

# INSTALLATION GUIDELINE

**Type: Levelling over Under-Tile Heating Elements, and then Fixing Ceramic Floor Tiles or Porcelain Tiles**



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.**
- **The installation of floor heating systems and underlayment compounds is a skilled operation and should only be carried out by competent and experienced artisans with the correct training and equipment. Application by unskilled labour is NOT recommended.**
- **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:**

### **Levelling over Under Tile Heating Elements**

TAL FLOOR PRIMER / TAL FLOORKEY + TAL RAPIDFIX  
TAL SUPERSCREED  
TAL SCREEDBINDER

### **Tile Installation**

TAL KEYCOAT + TAL KEYMIX \*  
TAL PROFESSIONAL / TAL PROBOND – Ceramic Floor Tiles  
TAL GOLDSTAR 12 / TAL GOLDSTAR XL – Porcelain Tiles  
TAL WALL & FLOOR GROUT  
TAL BOND / TAL BOND POWDER  
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.**

Page 1 of 8

TAL - a division of Norcros SA (Pty) Ltd | **Gauteng:** Porcelain Road, Olifantsfontein 1665, Private Bag X4 Olifantsfontein 1665, South Africa  
Tel: +27 11 206 9700 | Fax: +27 11 316 2863 | **Technical Advice No: 0860 000 825** | [www.tal.co.za](http://www.tal.co.za)

**Norcros SA (Pty) Ltd** Reg. 1952/000012/07  
Porcelain Road | Private Bag X4 Olifantsfontein 1665, South Africa | Tel: +27 11 206 9700 | Fax: +27 11 316 2863 | [www.norcros.co.za](http://www.norcros.co.za)  
Norcros SA (Pty) Ltd Divisions: Johnson Tiles, TAL, Tile Africa & House of Plumbing

# INSTALLATION GUIDELINE

**Type: Levelling over Under-Tile Heating Elements, and then Fixing Ceramic Floor Tiles or Porcelain Tiles**



## **SPECIAL NOTE MUST BE TAKEN OF THE FOLLOWING:**

### **Floor Heating Systems:**

We have specified a modified adhesive and grout systems for this installation, with tile panel movement joints at closer centres, to allow for the anticipated thermal expansion and contraction associated with floor heating systems.

**Note: The new tile installation must be allowed to fully cure before the Heating System is put into operation, ie allow a minimum of 28 days before the Heating System is switched on.**

### **Adhesive Systems:**

#### Ceramic Tiles

We have specified TAL PROFESSIONAL standard-setting ceramic tile adhesive, mixed with TAL BOND as a total water replacement in the mix, for this installation.

**Alternatively,** TAL PROBOND **modified** standard-setting adhesive can be considered. When using TAL PROBOND no additives are required, simply mix with cool clean water. This not only minimises the risk of mixing and application errors on site, but also reduces delivery costs and storage requirements for bulky additive containers.

#### Porcelain Tiles

We have specified TAL GOLDSTAR 12 quick-setting high-strength adhesive, mixed with TAL BOND as a total water replacement in the mix, for this installation.

**Alternatively,** TAL GOLDSTAR XL **modified** quick-setting adhesive can be considered. When using TAL GOLDSTAR XL no additives are required, simply mix with cool clean water. This not only minimises the risk of mixing and application errors on site, but also reduces delivery costs and storage requirements for bulky additive containers.

**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).**

**NB: TAL GOLDFLEX modified rapid-setting adhesive should be used if quicker access is required to newly tiled floors (grout after 4 hours, sets after 6 hours).**

### **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.

# INSTALLATION GUIDELINE

Type: Levelling over Under-Tile Heating Elements, and then Fixing Ceramic Floor Tiles or Porcelain Tiles



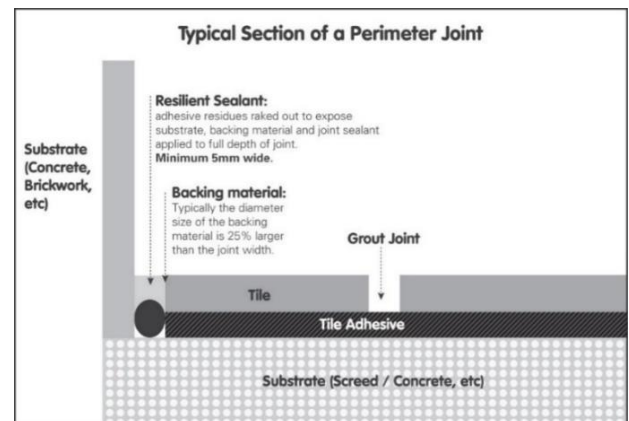
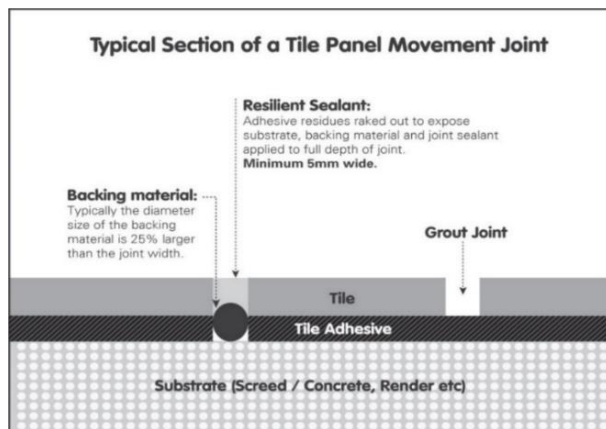
## Tile Panel Movement Joints & Perimeter Joints:

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:

### Cold Ambient Conditions

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.**

### 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.**

# INSTALLATION GUIDELINE

Type: Levelling over Under-Tile Heating Elements, and then Fixing Ceramic Floor Tiles or Porcelain Tiles



## 1. BACKGROUND PREPARATION

- 1.1 **Allow all new concrete work and screeds to cure for at least 6 weeks and 4 weeks respectively before proceeding.** All new concrete work and screeds should attain a moisture content of 5% or less before the flooring installation is commenced.  
**When tiling directly onto concrete, ensure that the surfaces are clean and free of all traces of curing agents, laitance and any other surface contaminants, preferably by diamond grinding, scarifying, etc.**
- 1.2 Any screeding must be firmly bonded to the underlying concrete, and the substrate must be of significant strength, must be integrally sound (no crumbling, cracking, etc) and must be of a quality and consistency suitable for screeding and tiling. All damaged, defective, deteriorated or hollow sounding areas must be removed and the floor made good before proceeding.

## 2. LEVELLING OVER UNDER-TILE HEATING ELEMENTS

- 2.1 **The substrate must be clean and dry and free of all traces of dust, loose particles and surface contaminants which could impair adhesion.**
- 2.2 **The substrate must be primed prior to the installation of the Floor Heating Elements and Underlayment Compound, as follows:**
- 2.3 **Woodfloated (rough, porous) Surfaces**
  - 2.3.1 Prime the surface with a coat of neat TAL FLOOR PRIMER, applied using an appropriate roller or builders block brush and ensuring complete coverage of the substrate to receive the underlayment compound.  
**NOTE:** Highly porous floors may require more applications of TAL FLOOR PRIMER, and each coat should be applied in a ***cross-direction to the previous application*** once the previous coat is touch dry.
- 2.4 **Powerfloated / Steelfloated (smooth, dense) Surfaces**
  - 2.4.1 Prime the surface with a slurry consisting of 1 part TAL FLOORKEY mixed with 2 parts TAL RAPIDFIX powder (by volume), **applied using an appropriate builders block brush or soft-bristle broom and** ensuring complete coverage of the substrate to receive the underlayment compound.
- 2.5 **Ensure that no ponding of the primer occurs.** Allow the priming coat to dry and ensure it is well-bonded to the substrate before the under-tile heating elements are laid and pinned/taped in place, strictly in accordance with the manufacturer's instructions.  
**NB: The underfloor heating element system must not occupy more than 10% of the floor surface area to receive the Underlayment Compound; the critical factor is the contact of the Underlayment Compound onto the Floor Substrate, a minimum of 90% contact must be achieved.**
- 2.6 Add 20kg TAL SUPERSCREED to **5 litres of TAL SCREEDBINDER (replacing the water in the mix)**, and mix until a smooth, lump-free paste is obtained. Stir occasionally whilst in use. **Do not mix up more than can be used in 20 – 30 minutes.**

# INSTALLATION GUIDELINE

Type: Levelling over Under-Tile Heating Elements, and then Fixing Ceramic Floor Tiles or Porcelain Tiles



- 2.7 Add 20kg TAL SUPERSCREED to **5 - 5.5 litres of TAL SCREEDBINDER (replacing the water in the mix)** while stirring slowly with an electric drill of 1.8Kw with a suitable mixing paddle attachment. The mixing process and application should be continuous. Mix thoroughly for 5 minutes until a smooth, lump-free viscous liquid is obtained. Allow the mix to stand for 3 minutes, and then stir again for 1 minute. Stir occasionally whilst in use.

**For best results use a full bag in one mix. Do not mix up more than can be used in 20 – 30 minutes. Never add more liquid to a mix which has been left standing for too long (retempering) as this will compromise the integrity of the TAL SUPERSCREED.**

- 2.8 Apply TAL SUPERSCREED mixed with TAL SCREEDBINDER over the heating elements, ensuring that all wires are completely covered. Work to a smooth, level surface.

- 2.9 **For this installation we recommend that the TAL SUPERSCREED SL be a minimum of 5mm above the highest point of the underfloor heating. The screed should be left with a finish that resembles that generally achieved with a Wood Float.**

**Temporary rails or barriers can be installed on either side of the installation area to assist with application of the TAL SUPERSCREED material.**

- 2.10 **NOTE:** If a separating covering mat is to be used, this must be placed in the wet screed over the heating elements. A further layer of TAL SUPERSCREED mixed with TAL SCREEDBINDER at least 2mm thick must be applied over the mat, ensuring that the mat is totally saturated from both sides and forms part of the levelling compound. Allow 24 hours drying time before proceeding.

- 2.11 The TAL SUPERSCREED installation must be allowed to cure for a minimum of 24 hours, depending on site and ambient conditions.

- 2.12 **The TAL SCREEDMASTER installations should be protected from building operations and other trades until fully cured. They should also be completely protected until fully covered with tiles.**

- 2.13 Before tiling is commenced installed it is the Flooring Contractor's responsibility to thoroughly inspect the new TAL SUPERSCREED installation and confirm that it is integrally sound and does not show signs of Overwatering and Product Separation.

## NB:

- Priming of the TAL SUPERSCREED installation is not typically required prior to the adhesive application.
- Powerfloated or steelfloated areas of substrate **not covered** with TAL SUPERSCREED must be keyed with a slurry consisting of 1 part TAL KEYCOAT to 2 parts TAL KEYMIX powder **or** 2 parts TAL tile adhesive powder (by volume), applied using an appropriate builders block brush or soft-bristle broom and ensuring complete coverage of the substrate. Allow this slurry coat to dry for 4 – 6 hours before applying the adhesive.\*

# INSTALLATION GUIDELINE

Type: Levelling over Under-Tile Heating Elements, and then Fixing Ceramic Floor Tiles or Porcelain Tiles



## 3. ADHESIVE SYSTEM

### 2.1 Ceramic Tiles

2.1.1 Apply TAL PROFESSIONAL **mixed 20kg with 5 litres of TAL BOND (replacing the water in the mix)** to the background using a notched trowel.

**Alternatively**, TAL PROBOND **modified** adhesive can be used.

### 2.2 Porcelain Tiles

2.2.1 Apply TAL GOLDSTAR 12 adhesive **mixed 20kg with 5 litres of TAL BOND (replacing the water in the mix)** cool, clean water to the background using a notched trowel.

**Alternatively**, TAL GOLDSTAR XL **modified** adhesive can be used.

### 2.3 General – Ceramic & Porcelain Tiles

2.3.1 **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” with adhesive is also required when using large format tiles to ensure full contact and a solid bed of adhesive beneath each tile.**

2.3.2 At no time spread more adhesive than can be tiled onto in 10 – 15 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.

2.3.3 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.

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

2.3.5 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 Ceramic Floor Tiles must be a minimum of 5mm wide, and a minimum of 3mm wide between Porcelain Tiles.**

2.3.6 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.

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

## 4. 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, as follows:

# INSTALLATION GUIDELINE

Type: Levelling over Under-Tile Heating Elements, and then Fixing Ceramic Floor Tiles or Porcelain Tiles



**TAL PROFESSIONAL / TAL PROBOND (Ceramic Tiles) - Allow a minimum of 24 hours before light foot trafficking or grouting.**

**TAL GOLDSTAR 12 (Porcelain Tiles) - Allow a minimum of 6-8 hours before light foot trafficking or grouting.**

**TAL GOLDSTAR XL (Porcelain Tiles) - 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 BOND (replacing the water in the mix)** for filling tile joints up to 8mm wide.

**Alternatively**, TAL BOND POWDER may be added to the grout mixing water at a ratio of 1 x 1kg sachet per 20kg TAL WALL & FLOOR GROUT.

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.

## 5. MOVEMENT JOINTS

- 5.1 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.
- 5.2 **Movement joints should be located in both directions at maximum 3 metre centres for this application.**
- 5.3 **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.

# INSTALLATION GUIDELINE

**Type: Levelling over Under-Tile Heating Elements, and then Fixing Ceramic Floor Tiles or Porcelain Tiles**



- 5.4 **The joints should be at least 5mm wide and extend through the adhesive and tile layers.**  
All construction / cold joints and structural joints in the background must be extended through the adhesive and tile layers to the surface in the form of tile panel movement joints. With regards to structural joints, the full width of the structural joints must be respected and extended through the adhesive and tile layers to the surface.
- 5.5 Where practical, the bulk of the depth of the movement joint can be filled with TAL SEALMASTER CORD.
- 5.6 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).
- 5.7 For the key requirements common to all tiling situations please refer to SANS 10107, Code of Practise for the Design and Installation of Ceramic Tiling.

©TAL 1972 & 1984