



## TECHNICAL BULLETIN – TB132

# HOW TO RECONSTRUCT, WATERPROOF, AND TILE A SHOWER

23<sup>rd</sup> July 2024

## INTRODUCTION & SCOPE

### GLOSSARY OF TERMS

#### Gauging Solution

The gauging solution is the liquid mixed with cement, sand, and aggregate mix to wet it out. In the case of standard cement, it may be water, but in many instances, the gauging solution is improved by blending water with specialized additives.

#### Knead

To massage the mat into the liquid to form an integrated component.

#### Lay-off

The process of very lightly smoothing a thick layer of a liquid coating without spreading the material over a larger area.

#### Lightweight Concrete

Autoclaved aerated concrete (AAC) (such as 'Hebel' block).

#### Stripe Coat

A stripe coat is a material only applied across a centreline that extends equidistant across that centreline, such as a corner joint.

#### Substrate

The base building material used in constructing the item to which the coatings or adhesives are applied.

## PREPARING THE SHOWER RECESS

### Preliminary Preparation

Remove shower screen, tap and shower head dressings and any other superficial hardware.

### Concrete Floors

#### **Materials Required:**

- ❖ *ARDEX WPM405*
- ❖ *Pre-mixed sand cement blend mortar mix*
- ❖ *Stiff bristle brush*

Note that 'concrete floors' refers to the base construction material. Cement mortar screed tile beds (including those over timber or fibre cement floors) do not constitute a concrete floor.

Remove all existing tiles using a cold chisel, hammer, or other mechanical means.

Under the tiles, there will likely be a cement mortar screed tile bed into which the fall to the waste outlet is shaped. If this bed is still in reasonable sound condition, it may be reinstated to a smooth surface with the correct falls. If the bed is badly damaged from removing the tiles, it should be removed.



If the shower recess has a hob constructed of lightweight concrete or timber, it should be removed and the floor surface ground clean. Brick hobs may be retained and reinstated using a cement slurry and repair mortar described for the reinstatement or replacement of the cement tile bed.

All existing tile adhesive, waterproofing membranes, and other surface contaminants must be cleaned from the surface. This can be done by grinding, needle gunning, or other mechanical method. It is necessary to remove at least 90% of any coating material, preferably all material, before going further.

Once a sound substrate is achieved, install a new hob, if applicable, of lightweight concrete, bonding the hob with 'No More Nails' or similar to the substrate. The top of the hob should have a slight slope toward the internal of the shower recess to allow for drainage.

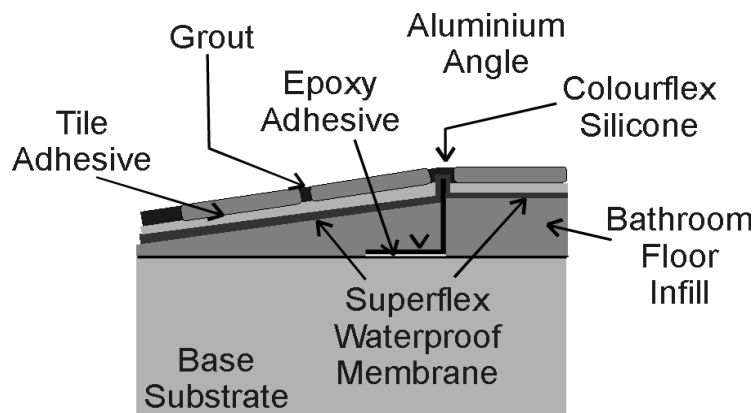
For jobless recesses, fix an aluminum angle water stop along the open perimeter(s) (including doorways) (see diagram) using a two-part epoxy adhesive such as 'Araldite.'

For recesses with screens, the aluminium angle should extend approximately 5 mm above the finished tile level to allow the screen to be attached, while for unenclosed recesses, the angle should extend flush with the finished level of the tiles.

### Hobless Shower Detail

Whether the bed is reinstated or replaced, the process is the same.

Prepare a gauging solution by mixing four (4) volumes of water with one (1) volume ARDEX WPM405. Mix the gauging water with the premixed sand/cement mortar blend to make a stiff mobile cement mortar mix.



### To reinstate the cement bed

Thin a small amount of the cement mortar blend to a liquid consistency and brush this slurry mix into the remaining bed with a stiff bristle brush similar to a nylon nail or scrubbing brush.

To the wet slurry mix, immediately lay the prepared cement mortar to fill all surface deformations and form the falls to the waste outlet such that there is a fall of at least 1 in 60 or 15mm fall over every metre distance from the waste outlet.

### To install a new cement bed

Thin a small amount of the cement mortar to a liquid consistency and brush this slurry mix into the substrate with a stiff bristle brush similar to a nylon scrubbing or nail brush.



To the wet slurry mix, immediately lay the prepared cement mortar to form falls to the waste outlet, with a fall of at least 1 in 60 or 15mm over every metre from the waste outlet.

### **To finish the cement bed**

Allow to set partially and firmly rake the surface using the stiff bristle brush to achieve a slightly roughened surface.

### **Timber Floors (Sheet timber floors only)**

#### **Materials Required**

- ❖ ARDEX WPM405
- ❖ 75 mm bristle brush
- ❖ ARDEX WPM155 Rapid Plus
- ❖ 12-15 mm nap mohair roller
- ❖ Pre-mixed sand cement mortar blend

Remove all existing tiles using a cold chisel, hammer, or other mechanical means.

Under the tiles, there will likely be a screed cement bed. This bed should also be removed, and the timber inspected.

If the shower recess has a hob, it should be removed, and the floor surface should be ground clean.

If the timber has been affected by water or weakened in any way, it must be replaced. Wet-area plywood may be used; however, high-compressed fibre cement is superior for this application. The sheeting should be fixed in accordance with the manufacturer's recommendations.

When the floor sheeting is removed, thoroughly check the underlying support beams for any signs of damage that should be repaired by a licensed builder.

Once a sound, solid timber substrate is achieved, install a new hob, if applicable, of lightweight concrete, bonding the hob with 'No More Nails' or something similar to the substrate.

The top of the hob should have a slight slope toward the internal of the shower recess to allow for drainage.

For hobless enclosed recesses, fix an aluminium angle along the screen perimeter(s) using a two-part epoxy adhesive such as 'Araldite'. The aluminium angle should protrude above the finished tile surface to allow the screen to be fixed. Where no shower screen is to be installed, the aluminium angle should be finished flush with the underside of the tiles.

Brush one coat of ARDEX WPM405 (diluted 1:2 with water), working well into the surface, to all floor and hob surfaces, and up the walls to a height above the proposed height of the cement tile bed to totally cover the substrate without leaving excessive product over the top of the surface.

Allow the diluted ARDEX WPM405 to dry (at least 30 minutes) and apply one coat of ARDEX WPM155 Rapid Plus Membrane at a coverage rate of 1 litre for every square metre. This coverage rate produces a wet film thickness of 1.0 mm. Apply a heavy coating and lay off the film by lightly rolling over the surface—do not spread the product.

Allow the ARDEX WPM155 Rapid Plus waterproofing membrane to dry overnight; normally, overnight is sufficient except in cold or wet conditions.

Ensure the first coat has dried, particularly in the corners where the material is thickest. This coat is not the waterproofing membrane and is designed as an intermediate layer to ensure the mortar screed is bonded to the sheet timber substrate.



Install a new cement bed by laying a cement mortar screed prepared by mixing 4 volumes of water and 1 volume of ARDEX WPM405 and using this blend as the gauging solution with the premixed sand/cement blend to make a stiff mobile cement mortar mix. Lay the mortar to form falls to the waste outlet such that there is a fall of at least 1 in 60 or 15mm over every metre distance from the waste outlet. This screed must be a minimum of 15mm thick.

Strip timber flooring (e.g., tongue-and-groove) is best covered with fibre cement sheeting after any repairs necessary to achieve a structurally sound substrate have been completed.

### **Fibre Cement Floors**

#### ***Materials Required***

- ❖ *ARDEX WPM405*
- ❖ *Pre-mixed sand cement mortar blend*
- ❖ *12-15 mm nap mohair roller*
- ❖ *75 mm bristle brush*

Remove all existing tiles using a cold chisel, hammer, or other mechanical means.

Under the tiles, there will likely be a screed cement bed. This bed should also be removed, and the fibre cement inspected for structural integrity.

If the shower recess has a hob, it should be removed, and the floor surface should be ground clean.

If the fibre cement has been affected by water or weakened, it must be replaced. High-compressed fibre cement should be used for this application. The sheeting should be fixed in accordance with the manufacturer's recommendations.

When the floor sheeting is removed, check the underlying support beams for any signs of damage that should be repaired by a licensed builder.

Once a sound solid fibre cement substrate is achieved install a new hob, if applicable, of lightweight concrete bonding the hob with 'No More Nails' or similar to the substrate. The top of the hob should have a slight slope toward in the internal of the shower recess to allow for drainage.

For hobless recesses, fix an aluminium angle along the open perimeter(s) using a two-part epoxy adhesive such as 'Araldite'. For hobless enclosed recesses, fix an aluminium angle along the screen perimeter(s) using a two-part epoxy adhesive such as 'Araldite'. The aluminium angle should protrude 5mm above the finished tile surface to allow fixing of the screen. Where no shower screen is to be installed, the aluminium angle should be finished flush with the underside of the tiles.

Brush one coat of diluted ARDEX WPM405, working well into the surface, to all floor, hob surfaces, and up the walls to a height above the proposed height of the cement tile bed to totally cover the substrate without leaving excessive product over the top of the surface.

Install a new cement bed by laying a cement mortar screed prepared by mixing 4 volumes of water and 1 volume of ARDEX WPM405 and using this blend as the gauging solution with the premixed sand/cement blend to make a stiff mobile cement mortar mix. Lay the mortar (minimum 15mm thick) to form the falls to the waste outlet such that there is a fall of at least 1 in 60 or 15mm over every metre distance from the waste outlet.

### **Concrete, Brick, or Rendered Walls**

#### ***Materials Required***

- ❖ *Pre-mixed sand cement mortar blend*
- ❖ *ARDEX WPM405*



Remove all existing tiles using a cold chisel, hammer, or other mechanical means.

All existing tile adhesive, waterproof membranes, and other surface contaminants must be cleaned from the surface. This can be done by grinding or needle gunning, or other mechanical methods. It is necessary to remove at least 90% of any coating material, and preferably all material, before going any further.

If the surface of the exposed substrate has been damaged it should be reinstated to a smooth uniform surface.

Prepare a gauging solution by mixing three (4) volumes of water with one (1) volume of ARDEX WPM405. Mix the gauging water with the premixed sand/cement mortar blend to make a stiff mobile cement mortar mix.

### **To reinstate the wall surface**

Thin a small amount of the cement mortar to a liquid consistency and brush this slurry mix into the remaining bed with a stiff bristle brush similar to a nylon nail or scrubbing brush.

Immediately lay the prepared cement mortar while the slurry coat remains wet to fill all surface deformations and reinstate a smooth surface.

### **Fibre Cement Walls**

#### ***Material Required***

- ❖ *Fibre cement sheets*
- ❖ *Screws or spiral profile mails*

Remove all tiles and fibre cement surfaces leaving the exposed timber studs and noggins. Take care when removing the shower recess walls to avoid damaging the outer wall cladding fixed to the opposite sides of the timber studs.

Ensure all timber framework is sound and if any water damage exists the timbers should be replaced.

Fix new fibre cement sheets to the timber frame walls. Sheets should be preferably screw fixed with the screw heads countersunk to be level with the fibre cement sheet levels. Spiral profile nails may be used with the top of the heads flush with the surface of the fibre cement cladding.

Sheets should be positioned with a 2-3 mm gap at wall to wall, and 6mm gap at wall to floor intersections to allow for possible movement.

## **WATERPROOF MEMBRANE INSTALLATION**

#### ***Materials Required***

- ❖ *100 mm bristle brush*
- ❖ *12-15 mm nap mohair roller*
- ❖ *(Ardex Abaseal)*
- ❖ *Ardex Multiprime primer*
- ❖ *Neutral Cure Silicone Sealant*
- ❖ *Ardex WM 001 (Superflex Premixed membrane)*
- ❖ *Ardex Deckweb polyester mat reinforcing*

Once all the surface preparation has been completed, the method and process of application of the waterproof membrane is the same regardless of the form of construction.

The Australian Standard 3740 and Australian Building Codes currently stipulate that a waterproof membrane in a shower recess must be applied to all floor surfaces to a distance of 1.5 metres



from the shower head and all wall surfaces to a height of 1.5 metres, or above the shower head whichever is the highest.

The waterproof membrane should extend over the hob, or aluminium protrusion in the event of a hobless shower recess. For hobless showers the Australian Standard only requires the membrane to extend over surfaces to a horizontal distance of 1.5 mtrs from the shower head, however, Ardex recommends that all bathroom floor surfaces be treated to contain excessive splashing and/or drainage.

***Note that an effective waterproof membrane is only achieved with Ardex WM 001 (Superflex Premixed) if the minimum dry film thickness of 1.0 mm is achieved. (The recommended dry film thickness is 1.2 to 1.5mm) It is advisable to calculate the total area to be waterproofed prior to commencing the application, and calculate the volume of material to be used by multiplying the square metres by 2 to give the number of litres required. If all material has not been used after two coats, apply further coats until the calculated volume has been applied.***

### **Priming**

Allow all cement screeds to cure for seven (7) days before applying the primer.

Alternatively, if the length of the curing time is inconvenient, or the substrate surfaces are damp or wet, apply one coat of Ardex WPM300 HydrEpoxy to the screeds and damp or wet surfaces. The Ardex WPM300 HydrEpoxy should be applied at a rate of 3 square metres per litre per coat to achieve a wet film thickness of approximately 0.3 millimeters (8-10 times the wet film thickness of a normal building paint). There is no need to prime the surfaces coated with Ardex WPM300 HydrEpoxy.

Ensure all remaining surfaces are clean and dry and apply by brush one coat of Ardex Multiprime primer, working well into the surface, to totally cover the substrate without leaving excessive product over the top of the surface.

Allow the Ardex Multiprime to dry (at least 30 minutes) before proceeding.

### **Bond-breaker Installation**

A bond-breaker must be installed across all surface joints, including corner joints and sheet joints, and all cracks in the surface less than 2 mm in width. For cracks greater than 2 mm, refer to the Ardex WM 001 Superflex Premixed Product Data Sheet or seek advice from your nearest Ardex stockist.

Using a cartridge gun, apply a bead of *neutral cure* silicone along each corner of all wall to wall joints, wall to floor joints, wall and floor to hob joints. As the silicone is placed, smooth the bead to form a thin layer extending 5mm on either side of the joint. This is done using a finger and it can be made easier by wetting the finger prior to smoothing.

Install a bead of neutral cure silicon to seal the interface of the shower recess floor to the waste outlet pipe.

### **Membrane Application**

Prepare the Ardex Deckweb Polyester mat reinforcing by cutting into lengths to suit each joint or crack. The lengths should be cut approximately 100 mm longer than the joint or crack at each end where they will intersect with another reinforcement length to allow for overlapping. Do not try to reinforce around corners with a continuous strip of reinforcing mat as wrinkles will occur in the

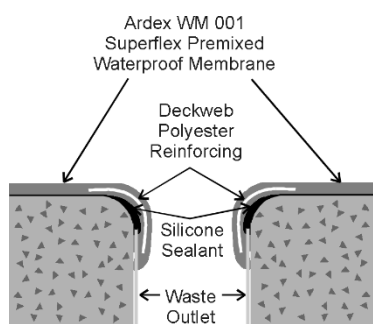


mat. Prepare smaller lengths to extend over the floor surface by 50 mm and down into the waste outlet to overlap the outlet plumbing, by 50mm if possible.

Apply a liberal stripe coat of Ardex WM 001 Superflex Premixed membrane, by brush application techniques, equidistantly across all areas where the bondbreaker has been installed to extend at least 100mm on either side. Only do a section of joint or crack at a time, installing the Ardex Deckweb mat reinforcing before proceeding to the next section.

The reinforced membrane must also be applied to lap into the waste outlet plumbing. Apply the stripe coat to the floor surface extending at least 75 mm around the outlet and down into the outlet to lap over the internal of the waste pipe.

### Waste Outlet Detail



While the stripe coat remains wet and fluid lay the pre-prepared length of 190 mm wide strip of Ardex Deckweb polyester mat reinforcing equidistantly across the joint and knead the mat into the stripe coat to fully wet-out the mat and ensuring all air pockets and creases are removed. ***It is critical that the mat be fully wetted out before any further membrane material is applied over the top of the mat.***

Once all the corners, joints and cracks have been reinforced apply, by brush or roller application techniques, one coat of Ardex WM 001 Superflex Premixed membrane to all surfaces to which the membrane is to be applied, at a coverage rate of 1 litre for every square metre. This coverage rate produces a wet film thickness of 1.0mm. Apply a heavy coating and lay-off the film by lightly rolling over the surface – do not spread the product.

Allow the Ardex WM 001 Superflex Premixed membrane to dry, normally overnight is sufficient except in cold or wet conditions.

Ensure the first coat has dried, particularly in the corners where the membrane has been applied over the bondbreaker or has been reinforced with Ardex Deckweb mat before applying a second coat of Ardex WM 001 Superflex Premixed membrane in the same manner as the first.

Ensure that the correct volume of Ardex WM 001 Superflex Premixed membrane as calculated before starting application has been applied to the surfaces. If all the calculated product has not been used apply further coats as required.

### TILING INSTALLATION

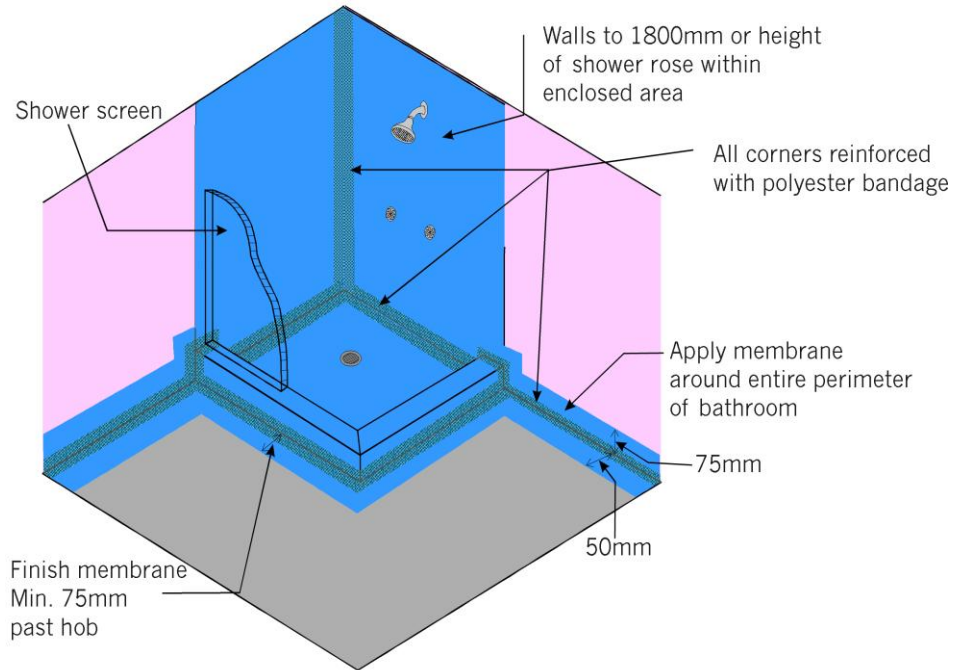
#### Materials Required

- ❖ 19 x 48 mm battens
- ❖ 6 mm notched trowel (for walls)
- ❖ 10 mm notched trowel (for floors)
- ❖ Ceramic Tile Adhesive (see selection guide)
- ❖ 2 mm Tile spacers (for walls)
- ❖ 5 mm tile spacers (for floors)
- ❖ Neutral Cure Silicone



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## MINIMUM AREA TO BE WATERPROOFED



### Preparation for Tile Installation

Ensure the waterproof membrane is hard dry, particularly in corners where the membrane is applied over bondbreaker or is reinforced.

Place temporary protection boards such as a sheet of thick cardboard, over the floor membrane to protect it from mechanical damage. One hole in the membrane makes the whole membrane system ineffective.

Measure the size of the wall tiles and add 2 mm to each dimension. Measure the height and width of the wall and lightly draw a vertical centerline on each wall.

Calculate the vertical positioning of the tiles by dividing the height of the wall by the height of the tile plus 2mm. Measure the vertical distance of full tiles from the top of the wall and lightly draw a level horizontal line at the height of the lowermost tile or part tile.

Temporarily fix a timber batten with the upper edge positioned level and flush with the line around the wall. Fixing should be done by using two nails in each batten fixed into the background stud. The holes created in the membrane shall be repaired at a later stage.

ADHESIVE SELECTION TABLE	
Substrate	Suitable Ardex Adhesives





## Adhesive Selection

The adhesive selected must be a cement-based adhesive and not a mastic or premixed adhesive. Mastic or premixed adhesives rely on evaporation of the water in the adhesive, and when applied between a tile and a waterproof membrane, they will not dry or be excessively slow to dry. Cement-based adhesives consume the water in the adhesive by chemical reaction and do not rely on water evaporation.

Concrete, Brick or Masonry	Abaflex MPP Ardex STS 8/ A90
Timber	Isoflex Ardex X56
Fibre Cement	Abaflex Isoflex Ardex X56 MPP

The type of adhesive required depends on the construction substrate and the tile selected. The following Table lists the more common adhesives for conventional glazed ceramic tiles but is not comprehensive. Consult your Ardex stockist to confirm the selection or alternative adhesives suitable for the specific application.

## Installing the tiles

### Walls

Starting from the centre line on the selected wall and the top of the timber batten, apply the tile adhesive to a section of the wall (approximately 1 square meter) using a 6mm notched trowel. Spread the adhesive uniformly with the trowel blade held at 45° to the horizontal. Before the adhesive forms a skin, fix the tiles starting at the centreline. Press and move the tile thoroughly into the adhesive to achieve a 100% adhesive cover. Position the tiles using 2mm tile spacers and remove all excess adhesive. Only place full tiles and remove the adhesive from the remaining wall surface. Occasionally, remove tiles to check that the adhesive fully covers the back of the tile. If not, apply more adhesive, or push the tile more firmly into the adhesive, or use a larger size notched trowel.

Repeat the process until all full tiles have been bonded to the surface.

Once all full tiles have been positioned, the remaining areas can be tiled, leaving a 3 mm gap at the corners. Do not flush butt tiles tightly at corners, and there should be a 2-3mm gap to allow for movement. All tile cut edges should face the corner. Note that the tile cuts may vary in size from top to bottom if walls are 'out of plumb'.

The timber battens should be removed, without damaging the membrane further, after the adhesive has set and before the adhesive dries hard.

### Floors

Draw a centreline across both directions of the floor intersecting over the waste outlet.

Install the waste outlet cover, with the perimeter corners aligned to the centrelines where applicable, and bond onto the floor surface using the floor tile adhesive.

Cut and lay tiles to fit around the outlet leaving a 5mm gap between the outlet and the tiles. Place the tiles such that the edges align with the centrelines.

Starting from the waste outlet apply the selected tile adhesive to one quadrant of the floor surface using a 10mm notched trowel. Hold the trowel blade no less than 45° to the horizontal to apply a uniform adhesive coverage.



Press and move the tile into the adhesive to achieve a 100% adhesive cover. Position the tiles using 5mm tile spacers and remove all excess adhesive. Leave a 3mm gap between the tiles and perimeter walls or hob in fixing the tiles.

In fixing the tiles ensure the falls are maintained and uniform across the radius from the waste.

At hobs, the top horizontal tile should cover the edge of the vertical tiles unless the shower screen frame covers these.

### **Finishing**

Allow the floor tile adhesive to dry thoroughly; 24 hours is recommended. Avoid, as far as possible, placing weight onto the tiles during subsequent work.

Seal the penetrations through the wall membrane, resulting from the batten nails, with neutral cure silicone.

Cut tiles to fit the lowermost section of the wall surfaces, leaving a 3 mm gap between the wall and floor tiles. Fix the tiles around the lower levels of the wall using 3mm spacers on the top, bottom, and sides of the tile. The tile cut edges should be facing into the corner.

When the adhesive has set hard, remove any excess adhesive from all internal corner movement joints and fill these with ARDEX SE silicone sealant, colour selected to suit the tile and the grout colours.

## **GROUTING THE TILES**

### Materials Required

- ❖ ARDEXEG-15
- ❖ ARDEX FS-DD
- ❖ Grouting Trowel or small grouting rubber squeegee.
- ❖ Soft lint free cloth
- ❖ Rubber sanding block or block of wood

ARDEX EG15 is an epoxy grout that resists mould, mildew and fungi growth and is ideally suited to areas such as shower recesses.

Ardex FS-DD is a cement-based grout containing Microban to resist mould, fungi, and mildew growth.

When using ARDEX FS-DD over timber floors, it is recommended that the powder be mixed with a 50% blend of ARDEX Grout Booster and water to achieve greater flexibility.

Remove all tile spacers and clean out all excess adhesive from grout joints.

Apply the grout to the surface, working it well into the joints.

***When using ARDEX EG-15 grout ensure all the joints are totally filled and only do one area (approximately 1 square metre) at a time before thoroughly cleaning the excess grout from the surface.***

To clean off the excess, use a couple of layers of damp, soft, lint-free cloth over a block of timber or rubber sanding block to avoid dragging the grout out of the joint.

When using ARDEX FS-DD, after removing most of the excess grout allow the remaining grout to dry and polish off with a soft, clean cloth.

The data sheets for all ARDEX products mentioned above should be read in conjunction with this technical bulletin.



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**IMPORTANT**

This Technical Bulletin provides guideline information only and is not intended to be interpreted as a general specification for the application/installation of the products described. Since each project potentially differs in exposure/condition specific recommendations may vary from the information contained herein. For recommendations for specific applications/installations contact your nearest Ardex Australia Office.

**DISCLAIMER**

The information presented in this Technical Bulletin 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 a product for a particular application. Users are asked to check that the literature in their possession is the latest issue.

**REASON FOR REVISION – ISSUER**

Content review, change of company slogan and address

**DOCUMENT REVIEW REQUIRED**

38 month or whenever third-party suppliers change their recommendations

**Australia:** 1300 788 780

**New Zealand:** 643 384 3029

Web: [www.ardexaustralia.com](http://www.ardexaustralia.com)

email: [technical.services@ardexaustralia.com](mailto:technical.services@ardexaustralia.com)

Address: 2 Buda Way, Kempers Creek NSW 2178