

SEAMLESS JOINT TILING TECHNOLOGY



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With industry best specifications and standards over 10 times stricter than international requirements, Kaolin are able to offer a product so exact that grout joints as small as 0.5mm can be used.

Grout joints have always been the biggest downfall of tiles, often leading to disappointment in the finished job and years of frustration for the end user. Not only are the grout joint aesthetically unpleasant, they also attract dirt and dust, and if not laid properly, can change colour or get efflorescence.

So far, the only solution was to use large slabs and porcelain panels to achieve a look with less grout joints. But large slabs are not only expensive, they are also very hard in handling, logistic and cutting. Also, because of the tolerances that large porcelain slabs intrinsically tend to have, the joints would still be recommended of 3mm.



750X1500MM AND 900X1800MM IS THE BEST OF BOTH WORLDS

Kaolin has a perfect solution. By using large format tiles of 750x1500mm and 900x1800mm not only do we achieve a better look, compared to small sizes, it also reduces the cost of laying compared to large panels and simplifies the logistics and handling overall.

With Kaolin extremely unique and high tolerances, these are also the perfect sizes for “Seamless Joint” tiling. With our “Seamless Joint” tile range we can now specify grout joints so fine that they become virtually invisible in the finished installation.



COMBINATION WITH SHOWPIECES AND ENDLESS VEIN™

Seamless Joint Tiling is even more crucial and reveals its true potential when combined with Endless Vein™ or Kaolin Showpiece sets.

When veins are aligned to and look as if coming from one large piece of slab, seamless joint makes that only just perfect. Seamless Joint Tiling enhances this look one step further creating a seamless transition from one piece to the next perfectly recreating the beauty of natural stone.

In tile manufacturing, book-matching pieces for seamless continuity is nothing new, but the continuity has a limit. Endless Vein™ achieves infinity. The revolutionary product is

a grid of 6 or 8 unique large format pieces that can be laid with Kaolin “Seamless Joint Tiling Technology” to present as one piece – let’s call this the XL piece. Impressive in its own right, when this XL piece connects with the next XL piece, it will continue the natural stone patterning both horizontally and vertically endlessly.

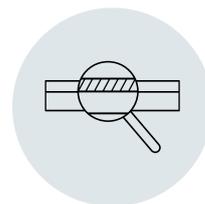
Kaolin’s Showpiece series of porcelain tiles reveal sublime compositions that are dramatic in their beauty. Each tile set is book matched and interconnected ranging from 9 square metres to almost 40 square metres of unique continuous pattern; or even endless if bookmatched.



DEFINING CRITERIA FOR “SEAMLESS JOINT TILING”

How do we achieve “Seamless Joint Tiling”? It comes down to 5 critical areas where Kaolin tiles excel over the competition.

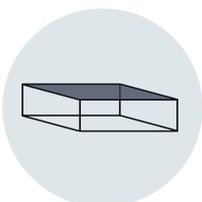
Those critical areas can only be achieved by pressed-to-size tiles. For economic reasons, most tiles today are manufactured in a larger size and then cut down to multiple smaller sizes to provide the end user options. Product lost to the cutting process or setup error/ variations often leads to tiles smaller than advertised and very often different in size to other tiles, even from the same manufacturer. Kaolin does not cut tiles to size. Every tile is pressed to the intended size and you will always receive a tile true to size. Kaolin has the strictest tolerances on the market and we only allow 0.3mm variation from nominated size.



1. TRUE TO SIZE

All Kaolin tiles are true to their mentioned size. A 900x1800mm is exactly that. Most tile manufacturers cut tiles from larger formats and are always slightly off-size. 900x1800mm tile would be in reality 895x1798mm for example. At Kaolin we are very proud of the fact all our tiles are “True to Size”.

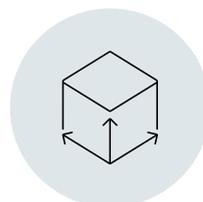
There is nothing more frustrating than ordering a tile that is advertised as 600x1200mm or 750x1500mm and then finding out it is 5mm smaller (595x1195mm or 745x1495mm). This becomes even more so when utilising more than one design in the same area and trying to get the grout lines to line up.



2. SURFACE FLATNESS

Kaolin pride ourselves on producing some of the flattest tiles available. Our 900x1800mm Seamless Joint Tile range have a factory allowance of only + or - 0.02% height deviation over the surface of the tile, this is almost 20 times stricter than the international standards of 0.4% allowed. While international standards cap this deviation at a maximum + or - 1.8mm, Kaolin standards only allow a maximum -0.3mm to +0.4mm surface variation over 1.8m.

This allows us to position the tiles closer without fear of lipping. In fact, we will also support bricklaying of Seamless Joint tiles with as little as a 1.5mm grout joint.



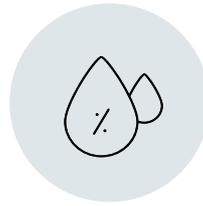
3. LENGTH AND WIDTH

A small gout joint cannot work unless your tiles are consistently the same size and straight.

International standards allow for a maximum + or - 1mm size deviation from tile to tile, this can lead to 2 tiles being up to 2mm different in size, this is why tilers have larger grout joints to allow for this variation.

This is unacceptable to us at Kaolin, so we have set our Seamless Joint tiles to have no more than 0.3mm variation between any two tiles. With a stack bond lay we now support joints down to as little as 0.5mm using our levelling clip system and approved installation methods.

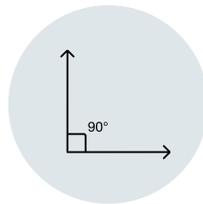
DEFINING CRITERIA FOR “SEAMLESS JOINT TILING”



4. WATER ABSORPTION

Tiles absorb water and as they do, they expand. This expansion can lead to tiles becoming “drummy” as they shear the bond to the adhesive and even pop up as expansion limits are reached and appropriate expansion joints are not included.

All Kaolin Seamless Joint tiles have an average water absorption rate of only 0.04% which is more than 10 times stricter than the international standard 0.5% and only a fraction of what natural stone can absorb, which virtually eliminates moisture expansion issues in tiles.



5. TRUE RECTIFIED EDGE

Kaolin tile edges are a true 90 degrees. Most manufacturers put a slight bevel on the edges of their tiles as they are often cut down from bigger sizes. This cutting leads to small chips along the edge of the tile and no other option than to put a bevel on the tile to remove the chipping.

As Kaolin press all their tiles to the required size we never cut the tiles down and never have to bevel the edge. For the end user this means that the size spacers used will be the finished grout width.

Use a 0.5mm spacer with a Kaolin seamless joint tile and the grout will be only 0.5mm. When the tile has a bevel or chamfer it can widen the grout joint considerable. This is often why 1.5mm spacers end up leaving a 3mm grout joint.



REAL PRACTICES

Many owners and designers dislike seeing wide grout joints and specifically require Kaolin products for seamless joint look. Below you can find some real life examples of tiles being laid with 0.5mm grout joints.





REQUIREMENTS FOR SEAMLESS JOINT 750X1500MM AND 900X1800MM POLISHED PORCELAIN TILES

Kaolin only recommend for internal areas only.

Substrate must be structurally sound and solid. Acceptable substrates include concrete floors and walls, fibre cement sheeted walls fixed in accordance to manufacturers specifications and designed to handle loads in excess of 30kg per M2. "Blueboard", "Gyprock" or "Scyon" are not acceptable substrates.

Substrates must be flat and level with no more than 3mm variation over 3m. Any excess variation should be removed via grinding or use of an appropriate self-levelling compound on floors. Wall frames should be level and consistent before sheeting commences. "Packing" or building up of the adhesive does not compensate for poor substrate preparation. All expansion joints must be incorporated as Per AS 3958.1-2007.

A perimeter expansion joint must be incorporated into the tiling installation to allow for any expected expansion in the tiling system, even though this may be minimal. Failure to allow some room for expansion can lead to failure of the entire job. Any expansion joints incorporated in the substrate must be carried through the tiling system. Tiling over expansion joints will lead to failure of the tiling system and will not be covered under any warranty.

Australian Standards fixing methods must be employed as per AS 3958.1-2007. This includes a minimum "commercial" use coverage guideline of 80% coverage for walls and 90% coverage for floors. We recommend back buttering of the tile

in conjunction with a 15mm notch trowel on the substrate to achieve recommended coverage. The additional use of vibration machines will help expel air and achieve the desired coverage. Dot fixing of any kind is not advised. We recommend to routinely pull up a tile during the laying process to ensure minimum coverage standards are being met. We recommend a minimum C2S1 classification or epoxy adhesive or be used.

We recommend use of levelling clips when laying seamless joint. All adhesives shrink and slump as they dry and this can lead to lipping tiles even if they were not evident during laying. Levelling clips are not a substitute for proper laying methods and any tiles sitting low during install should be pulled up and more adhesive added, do not rely on the clip pulling all the tiles flat. The clips purpose is to hold the tile in position during adhesive curing. For 900x1800mm tiles we recommend a minimum 3 clips along the short edge and 4 clips along the long edge. Ensure adhesive is fully cured before removing levelling clips.

Kaolin has tested and recommend Starlike Evo epoxy grout by Litokol (distributed by SAS Chester Hill) due to its low filler content and easy flowing nature. In testing we achieved 100% depth coverage with a 0.5mm spacer on a 11mm thick tile with minimal slumping. With such a fine joint any sanded grouts will not be suitable, for this reason seamless joint tiling can only be achieved with a 2-part epoxy grout system with ultra-fine fillers. We have not tested with any other systems and cannot recommend their suitability.

MEETING THE AUSTRALIAN STANDARDS FOR GROUT JOINTS

12

FLOOR AND WALL TILING

12.6 Grouting and joints

Grouting is defective if it is not carried out in accordance with the requirements of Clause 5.7 of AS 3958.1.

Joints are defective if they are not, as far as is practicable, of consistent width and can be seen from a normal viewing position.

Finished grout is defective if it is not uniform in colour, smooth, without voids, pinholes or low spots.

- a. The top surface of the grout may be tooled to provide a contoured depression of no deeper than 1 mm for up to 6 mm wide joint and up to 2 mm for a 6-10 mm wide joint (clause 5.7(e) of AS 3958.1).
- b. Joint widths for floor tiles should not exceed 3 mm for pressed tiles and 6 mm for extruded tiles (clause 5.4.6 (c) (i) of AS 3958.1)
- c. Joint widths for wall tiles should not exceed 1.5 mm for pressed tiles and 6 mm for extruded tiles (clause 5.4.6(c)(ii) of AS 3958.1).
- d. Joint alignment should be consistent throughout the installation within a tolerance of 4 mm in 2 m³ (clause 5.4.6(d) of AS 3958.1).

Grout is defective if it becomes loose within 24 months of handover.

12.7 Flexible sealants to junctions

Flexible or waterproof sealants to junctions are defective if they are not installed when required by the BCA and AS 3958.1, or in accordance with the manufacturer's installation requirements.

12.8 Uneven tiling

Except where tiles have distortions inherent in the manufacture, tiling is defective if it has joints that are not uniform, of even width, aligned or in the same plane.

Large tiles could present problems when required to fall and drain to a floor outlet.

⁸ This requirement does not apply to an interface between vertical and horizontal tiled surfaces.

[BACK TO CONTENTS](#)

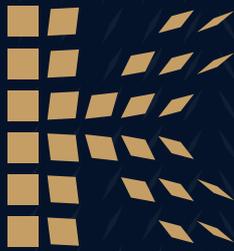
54

GUIDE TO STANDARDS AND TOLERANCES 2017

Kaolin recommendation of seamless joint of 0.5mm is compliant with the Australian Standards (AS3958.1). The Guide to Standards and Tolerances 2017 clearly states that the joint widths for floor and wall tile “should not exceed” respectively 3mm and 1.5mm, it does not mention any minimal joint sizes (see extract on the left).

Do not forget that those standards are designed to suit most tiles on the market. Kaolin Tiles are made to much tighter tolerances, our allowance for size and flatness is only 0.02%, this is 20 times stricter than tis ISO13006:2018 standards for tile tolerances. This allows us to exceed the recommended guidelines and lay with a smaller grout joint.

Source: NSW_Guide_to_Standards_and_Tolerances__Page_54



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