

TECHNICAL BULLETIN

BUILDING UP LEVELS, CREATING FALLS OR SMOOTHING SURFACES PRIOR TO TILING

INTRODUCTION & SCOPE

A practice that is used in tiling installations involves the use of neat ceramic tile adhesives to build up a deep bed suitable for falls, or simply filling up gaps or irregularities in walls or floors. A similar situation involves the erroneous belief that the tile adhesive is suitable for building up, or filling cement joints in brick or block work.

These practices are not sound for a number of reasons and we will look at suitable solutions.

WHY ARE THESE PRACTICES NOT RECOMMENDED?

There a number of reasons why these practices are not recommended and can lead to later problems including -

- Laying thick beds of mastic or premixed adhesives will lead to drying problems, as these materials cure by water evaporation. Maximum thickness should not exceed around 3mm.
- Tile adhesives are not normally shrinkage compensated and so overly thick beds can shrink during drying and crack.
- Flexible tile adhesives have lower shear strengths, and so beds laid in excess of the recommended thicknesses can lead to a weak bed and possible tile de-bonding.

- Tile adhesives are generally more expensive than rendering or filling and so the use of these materials may not be cost effective.

WHAT CAN BE DONE TO BUILD UP LEVELS OR FLATTEN SURFACES BEFORE TILING

The following are recommended practices prior to laying tiles, where a fall needs to be created, or a level or flatness problem requires correction.

Using a Ceramic tile adhesive (Masonry only)

On concrete floors with a small area to be tiled, DUNLOP UNIVERSAL and TILE ALL can be built up to a maximum bed thickness of 10mm in a single layer.

However, the adhesive needs to dry before any other application occurs and shrinkage needs to be considered. The use of tile adhesives in this way should be considered as an option of last resort.

Using screeding or levelling materials

Rigid floors—masonry

On concrete floors in wet, dry or external areas;

- Bonded sand/cement (3:1 S:C) screed mixed with DUNLOP PRIMER AND ADDITIVE in the gauge water.
- DUNLOP MULTIPURPOSE FLOOR LEVELLER up to 10mm thick, or mixed with

an equal **weight** (1:1) of 3-5mm aggregate to 25mm or approximately half a **volume** (1:2) of 0.3mm sand for falls or ramps up to around 30mm.

On concrete floors in dry internal areas only, the same solutions as for the wet areas but also including;

- DUNLOP FLOOR REPAIRER RAPID PATCH can be any depth, but for economy;
 - * to a depth of 20mm neat,
 - * to 30mm depth with a half **volume** (1:2) of coarse 0.3-1.0mm clean dry sand (not *brickies* sand) or half **weight** of 2-5mm aggregate (1:2—1 part filler, 2 parts REPAIRER)
 - * and to 50mm depth with a half **weight** of 10-12mm clean dry aggregate mixed (1:2—1 part filler, 2 parts REPAIRER)
- DUNLOP ARDIT RAPIDSET REPAIR MORTAR to 30mm depth
- DUNLOP self smoothing cements such DUNLOP MULTIPURPOSE FLOOR LEVELLER, DUNLOP ARDIT FLOOR LEVELLER and DUNLOP TIMBER FLOOR LEVELLER either neat to their specified maximum thickness or mixed with an equal **weight** (1:1) of 2-

TECHNICAL BULLETIN

5mm aggregate to between 25 and 30mm thick.

Flexible floors

On flexible timber substrates such as timber or Compressed Fibre-Cement Sheet, for dry internal applications;

- Unbonded mesh reinforced self supporting sand/cement (3:1 S:C) screed (~40mm thick) mixed with DUNLOP PRIMER AND ADDITIVE in the gauge water on a plastic sheet.
- DUNLOP TIMBER FLOOR LEVELLER up to 10mm thick, or up to 30mm thick when mixed with an equal **weight** of 2-5mm aggregate (1:1). This can be tiled (bond breakers over sheet joints on the finished surface), or over sheeted for a flat surface.

On flexible external Compressed Fibre-Cement Decks (under membranes);

- Unbonded mesh reinforced self supporting sand/cement (3:1 S:C) screed (~40mm thick) mixed with DUNLOP PRIMER AND ADDITIVE in the gauge water on a plastic sheet.
- DUNLOP TIMBER FLOOR LEVELLER up to 10mm thick, or up to 30mm thick when mixed with an equal **weight** of 2-5mm aggregate (1:1). This can be tiled (bond breakers over sheet joints on the finished

surface), or over sheeted for a flat surface.

Note: this does not mean using the leveller system over Scyon™ Secura™ Flooring.

On timber substrates in water-proofed wet internal application (under membranes)

- Unbonded mesh reinforced self supporting sand/cement (3:1 S:C) screed (~40mm thick) mixed with DUNLOP PRIMER AND ADDITIVE in the gauge water on a plastic sheet.

Above membranes (for example membranes not suitable for tiling)

- Unbonded mesh reinforced self supporting sand/cement (3:1 S:C) screed (~40mm thick) mixed with DUNLOP PRIMER AND ADDITIVE in the gauge water on a plastic sheet.

Rendering walls (Masonry)

On brick, block work or irregular masonry walls

- Cement slurry coat mixed with DUNLOP PRIMER AND ADDITIVE in gauge water, followed by sand/cement render mixed with DUNLOP PRIMER AND ADDITIVE in gauge water.

Over suitable membranes (not including pools where special procedures apply)

- Cement slurry coat mixed with DUNLOP PRIMER AND

ADDITIVE in gauge water, followed by sand/cement render mixed with DUNLOP PRIMER AND ADDITIVE in gauge water.

Note that when bonded to the membrane the minimum screed thickness shall be no less than 15mm, but when unbonded a 40mm self supporting screed is required.

Non-recommended applications

The following installation methods are not recommended -

- ☒ Application of renders on flexible walls such as fibre-cement sheets, plaster-board or timber.
- ☒ Direct application onto any type of external timber decks.
- ☒ Building up adhesive beds with thicknesses above 3-3.5mm using rubber modified adhesives such as DUNLOP WALL AND FLOOR TILE ADHESIVE, RAPIDFLEX and FLOOR TILE ADHESIVE or the mastics DUNLOP WALL TILE ADHESIVE, WALLFIX TILE ADHESIVE or PREMIXED MASTIC.
- ☒ Any attempts to build up thickness with DUNLOP PRE-MIXED RESAFLEX.
- ☒ Direct build up on timber floors in wet areas with DUNLOP levelling cements such as, DUNLOP

TECHNICAL BULLETIN

MULTIPURPOSE FLOOR LEVELLER, ARDIT FLOOR LEVELLER, TIMBER FLOOR LEVELLER or the patch mortars, DUNLOP FLOOR REPAIRER RAPID PATCH and DUNLOP ARDIT RAPIDSET REPAIR MORTAR .

CONCLUSIONS

The solutions suggested in this bulletin provide procedures for building up beds prior to tiling. The specific instructions can be found on the relevant product datasheets or in Technical Bulletins which can be obtained from DUNLOP's technical advice hotline upon request, or from the DUNLOP DIY website.

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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GLOSSARY

Bonded screed– A screed, either sand-cement or granolithic that is actually bonded to the underlying surface. Such screeds are susceptible to any movements in the substrate, but are suitable for thinner applications.

Mastic adhesive–This usually applies to pre-mixed adhesives in the form of a paste, which D Class tile adhesives to ISO13007.1. Note that 'mastic can also be used for cement based powders with handling properties similar to the pre-mixed pastes.

Metal mesh–Screeds used welded mesh which complies with AS/NZS 4671-2001. For sand-cement the welded mesh size is typically 2-3mm with 25-40mm apertures. Chicken wire and renders lath are not suitable to use with floor screeds.

Sand-cement screed–These are the traditional screeds used by tilers and builders. The cement is common Portland Cement and the sand is usually so called 'brickies' sand which contains some clay to help plasticity when being worked. To obtain best strength they need to mixed correctly (component ratios) and compacted.

Shrinkage and Shrinkage compensation–When an adhesive dries and the water leaves the material, it undergoes a volume reduction which is called 'shrinkage'. This effect leads to

cracking, de-bonding and other problems. Shrinkage compensated materials contain components which expand on drying to counteract the tendency to shrink.

Unbonded screed–A screed either sand-cement or granolithic that is not bonded to the underlying surface and is free floating. Such screeds have to be thicker with included metal mesh to avoid breaking up. They are used when the screed can't be adhered to the underlying surface and can be removed from underlying movements in the substrate.

Weight vs Volume

Within the text, some filler additions are in weight others in volume.

Sand materials (0.1-2mm sized) can be more easily measured in volumes (i.e. litres, gallons etc.,). Typical quartz sand has a bulk density of 1200-1600kg/m³, so 10kg is roughly 6-8 litres,

Aggregate ranging from 2-12mm in size can have variable shapes making volume and bulk density an unreliable measure. Gravel aggregate also commonly has different rock compositions, making the bulk density far more variable. Hence the use of weights in the case of coarser materials.