, large enough for several porcelain paving tiles in a layer that is roughly 40-60mm thick, and pat it with the back of the shovel to lightly compact it. It is important to not use 'too much' of the bedding, because it has to be scraped off, using a long, straight board to remove the excess bedding material, leave a smooth and level surface onto which the paving can be placed.

To achieve the correct level for the screeded bed, a reference level is required. This might be an existing edge (or kerb or edge course) or it can be a 'rail' set at the level of the underside of the paving. We recommend

that installation should be made using a floor covering adhesive to secure the porcelain paving tile to the sub-floor/cement screed such as flexible tile adhesive, Mapei Keraflex Maxi. The adhesive should be spread evenly over the underside of the porcelain paving tile to create a Bond Bridge and the tile is then pressed using the twist and slide motion the down onto adhesive and settled.

#### INSTALLATION ON CONCRETE BED

In this method the porcelain paving tiles are laid in the same manner as for laying floor tiles inside the house. The porcelain is laid on a pre-installed base, created in the same way as the wet base above, but which has been dried out for 3-4 weeks. We recommend that installation should be made using a floor covering adhesive to secure the porcelain paving tile to the sub-floor/cement screed such as flexible tile adhesive Mapei Keraflex Maxi. The adhesive should be spread evenly over the whole of the rigid base using a notched spreader and the underside of the porcelain paving tile to create a Bond Bridge and the tile is then pressed down using the twist and slide motion onto the adhesive and settled.

#### INSTALLATION ON GRASS FOR STEPPING STONES

Installation on grass to be used as stepping stones can be achieved by ensuring that the ground is both flat and even, then adding a 5cm layer of gravel (4/8mm diameter) and then dry-lay the porcelain paving tiles. The results can be long-lasting but will be dependent on soil movement.

#### INSTALLATION ON PEDESTALS

Our 18mm and 20mm thick rectified tiles are suitable for using with pedestals. For more information and number of pedestals required per tile please consult your pedestal provider.

#### INSTALLING PORCELAIN WALLING/CLADDING

Porcelain tiles can be fixed to most walls, however all surfaces must be completely secure without any obvious curvatures and capable of carrying the additional load. The maximum fixing height for the various substrates listed below is 3.6m using a suitable wall tile adhesive. Above 3.6m mechanical fixings will be required and you should consult a specialist for the correct methods and load bearings.

As part of the process it is important that all substrate preparation products, mortar and grouts are compatible and we therefore recommend using a single source for all installation materials. You should also check your substrates suitability for tiling before selecting your adhesive. Grout joints are to personal taste and will vary depending on the product used however we recommend between 2-3mm for our Porcelain Walling/Cladding range.

Global Stone recommend the use of Mapei Products as featured on page 42.

Sand and Cement render is a good vertical base for fixing most porcelain tiles with a thickness up to 15mm with a load bearing of up to approximately 38kg/m<sup>2</sup>. New renders will require a minimum of two weeks to dry out. We recommend the following products:

Please visit [www.globalstonepaving.co.uk/](http://www.globalstonepaving.co.uk/) For more information on other substrates including;

- Plasterboard without plaster skim coat
- Backerboard/Tile backerboards
- Gypsum Plaster Skim
- Problematic Substrates (such as some Plaster Skim and painted walls)
- Movement Joints in Walls

#### HANDLING THE PORCELAIN

Porcelain can be heavy and cumbersome, particularly with the larger pieces, so take care when handling. As a rough guide any paving stone

600mm x 600mm or above is best handled by 2 people, stood on the edge and carefully lowered into position. It is important to note that a porcelain paving has a face and base, meaning there is a right way up.

#### CUTTING PORCELAIN

Porcelain paving tiles are best cut using a power saw fitted with a good quality diamond blade which is water fed and specifically made for cutting porcelain. These can be hired locally and the hire depot will provide you with full instructions on how to use them safely. Cutting of porcelain generates a lot of potentially harmful dust so ensure you wear a suitable dust mask and safety eyewear at all times. Cut from the top surface. Have the line of cut clearly marked, and the blade rotating at around half-revs before bringing it into contact with the tile. As the blade bites into the tile, increase the engine revs if necessary, but ensure the saw remains evenly-balanced and progresses along the line of cut at a regular pace. Please note that it cannot be cut successfully using traditional hand tools (hammers and chisels) and abrasive cutting discs, even if marked as being suitable for stone, as it will more than likely result in chipping and fragmenting of the incredibly hard surface.

#### LAYING PATTERNS/DESIGNS

Global Stone porcelain paving tiles are normally laid in one of two arrangements; stack bond (like a chess board) or coursed (where the paving is laid in lines of courses of the same width. Stack bond needs paving tiles of a matching size, while coursed layouts rely on the porcelain sharing a common width while the lengths vary.

#### JOINTING

The 4-8mm joints between the paving can be filled with two key types of material mortar or tile grout.

#### MORTAR JOINTING

This traditional method uses a strong mortar (four parts sand to one part cement) to fill the joint. The mortar should be mixed in small quantities, say one 25kg bag of sand at a time, because pointing is a slow process and the mortar has a fairly short working life (20-60 minutes depending on time of year). The same coarse sand used for the bedding, though the softer 'building sand' gives a smoother, more adhesive mortar and is generally considered to be easier to work. The mortar should have a workable but flowing consistency, something akin to the mix for a rich fruit cake, and able to stand in 'peaks' without slumping too much. Adding a plasticiser to the mix water makes the mortar far more workable. It is worth noting that some bags of cement contain a built-in plasticiser, so there is no need to add one to the mix water – check the packaging of your cement.

#### FLEXIBLE TILE GROUT JOINTING MATERIALS

These cement based products are mixed with water to provide an easy working grout which is applied using a rubber back trowel, simply wiping off any excess off the surface of the porcelain paving tile, and after just 90 minutes, the material will have hardened to form a perfect joint. We recommend Mapei Ultracolor Plus, which is a rapid setting cement based grouting compound which is water repellent, unaffected by weather and which enables foot traffic after just 90 minutes.

#### CLEANING AND MAINTENANCE

Thanks to its great hardness and weather-resistance, porcelain paving tiles can be cleaned with almost any detergent. However, we recommend simply using a mild detergent and a water jet. For greater convenience and to avoid potential limescale deposits forming, we recommend facilitating drainage with a rubber brush.