INSTALLATION GUIDELINE

Type: Tiling onto a "Torch-on" Bituminous Waterproofing Compound applied on a Balcony or Roof Slab

1 December 2024

IMPORTANT:

- **This Installation Guideline is issued for information purposes only, and should not be used as a project specification.**

  Please contact the TAL Technical Advice Centre to ensure you have the latest version of this Installation Guideline, as products and application procedures can change.

- **As each and every project needs to be assessed individually on its own merits and characteristics, please contact the TAL Technical Advice Centre for a project-specific detailed materials and methods specification for specific projects.**

- **It is important that the tile selected is suitable for the application, preferably against a written Supplier's specification. Factors such as water absorption, irreversible moisture expansion, MOR and PEI ratings, chemical resistance and overall stability of the product need to meet the requirements of the service conditions.**

  NB: The backs of all tiles must be clean and free from all traces of dust and contaminants which could impair adhesion.

THE TAL PRODUCTS REQUIRED FOR THIS INSTALLATION ARE AS FOLLOWS:

TAL KEYCOAT + TAL KEYMIX*
TAL GOLDSTAR XL + TAL BOND / TAL BOND POWDER
TAL WALL & FLOOR GROUT + TAL SCREEDBINDER
TAL SEALMASTER CORD
TAL GOLDSTAR SEALMASTER 1000

NB: Prior to commencing the installation, please refer to the instructions on the packaging and product data sheets for more detailed information pertaining to substrate preparation, product mixing and application, curing times, etc. The products must be applied following a good standard of workmanship.

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SPECIAL NOTE MUST BE TAKEN OF THE FOLLOWING:

Bituminous Waterproofing Systems:
Whilst **bituminous compounds** provide excellent waterproofing to structures, past experience has shown that tiling over bituminous waterproofing systems has proven problematic. Some of the issues found with tiling onto bitumen include:

- Bituminous systems are usually applied at a minimum thickness of 4mm. Being thermoplastic in nature, bitumen in warm conditions tends to be viscoelastic ('flow' as a solid mass). In extreme cases this flow exceeds the flexibility induced into the tile adhesive and grout by the use of suitable additives and movement joints combined, resulting in buckling of the panel, cracking of tiles and ultimately failure.
- Plasticizer migration from the bitumen resulting in the deterioration of the integrity of the bitumen and tile adhesive, and a failure of the installation.
  Applying a 'bond breaker', in the form of silica aggregate or a cementitious/acrylic waterproofing layer, will alleviate the effects of plasticizer migration into the adhesive.

If tiling is to take place over a bitumen-based waterproofing system we recommend that a screed, of minimum 70mm thickness, be applied over the bitumen.
Should height tolerances not allow for a 70mm screed prior to tiling we recommend that another, compatible, waterproofing system be investigated. TAL SUPERFLEX (acrylic) and TAL SUREPROOF (2K cementitious) waterproofing compounds were developed as flexible waterproofing systems for waterproofing below tile installations and are fully compatible with cementitious tile adhesives.

Should you elect to tile over the bituminous waterproofing compound, the below-mentioned products and installation procedures may be considered.

It must however be noted that, whilst we can guarantee the performance of our products, we cannot guarantee the integrity of the substrate to which they are applied.
TAL will not be liable should the tile installation be compromised as a result of the waterproofing system/s failing or debonding from the subsurface, or from each other, or as a result of reduced support below the tiles resulting from the viscoelastic nature characteristic to bitumen-based compounds and/or plasticizer migration into the system.

It is our understanding that Bituminous Waterproofing Compounds are usually overcoated with a modified cementitious waterproofing compound ("Resiflex", etc) prior to tiling.

Adhesive System:
Due to the viscoelastic nature of bituminous waterproofing systems, a more deformable, or "**S2**" type, adhesive system should be used for these installation areas, ie TAL GOLDSTAR XL modified quick-setting adhesive (C2TES1) system with TAL BOND or TAL BOND POWDER incorporated in the adhesive mix (in accordance with the product instructions) to achieve the "S2" properties.

Note: If quicker access is required to newly tiled floors then TAL GOLDFLEX modified rapid-setting adhesive + TAL BOND / TAL BOND POWDER – should be considered (grout after 4 hours, trafficable after 6 hours).

It is important that newly installed tiles are protected from traffic (other trades, etc) while the adhesive sets. This is especially important in fast-track installations.
Too early trafficking of newly installed tiles before the adhesive has set sufficiently may result in an impaired bond (hollow-sounding and/or loose tiles).

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Floor Levels:
The following is an excerpt from **SANS 10107**, Code of Practice for the Design & Installation of Ceramic Tiling:

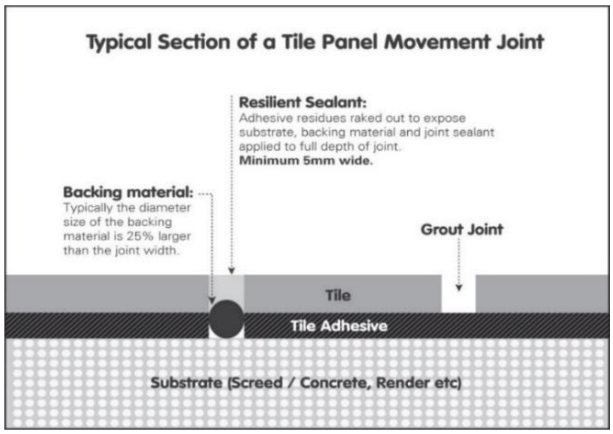
> "*Where the tiling is bedded in an adhesive, the tolerance for the base should conform to that required for the finished floor.*"

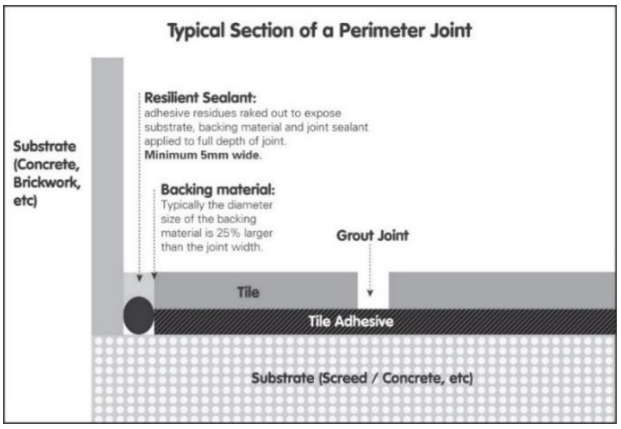
Should large variations in the floor levels be noted, it is recommended that floor level surveys be conducted on the floor surface and all variations in the floor levels be rectified prior to the tile installation. (The QS or Main Contractor should advise on the required degree of accuracy of the floor, ie Class 1, 2 or 3.)
It is very labour intensive to achieve true levels when working with thicker beds of wet adhesive, and the higher adhesive consumption will have a cost implication on the installation. Exceeding the recommended maximum application thickness of a tile adhesive may also result in an installation failure.

External Applications:
External installations must be protected from inclement weather and too-rapid drying (direct sunlight, drying winds, etc), while the adhesive sets.

Tile Panel Movement Joints & Perimeter Joints:
It should be noted that the lack of, ***or poorly constructed***, intermediate tile panel movement joints and perimeter joints in a tile installation is a major cause of tile failure.
Joints must be created at the required spacing and must be well raked out to remove all traces of adhesive residues, debris, contamination, etc, ie the joint must extend through the tile and tile adhesive layers down to the substrate.
These joints must be filled with and sealed with a suitable backing cord/tape and resilient joint sealant material in accordance with the manufacturer's instructions.

Alternatively, suitable Prefabricated Movement Joint Strips can be installed during the tiling operation, ***strictly in accordance with the manufacturer's instructions.***





Application Conditions:
<u>Cold Ambient Conditions</u>
Cold ambient conditions will not only impact on the temperatures of the adhesive, grout and mixing liquid (water or additive used in the adhesive and grout mix), but also the temperature of the substrate and tiles.
NB: Longer setting and curing times should thus be anticipated and catered for during extreme cold conditions.

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High Ambient Conditions

As indicated on the product data sheets, warm weather conditions (generally, temperatures above 30°C) may shorten the working time of the mixture, and may even result in flash-setting of rapid- or quick-setting adhesives.
High ambient conditions will also impact on the temperatures of the adhesive and grout, mixing liquid (water or additive used in the adhesive and grout mix), substrate (concrete or screed), and tiles.
It is thus important when elevated ambient conditions are encountered that the materials (adhesives, liquids, tiles, etc) are stored in interior, cool conditions prior to use to reduce the risk of too-rapid setting.
NB: Never add more liquid to a mix which has been left standing for too long, as this will compromise the integrity of the product.

1. BACKGROUND PREPARATION

NB: External Floors should be to the required falls, with adequate provisions for drainage to ensure run-off of rainwater.

1.1 **All new substrates must be allowed sufficient curing/drying time to ensure that the tile installation is not compromised by drying shrinkage movement in the substrate.**

1.2 **The Bituminous Waterproofing System must be applied strictly in accordance with the manufacturer's instructions and the waterproofing specification issued for this project.**

This should be overcoated with an acrylic/cementitious waterproofing compound, applied strictly in accordance with the product instructions, and ensuring complete coverage of the bituminous waterproofing layer.

1.3 **Before tiling is commenced the waterproofing installation must be thoroughly evaluated, and any defective (air bubbles, delaminated/debonded) sections must be identified and made good.**

1.4 **NB: Any contamination from other trades and general surface contaminates must be identified and removed. The substrate must be clean and dry and free from all traces of dust, loose particles and surface contaminants which could impair adhesion.**

1.5 **Note:** If the 'Torch-on' Bituminous Waterproofing System is overcoated with a Cementitious/Latex waterproofing compound, no further priming should be required. However, if no Cementitious/Latex system is applied, the Bituminous Waterproofing layer must be primed with a slurry consisting of 1 part TAL KEYCOAT to 2 parts **TAL KEYMIX** powder (by volume), applied using a suitable builder's block brush or soft-bristle broom and ensuring complete coverage of the substrate. Allow this slurry coat to dry for 4 – 6 hours and ensure it is well-anchored to the surface before applying the adhesive.*

2. ADHESIVE SYSTEM

2.1 Apply TAL GOLDSTAR XL **modified** adhesive **mixed 20kg with 5 litres of TAL BOND (replacing the water in the mix)** to the background using a notched trowel.

Alternatively, TAL BOND POWDER may be added to the adhesive mixing water at a ratio of 1 x 1kg sachet per 20kg TAL GOLDSTAR XL, ***strictly in accordance with the product instructions***.

2.2 **In this tiling situation it is imperative that there is a solid bed of adhesive at least 6mm thick beneath each tile.** We would recommend the use of a notched FLOOR TROWEL or THICK-BED FLOOR TROWEL.

NOTE: Back "buttering" (trowelling) with adhesive is also required when using large format tiles to ensure full contact and a solid bed of adhesive beneath each tile.

2.3 At no time spread more adhesive than can be tiled onto in 20 – 20 minutes. Depending on atmospheric conditions, this will normally be around 1 square metre. This prevents the adhesive from drying or "skinning" before the tiles are applied.

2.4 Bed dry tiles (do not soak) firmly into the wet adhesive with a twisting action to ensure full contact between the background, tiles and adhesive. Tiles should be well tapped home with a rubber mallet or the wooden handle of a trowel. It is sound practice to remove the occasional tile to ensure that good contact has been achieved.

2.5 Clean off any surplus adhesive remaining on the face of tiles and between the joints with a damp sponge before the adhesive dries.

2.6 Never butt joint tiles. Joints are required to allow the individual tiles to move with respect to each other and thus avoid a compressive stress build-up. They are also required as vents for the tile adhesive to cure.

The joints between Porcelain Tiles must be a minimum of 3mm wide, and a minimum of 5mm wide between Glazed Ceramic Floor Tiles.

2.7 Pot life of the adhesive will vary with climatic conditions. Under no circumstances should adhesive which has been left standing for too long be reconstituted by adding more liquid.

2.8 Do not tile over structural, expansion or cold joints in the background. These joints must be extended through the various layers to the surface.

3. GROUTING

3.1 Grouting must not be carried out until sufficient bond has developed between the bedding mix and the tiles to preclude disturbance of the tiles during the grouting operation. **Allow a minimum of 8-10 hours before light foot trafficking or grouting.**

3.2 Use grey or coloured TAL WALL & FLOOR GROUT **mixed 20kg with 6 litres of TAL SCREEDBINDER (replacing the water in the mix)** for filling tile joints up to 8mm wide.

3.3 **WARNING:**

3.3.1 The joints must be raked out and cleaned before grouting.

3.3.2 Ensure that the joints are completely filled, and the grout is thoroughly compacted into the joints.

3.3.3 Particular care must be taken to clean the grout off the tile face before it hardens completely. This is especially important when a modified grout system has been used.

3.3.4 A sample of the tiles to be used should be tested beforehand to ensure that no grout is absorbed through the glaze, or into the tile body, causing permanent staining of the tiles.

3.3.5 It is important to use the stipulated amount of liquid in the TAL Grout mixture. When cleaning, a **damp**, ***not wet***, sponge must be used. Over hydration (too much liquid) of the mix, or in cleaning, causes colour variations in the grout joints, and also affects the integrity of the grout, resulting in a friable product.

4. MOVEMENT JOINTS

4.1 It should be noted that the lack of movement joints in a tile panel is a major cause of tile failure. They should be specified at the design stage to avoid placing them in heavy traffic areas and spoiling the visual effect of the tiles.

4.2 **Movement joints should be located in both directions at maximum 2 metre centres for this application area, aligning with the modular tile size.**

4.3 **Movement joints should also be located around the perimeter of all floors, including interfaces between floor tiling and aluminium shopfronts / sliding door tracks, in all vertical corners, against obstructions fixed to the structural background and over all discontinuities in building materials, e.g. at interfaces of concrete and brickwork. In addition, movement joints should be located around any fixtures protruding through the tiled surface such as columns or stairs.**

4.4 **The joints should be at least 5mm wide and extend through the adhesive and tile layers.**

NB: Special care must be taken to ensure that the waterproofing installation is not damaged during cleaning out of the tile panel movement joints and perimeter joints. Failure to do so will result in an impaired waterproofing installation. Ideally the adhesive should be carefully removed from the joints whilst still wet; dried adhesive is significantly more difficult to remove.

4.5 Where practical, the bulk of the depth of the movement joint can be filled with TAL SEALMASTER CORD.

4.6 Seal the joint using TAL GOLDSTAR SEALMASTER 1000 polyurethane joint sealant in accordance with the manufacturer's instructions. It is important that the joint sealant bonds only to the sides of the movement joint (edges of tiles).

4.7 For the key requirements common to all tiling situations please refer to SANS 10107, Code of Practice for the Design and Installation of Ceramic Tiling.