Paving Stones Direct UK LTD

Porcelain Paving Installation Guide

(Revised June 2025)

Introduction

Porcelain paving slabs have become a popular choice for UK patios and garden pathways due to their durability, low maintenance, and contemporary look. However, installing porcelain tiles outdoors requires a precise approach that meets British standards and building regulations. Unlike concrete or stone, porcelain is non-porous and extremely hard, meaning it demands a full mortar bed and proper bonding for long-term stability. This guide provides an expert, step-by-step walkthrough of the entire process – from initial planning through to aftercare – tailored to UK conditions and regulations (e.g. compliance with BS 7533 and damp-proof-course requirements).

It is written for professional landscapers and capable DIYers seeking a high-quality, durable finish. A professionally installed porcelain patio slab offers a sleek, modern finish with excellent durability when correctly laid on a full mortar bed with proper jointing.

Timeframe

When placing an order for any garden renovation product, it is important to receive delivery in advance of the project starting, rather than receiving delivery the day of. This is to ensure that if there are ANY issues with your order, you have ample time to notify the supplier, avoiding any lost time from installation.

Initial Checks

Upon delivery, check that all porcelain paving crates have matching batch codes. Porcelain is kiln-fired, and visual variations between batches are common. Mismatched batch codes indicate potential differences in shade and pattern, which can result in an inconsistent, patchwork-like finish. If batch codes differ, contact your supplier to arrange replacements.

Colour/Batch Variation: Subject to if you are installing a whole new patio or replacing some of your existing, you want to make sure that the colour, shadings and veinings match as much as possible.
Damages: While it can be quite a task, it is important to check each paving slab for cracks, chips and any other relevant damages. If any are found, please contact your supplier ASAP so this can be rectified.
Shape & Size: It is also just important to check that the size and shape of the slabs are correct based on your chosen design. Speak to your landscaper regarding this.

- **Note:** Matching batch codes is exempt/not necessary for random sized/packs of porcelain paving.

Considerations

There are several factors to consider regarding design and Installation factors. This will be covered by your landscaper if you are not opting for the DIY route.

- **Stack Bond:** Should a stack bond be chosen as the laying pattern, rectified paving slabs should be selected due to their minimal dimensional tolerances. A stack bond is not suitable for driveways as it does not offer sufficient structural integrity for the turning wheels of vehicles.

- **800mm Long Paving:** Paving slabs over 800mm long should be laid to a 1/3 offset bond. This mitigates the low corners of the slabs meeting the convex high middle of the slabs, which can lead to raised lips and the paving holding water or a trip hazard. The British Standard BS7533:102 tolerance for level variation between two paving units is 2mm.
- **Pre-Installation:** Prior to installation ensure the finished level of the paving is 150mm below the damp proof course of the house and preferably falling away from the building.
    - Should there be no option of falling the paving away from the house the best practice would be to install channel drains as per manufacturers specifications.
- **Installation:** When installing porcelain, a minimum fall of 1-60 should be installed to each of the subgrade, the MOT type 1 base, the bedding mortar and the surface course.
- **Drainage:** Drainage must also be considered, especially where paving meets a lawn. If there is no drainage at the bottom of the end of the fall, this can often cause a wet, boggy lawn. For large patios, drainage should be installed at every 10m of fall.
- **Bullnose Steps:** Should steps and copings be part of the design, full-body porcelain should be considered. As detailed above, full-body porcelain has a pattern through the whole thickness of the slab (see figures), whereas a baking line is often visible on non-full-body porcelain. This can stand out visually, especially when bullnosed.

Should full-body porcelain be unavailable or outside budget, stainless steel trims and nosing details are alternative solutions.

Excavation (assuming 20mm slabs to be laid)

- The minimum excavation depth is 150mm to accommodate 100mm compacted depth of MOT type 1, 30mm bedding mortar and 20mm for the paving slab.
    - If you are unsure about the strength of the subgrade conduct the heel test as outlined in British Standard BS7533:102, and adjust the depths of excavation accordingly to meet British Standard BS7533:101.
- The fall of the formation level should march that of the surface course and compact the subgrade.

Sub-Base Installation

Sub-base installation is a crucial step in building a stable, long-lasting foundation. It ensures even weight distribution, enhances drainage, and helps prevent movement or settlement over time.

- **Installing Sub-Base:** Good practice, especially on poor subgrades, is to install geogrid/biaxial mesh. This is specifically designed for soil stabilisation and reinforcement. Again geogrid should be overlapped by a minimum of 300mm and suitable zip ties installed to connect them together.
    - Best practice is to install edge restraints prior to base and sub-base installation so as to provide sufficient load bearing support and resist lateral

force. The edge restraints should be laid to a concrete bed and haunch and should be below the bedding mortar/laying course.

- **MOT Type 1:** Upon delivery of your MOT type 1, a close inspection should be carried out to its moisture content. It should be moist but not saturated.
    - Next, install MOT type 1 to a minimum and consistent compacted depth of 100mm, and at the same fall as the subgrade. The MOT type 1 should be installed in layers no more than 70mm in depth which will compact to approximately 50mm depth.
    - Compaction should consist of 5 passes both horizontally and perpendicular. A good indication that sufficient compaction has been achieved is there will be no lines in the MOT type 1.

Laying Course - Bedding Mortar

A crucial part of installing porcelain paving is the bedding mortar, also known as the laying course. It creates a stable, level base that supports each slab evenly, helping to prevent movement, cracking, or other long-term issues.

- Set out string lines to levels and falls. The string line should not touch the edge of the pavers and should be 1-2mm away to ensure it is not displaced. String lines should have a tingle or intermediate line pin every 6m to prevent line sag.
- Bedding mortar should consist of 1-4 Ordinary Portland Cement (OPC) and one of the following aggregates: 2-6mm, 1-4mm or 0-6mm crushed rock. Sharp sand is also an option: do not use builders' sand as it lacks the strength of crushed rock, often has a clay content and acts like a sponge with moisture, which can cause freeze/thaw issues.
- The mortar mix should have sufficient water added to hydrate the cement and form a ball that holds its shape in your hand when compressed with your fingers. A wet or semi-dry mix is more than acceptable, but not a dry mix.
- The mortar beds should be prepared flat (see figure) with no trowel marks (see figure), as this will provide a full contact mortar bed. Full contact mortar beds are essential to provide full surface area adhesion between the back of the slab and the mortar bed: voids may cause reflective staining in natural stone and occasionally concrete slabs, and may also cause weak spots.
    - Under no circumstances should paving be laid to dot-and-dab or spots.
- The thickness of a mortar bed should be a minimum of 30mm and no more 40mm. As an approximate guide, mostly depending on the moisture content of your mortar mix, 35-40mm will compress to 30mm.
    - It is important to compress the mortar sufficiently when using your rubber maul to achieve sufficient strength.
- Good practice is to install geogrid/biaxial mesh to the mortar bed, especially on poor subgrades. This is in addition to that that may have been installed beneath the MOT Type 1 base.
- Mortar in ambient temperatures is workable for approximately 2 hours, after that a new mix is required. It is considered bad practice to keep adding water to rehydrate the mortar as the mortar loses strength.

There should be no organic matter such as leaves on the type 1 base prior to laying mortar.

Laying Porcelain Paving

Once all preparatory steps have been completed—including sub-base installation, accurate levels and falls, and a properly prepared mortar bed—the process of laying porcelain paving slabs can begin. At this stage, attention to detail is essential.

- Check the underside of the paving slabs and check if there is a directional arrow. Directional arrows dictate the way the paving should flow in accordance with the surface pattern/design: even the shading of the paving slab can alter if not all paving slabs are facing in the same direction.
- Despite having matching batch codes the paving slabs should be selected from a minimum of 3 crates to prevent possible banding issues if selected from a single crate only.
- Using a damp cloth or grout sponge remove engobe dust from the back of the slab, for maximum adhesion. Check the porcelain paving units for chips.
- The back of the porcelain paving units should be fully coated with a British Standard BS7533 certified bonding mortar/slurry primer, applied with a grout float or trowel at 2-3mm thickness.
- Spacers of minimum 5mm should be used to achieve a consistent joint width. Check the spacers are tight in the joint and that they do not wobble or are loose. As there are dimensional tolerances of porcelain units it is good practice to use a string line to check, periodically, that joint lines are straight horizontally and perpendicular.
- Measuring back to the base line, to make sure the paving is square or parallel is good practice. Usually measuring back would involve measuring at either end and in the middle as a minimum.
- Using a washboy, clean the paving of mortar or bonding mortar as you lay. Rake the joints out of mortar as you lay the paving, so a full joint of grout may be installed. Do not wait until the end of the day as the mortar is likely to have hardened.
- The paving should not be walked on for a minimum of 24 hours. Clients should be made aware of this and paved areas cordoned off with hazard tape.

Cutting Porcelain

When cutting porcelain, a table saw is recommended, and for detailed cuts, a battery hand grinder with water suppression should be used. Continuous rim blades or blades designed to cut porcelain should only be used. Regular blade maintenance is essential to ensure the edges of the porcelain do not chip. Should minor chips occur, they should be removed with a diamond rubbing block or polishing disc.

Jointing

Jointing is the process of filling the gaps between porcelain paving slabs to lock them in place and protect the installation. It plays a key role in preventing slab movement, allowing for thermal expansion, and creating a water-resistant surface. Using the right jointing method ensures the overall strength, durability, and appearance of the finished patio.

- Allow the mortar bed to cure sufficiently prior to grout installation. Read the manufacturer’s specifications or contact their helpline for guidance as needed.
- Check the weather forecast if using cementitious grouts. If rain or freezing temperatures are imminent then delay grouting.

- Check the joints are of sufficient depth to receive the grout, usually a minimum 20mm depth.
- Clean the surface of the paving to ensure there is no contamination of the grout. Using a leaf blower to remove excess water from the joints and surface of the paving.

Install the chosen grout as per manufacturers' specifications, ensuring the joints are full with no voids.

Aftercare

Regular maintenance is essential—not just to preserve the appearance of your porcelain patio but also to ensure its long-term performance. Although porcelain is low-maintenance by nature due to its dense, non-porous surface, routine care is still important. A light power wash combined with proprietary porcelain cleaners is generally sufficient. Regular sweeping also helps prevent surface debris from accumulating and affecting the paving's appearance over time.

- Should the porcelain be chipped during its lifespan it may be repaired with a resin kit.

Sealants

While it is possible to seal porcelain paving, it simply isn't necessary due to the properties of porcelain paving; however, sealants may be applied to the porcelain and grout.

Summary

A porcelain-paved patio built on a proper sub-base, full mortar bed and fully filled joints is engineered to last for decades with little more than simple cleaning. By following the steps in this guide – ensuring 150 mm below DPC, correct falls, Type 1 sub-base, full-bed 4 : 1 mortar, slurry priming per BS 7533, careful joint filling and sensible maintenance – you will enjoy an outdoor space that looks immaculate and stands up to the British climate year after year.