INSTALLATION GUIDELINE

Type: Fixing Dark-Coloured Natural Stone Tiles onto Interior Walls & Floors

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.

  Very friable or powdery natural stone products must be primed with a slurry consisting of 1 part TAL KEYCOAT to 2 parts TAL KEYMIX powder *or* 2 parts TAL GOLDSTAR 6 powder (by volume) prior to the tiles being fixed.

  Natural stone products must also be tested for inherent delamination prior to fixing.

THE TAL PRODUCTS REQUIRED FOR THIS INSTALLATION ARE AS FOLLOWS:

TAL KEYCOAT + TAL KEYMIX *
TAL GOLDSTAR 6
TAL STAIN FREE GROUT / TAL QUARRYGROUT
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.

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

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
Norcros SA (Pty) Ltd Divisions: Johnson Tiles, TAL, Tile Africa & House of Plumbing

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SPECIAL NOTE MUST BE TAKEN OF THE FOLLOWING:

Tiles:
Certain marble and travertine products have a reinforcing mesh or resin backing on the backs of the tiles which require special precautions and preparation to be undertaken prior to tiling.
Please contact TAL if the marble or travertine product to be used for your installation has a reinforcing mesh / resin backing, so that we can advise on the correct installation system.

Sealing of Natural Stone Products:
Natural stone tiles show varying mineralogy depending on the source and metamorphic conditions of that particular environment. This impacts on the porosity of the natural stone showing variations within a classification, and between classifications.
It is recommended that the face of porous natural stone tiles be sealed prior to grouting to minimise the risk of the grout staining the tiles. This will also help prevent the ingress of water into the natural stone body, which could show as discolouration /variable shading of the tile.
Certain natural stone suppliers recommend the application of a slurry priming coat, such as TAL KEYCOAT + TAL KEYMIX, to the back of tiles for enhanced resistance to water ingress at this interface.

Adhesive System:
We have specified TAL GOLDSTAR 6 **rapid-setting** high-strength adhesive for this installation.
However, if timing on this project allows for a **quick-setting** adhesive option, then TAL GOLDSTAR 12 can be considered.
The advantages of using TAL GOLDSTAR 12 are as follows:

- TAL GOLDSTAR 12 has a longer pot life (pot life of 4 hours, grout after 6 – 8 hours, and traffic after 12 hours)
- TAL GOLDSTAR 12 is more cost effective than TAL GOLDSTAR 6

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).

Surface Beds:
All surface beds should have a damp proof membrane (DPM / DPC). Should there be no damp proof membrane below a surface bed or if prevailing moisture levels do not attain 5% (75% RH) or less, it is recommended that TAL VAPORSTOP HB (vapour barrier) be applied prior to tiling to eliminate potential problems associated with excessive moisture in the substrate (such as slow- or non-curing of the adhesive, efflorescence on grout and porous tiles, etc).
TAL VAPORSTOP HB is a moisture tolerant, 100% solids epoxy barrier coat that prevents the passage of water vapour and moisture through concrete slabs.
Please contact TAL for more information on the application of TAL VAPORSTOP HB if required for this site.
NOTE: All Ground Floor levels with Basement / Parking levels below should be construed as SUSPENDED slabs.

Suspended Concrete Slabs:
Tiling onto *SUSPENDED Concrete Slabs* require special precautions to be taken as the installation is prone to increased movement caused by slab deflection and creep, loading on the slab, etc.

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TAL BOND or TAL BOND POWDER must be incorporated in the adhesive and grout mixes, ***strictly in accordance with the product instructions***, to allow for the increased movement.
Correctly constructed tile panel movement joints must also be located at closer centres.

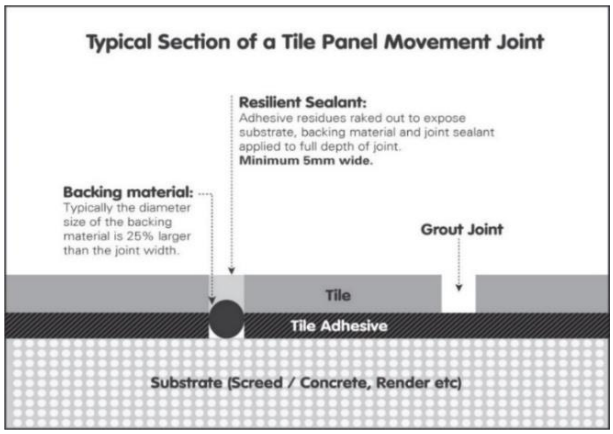
Floor Levels:
The following is an excerpt from **SANS 10107**, Code of Practice for the Design & Installation of Ceramic Tiling:

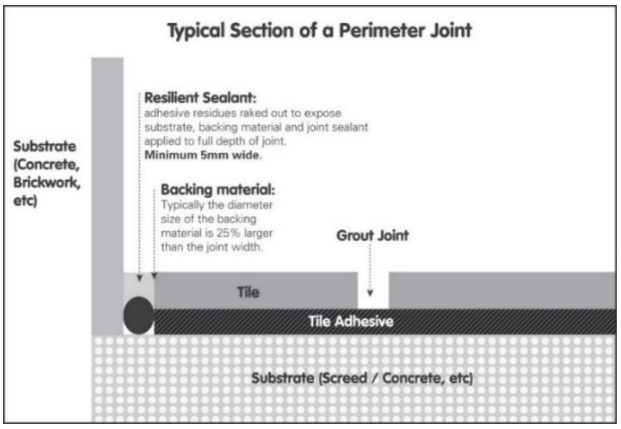
> "*Where the tiling is bedded in an adhesive, the tolerance for the base should conform to that required for the finished floor.*"

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.

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.

WALLS

FIXING DARK-COLOURED NATURAL STONE TILES ONTO RENDERED MASONRY WALLS

1. BACKGROUND PREPARATION

1.1 **Allow all new wall rendering to cure for at least 14 days**.

1.2 **The rendering must be firmly attached to the substrate, must be integrally sound (no crumbling, cracking, etc) and must be of a quality and consistency suitable for tiling *ie able to support the added weight of the adhesive and tile*.** All damaged, defective, deteriorated or hollow sounding areas must be removed and made good before proceeding. **Renders should be left with a woodfloated finish and must not be skimcoated with gypsum plaster.**

The substrate must be clean and dry and free from all traces of dust, loose particles and surface contaminants which could impair adhesion.

1.3 If the surface has been woodfloated it is possible to commence tiling. However, if the surface has been steelfloated it will be necessary to first key the surface with a slurry consisting of 1 part TAL KEYCOAT to 2 parts TAL KEYMIX powder ***or*** 2 parts TAL GOLDSTAR 6 powder (by volume), applied using an appropriate builder's block brush and ensuring complete coverage of the substrate. Allow this slurry coat to dry for 4 – 6 hours before applying the adhesive.*

2. ADHESIVE SYSTEM

2.1 Apply TAL GOLDSTAR 6 adhesive mixed 20kg with 5 litres of cool, clean water to the background using a notched trowel.

2.2 **In this tiling situation it is essential that there is good adhesive coverage and contact between the adhesive and tiles (minimum 80% adhesive coverage/contact).** 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 adequate adhesive coverage and contact behind each tile.

2.3 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.

2.4 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 Marble, Travertine and Granite Tiles must be a minimum of 3mm wide, and a minimum of 5mm wide between Limestone, Quartzite, Sandstone and Slate 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.

2.9 **NOTE: Ensure that heavy and/or large format wall tiles are well supported by means of a batten or some type of mechanical device until such time that the adhesive has set sufficiently. In this situation it will be 6 hours.**

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 4 hours before grouting.

3.2 **"Dry" Areas**

3.2.1 Option 1: TAL STAIN FREE GROUT

3.2.1.1 Use Light Grey TAL STAIN FREE GROUT mixed 20kg with 6 litres of cool, clean water for filling tile joints up to 12mm wide. TAL STAIN FREE GROUT is especially designed to reduce the staining of highly porous tiles such as sandstone and slate, overcoming the "picture-frame" effect encountered with conventional grouts.

3.2.2 Option 2: TAL QUARRYGROUT

3.2.2.1 Use grey TAL QUARRYGROUT mixed 20kg with 5 litres of cool, clean water for filling tile joints 5-25mm wide.

3.3 **"Wet" Areas, ie Splashbacks**

3.3.1 Option 1: TAL STAIN FREE GROUT

3.3.1.1 Use Light Grey TAL STAIN FREE GROUT **mixed 20kg with 6 litres of TAL BOND (replacing the water in the mix)** for filling tile joints up to 12mm wide. TAL STAIN FREE GROUT is especially designed to reduce the staining of highly porous tiles such as sandstone and slate, overcoming the "picture-frame" effect encountered with conventional grouts.

3.3.2 Option 2: TAL QUARRYGROUT

3.3.2.1 Use grey or coloured TAL QUARRYGROUT **mixed 20kg with 5 litres of TAL BOND (replacing the water in the mix)** for filling floor tile joints 5-25mm wide.

3.4 **WARNING:**

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

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

3.4.3 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.

3.4.4 NB: A sample of the tiles to be used should be tested beforehand to ensure that no grout is absorbed into the tile body, causing permanent staining of the tiles.

3.4.5 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 spoiling the visual effect of the tiles.

4.2 **Movement joints should be located in both directions at maximum 5 metre centres for interior Wall applications.**

4.3 **Movement joints should also be made in all vertical and internal corners/interfaces, against obstructions fixed to the structural background and over all discontinuities in building materials, eg at interfaces of concrete and brickwork. In addition, movement joints must be located around any fixtures protruding through the tiled surface, such as door and window frames, etc.**

4.4 **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.**

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.

FLOORS

FIXING DARK-COLOURED NATURAL STONE TILES ONTO CONCRETE OR SCREEDED SURFACE BEDS AND SUSPENDED SLABS

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 tiling can be 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 all substrates must be of significant strength, must be integrally sound (no crumbling, cracking, etc) and must be of a quality and consistency suitable for tiling. All damaged, defective, deteriorated or hollow sounding areas must be removed and the floor made good before proceeding.

1.3 **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.**

1.4 If the surface has been woodfloated it is possible to commence tiling. However, if the surface has been powerfloated or steelfloated it will be necessary to first key the surface with a slurry consisting of 1 part TAL KEYCOAT to 2 parts TAL KEYMIX powder ***or*** 2 parts TAL GOLDSTAR 6 powder (by volume), applied using an appropriate 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 before applying the adhesive.*

2. ADHESIVE SYSTEM

2.1 Surface Beds

2.1.1 Apply TAL GOLDSTAR 6 adhesive mixed 20kg with 5 litres of cool, clean water to the background using a notched trowel.

2.2 Suspended Slabs

2.2.1 Apply TAL GOLDSTAR 6 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 6, or TAL GOLDFLEX **modified** adhesive may be used. When using TAL GOLDFLEX no additives are required, simply mix with cool clean water, alleviating possible mixing and application errors on site.

2.3 General – Surface Beds & Suspended Slabs

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

2.3.2 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 Marble, Travertine and Granite Tiles must be a minimum of 3mm wide, and a minimum of 5mm wide between Limestone, Quartzite, Sandstone and Slate 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.

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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 4 hours before light foot trafficking or grouting.**

3.2 **Surface Beds**

3.2.1 Option 1: TAL STAIN FREE GROUT

3.2.1.1 Use Light Grey TAL STAIN FREE GROUT mixed 20kg with 6 litres of cool, clean water for filling tile joints up to 12mm wide. TAL STAIN FREE GROUT is especially designed to reduce the staining of highly porous tiles such as sandstone and slate, overcoming the "picture-frame" effect encountered with conventional grouts.

3.2.2 Option 2: TAL QUARRYGROUT

3.2.2.1 Use grey TAL QUARRYGROUT mixed 20kg with 5 litres of cool, clean water for filling tile joints 5-25mm wide.

3.3 **Suspended Slabs**

3.3.1 Option 1: TAL STAIN FREE GROUT

3.3.1.1 Use Light Grey TAL STAIN FREE GROUT **mixed 20kg with 6 litres of TAL BOND (replacing the water in the mix)** for filling tile joints up to 12mm wide. TAL STAIN FREE GROUT is especially designed to reduce the staining of highly porous tiles such as sandstone and slate, overcoming the "picture-frame" effect encountered with conventional grouts.

3.3.2 Option 2: TAL QUARRYGROUT

3.3.2.1 Use grey TAL QUARRYGROUT **mixed 20kg with 5 litres of TAL BOND (replacing the water in the mix)** for filling tile joints 5-25mm wide.

3.4 **WARNING:**

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

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

3.4.3 **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.**

3.4.4 **NB: A sample of the tiles to be used should be tested beforehand to ensure that no grout is absorbed into the tile body, causing permanent staining of the tiles.**

3.4.5 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 **Surface Beds**

4.2.1 **Movement joints should be located in both directions at maximum 5 metre centres for interior Surface Bed applications.**

4.3 **Suspended Slabs**

4.3.1 **Movement joints should be located in both directions at maximum 3 metre centres for Suspended Slab applications.**

4.4 **General – Surface Beds & Suspended Slabs**

4.4.1 **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.**

4.4.2 **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.**

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

4.4.4 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).

4.4.5 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.