

TECHNICAL BULLETIN

LAYING PORCELAIN TILES

INTRODUCTION & SCOPE

Correct installation of porcelain tiles requires a few specialised techniques to ensure that a good quality installation results and this bulletin gives some guidance to achieve this.

WHAT IS UNUSUAL ABOUT PORCELAIN TILES?

Porcelain tiles are manufactured basically from kaolin clay and feldspars that are fired in such a way to make the tiles highly vitrified and very non-porous. Vitrification results in a glassy state being created in the tile matrix. Some types of porcelain tiles made since the 2000s have such a degree of vitrification that the back faces are almost glassy. These tiles require more diligence in installation than the older style porcelains. The adhesives therefore have to be able to bond to this surface which requires a high polymer, cement based type.

Polishing the porcelain tiles creates micro voids in the surface which allows the grout colour particles to lodge in the surface. Therefore when grouting tiles where there is a high colour contrast between the tile and grout, it is recommended that the surfaces be masked off to prevent contamination and cleaning difficulties.

Where the porcelain tiles have been rectified (mechanically cut

or ground to a standardised size) the grout lines must be fully filled to protect the edge from spalling. Standard tile laying techniques for rectified tiles are similar although narrower grout lines are normally provided.

When the tiles are non-rectified the normal joint widths of 3-6mm should be used as recommended by the tile manufacturer.

Large format porcelain tiles, in common with other similar sized tiles can slump and tilt, so an adhesive with non-slump characteristics must be used such as DUNLOP UNIVERSAL.

QUALIFICATIONS

These recommendations do not apply to large sheet type thin porcelain tiles. These tiles are 4-7mm thick and up to 3m x 1m in dimensions. They require more specialised adhesive systems.

RECOMMENDATIONS FOR ADHESIVES

The following adhesives are suitable for internal and external, commercial and domestic applications on suitably prepared masonry surfaces –

DUNLOP UNIVERSAL

DUNLOP TILE ALL

For flexible floors such as timber sheeted with fibre-cement underlay—

DUNLOP WALL AND FLOOR FLEXIBLE TILE ADHESIVE

To minimise scratching of the polished surface, a fine sanded grout is required such as DUNLOP COLOURED GROUT with narrow joints. Wider joints will require a sanded grout such as DUNLOP WIDE JOINT GROUT, but care is needed with polished surfaces to prevent the sand scratching it.

The normal installation practices relating to movement and expansion joints need to be detailed in these jobs as per the Australian Standard AS3958.

APPLICATION

Normal application of the mixed adhesive is to spread the adhesive over the floor the floor substrate using the recommended 10x10x10mm (or larger) notched trowel.

Spread the mixed adhesive into the floor substrate using the flat of the trowel and then use the notched edge to create the adhesive ribs. Ensure the ribs all run in the same direction, say from left to right. Place the tile into the adhesive against the previously laid tile and slide back and forth across the direction of the adhesive ribs for 10 to 15mm while pressing firmly to collapse the adhesive ribs. Finish with the tile in its final position. This will ensure full adhesive contact with the back of the tile.

Occasionally lift the tiles to check the adhesive fully covers the back of the tile.

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Masking involves the application of a water soluble material to the tile face which prevents the grout adhering to the surface, and when grouting is complete, this material washes off. Commonly this has a starch base, but can be soaps or detergents as well.

SUBSTRATE CONSIDERATIONS

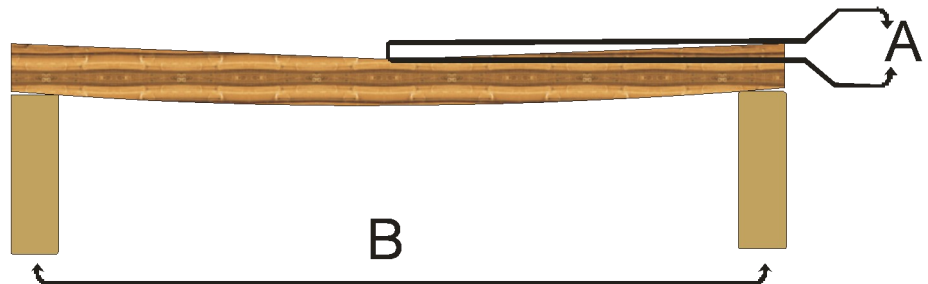
With large format tiles, floor flatness and flexibility become critical for finish and longer term performance.

Where concrete floors are insufficiently flat then the surface can be remedied using a floor levelling compound such as DUNLOP MULTIPURPOSE FLOOR LEVELLER or ARDIT FLOOR LEVELLER.

Masonry walls should be rendered or smoothed with an appropriate mortar or render product.

Timber floors are more difficult to deal with. Low spots and dips should be smoothed with DUNLOP Timber Floor Leveller and then over-sheeted with *fibre-cement underlay* sheets.

Deflection in floors (i.e. timber) is also an issue for large tiles. Excess deflection leads to cracking, lipping and de-bonding. The vertical deflection of floor substrates for tiles less than 350mm square should be less than 1/360th of the floor joist spacing, and for larger tiles less than 1/500th to 1/700th of the joist spacing. This is shown in the attached sketch where the deflection A must be less than



$$A < (B \div 360)$$

1/360th of the floor joist spacing B.

Deflection in walls is also a problem but more difficult to quantify and rectify.

Notes

Always refer to the product data sheets for specific usage details.

The information contained herein is to the best of our knowledge true and accurate.

No warranty is implied or given as to its completeness or accuracy in describing the performance or suitability of the product application.

Users are asked to check that the literature in their possession is the latest issue.

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