

# TECHNICAL BULLETIN – TB117

## APPLICATIONS OF TILES ONTO PRE-EXISTING TILES

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### INTRODUCTION & SCOPE

In internal applications it is possible to apply ceramic tiles over existing or in-situ tile finishes and ARDEX recommends a number of adhesive tile systems that allow this application to be done. This bulletin discusses some of the issues with this method of laying tiles that will assist in achieving a satisfactory result.

### QUALIFICATIONS

The following points need to be taken into consideration before undertaking a tile-on-tile installation.

- ① The existing tile surface must be sound with no loose or drummy tiles and the final installation is still reliant on satisfactory adhesion of the preceding one. Mechanical preparation will usually highlight unsound existing tile substrates.
- ✘ This procedure does not include certain external applications including high facades & walls, cantilevered verandahs or decks, and tiled driveways as these areas can be subject to high stresses and movements.
- ✓ Shaded external walls and floors with adequate falls to prevent ponding water are acceptable.
- ✘ Swimming pools and ponds are not suitable for tile-on-tile installations by these procedures and this is *not* recommended as a standard practice.
- ✓ 100% coverage must be achieved with the new adhesive bed on the existing tile top face and new tile rear face.
- ✘ Pebblecrete surfaces must be removed as per Technical Bulletin TB113.
- ① Where the area to be tiled is a wall, the individual tile weights, and also weights per square metre must be taken into account. The first layer of tiles and adhesive will be loaded by the second layer, but then both layers will cumulatively load up the substrate. Installations must comply with ARDEX recommendations for heavy tile installations and also maximum heights described in Technical Bulletins TB001 and TB148. Mechanical fixing INTO the substrate may be required. Application of heavy and large format tiles over existing tiles should not be considered a safe installation.

### THINGS TO CONSIDER ABOUT THIS APPLICATION

The tiles will move according to thermal changes, and to some extent moisture content. Having two layers of tiles can produce differential movements and for this reason external areas exposed to weather extremes requires careful consideration before installing the second layer of tiles.

Where the surfaces are neither cleaned nor ground, depending on the system to be used; loss of bond between the new tiles and the existing tile substrates can occur due to the presence of sealers, dirt, grease or other contaminants. As a minimum when not grinding internal surfaces, a film-less detergent or a degreaser should be used to remove any surface contaminants followed by adequate rinsing with clean water. This is particularly important in areas such as kitchens, and also recessed grout lines.

- ① Movement joints in the underlying tiles must be continued through the new layer, and control joints included as per AS3958. Failure to do so can result in cracking.
- ① Placement of large format tiles over smaller ones on flexible floors may not be desirable due to issues with differences in resilience to movement.
- ① Large format tiles, due to the requirements for surface flatness, may require a smoothing cement coat onto the underlying tiles, rather than straight tile on tile application (dry internal applications, see TB017).
- ✘ A new layer of tiles in a shower recess will not remedy waterproofing problems, unless the leak itself is addressed.



## PROCEDURE

There are three ways this application can be done depending on the degree of surface preparation. However, as with all tile installations correct preparation leads to a good result and conversely poor preparation invariably produces problems.

### OPTION 1 – MINIMAL PREPARATION (INTERNAL ONLY)

- With this method the tiles must be thoroughly washed down with sugar soap and any residual oils, fats, dirt, sealers or other contaminants removed thoroughly, rinsed and then allowed to dry. Failure to do so can result in tile de-bonding.
- The tile adhesives that can then applied to the existing tile surface are ARDEX OPTIMA (wet or dry internal, no skim coat) or ARDEX X77 ± ARDEX E90 (including wet areas after application of a skim coat) and ARDEX STS8W + ARDEX E90 or ARDEX S28N (with skim coat) in dry internal areas only.
- Priming can be performed with ARDEX P9 or ARDEX P82.

### OPTION 2 – SURFACE GRINDING OF THE GLAZE (INTERNAL WALLS-FLOORS AND ALL EXTERNAL SURFACES)

- The surface glaze on the tiles must be ground a minimum of 80% using mechanical methods (e.g. diamond ground, or ZEK<sup>®</sup> discs on an angle grinder) to CSP1 profile. After grinding the tiles shall be checked for bond quality.
- The surface is vacuumed to remove dust, and then primed (Multiprime/P9/P82).
- The following table lists adhesives/primers recommended *and is also dependent on the substrate type* – (ARDEX OPTIMA suitable for all cases).

**Table (1) Adhesives for Internal Installations to be used when glaze surface is ground away by 80-100%**

Tile Type	Internal Walls	Internal Floors
<b>Monocottura or Bicottura. Terracotta</b> <i>Remove glaze and prime with Multiprime / P9</i>	X56 ABAFLEX STS8W + ARDEX E90 MPP X18 ± ARDEX E90 ARDEX S28N ± ARDEX E90	ABAFLEX X56 STS8W + ARDEX E90 X18 ± ARDEX E90 X77 + E90 ARDEX S28N ± ARDEX E90
<b>Mosaics</b> <i>Remove glaze and prime with Multiprime / P9 if surface is porous</i>	X56 ABAFLEX STS8W + ARDEX E90 MPP X18 ± ARDEX E90 ARDEX S28N ± ARDEX E90	X56 ABAFLEX X77/STS8W + ARDEX E90 QUICKBOND+ABALASTIC X18 + ARDEX E90 ARDEX S28N ± ARDEX E90
<b>Vitrified and Glass</b> <i>Grind surface mechanically and optionally prime with P9 or P82</i>	X56 ABAFLEX STS8W + ARDEX E90 MPP X18 + ARDEX E90 ARDEX S28N ± ARDEX E90	X56 ABAFLEX X77 + ARDEX E90 STS8W + ARDEX E90 X18 + ARDEX E90 ARDEX S28N ± ARDEX E90
<b>Marbles/Granite</b> <i>Mechanically remove coatings and prime with Multiprime / P9</i>	X56 ABAFLEX STS8W + ARDEX E90 MPP ARDEX S28N ± ARDEX E90	X56 ABAFLEX X77 + ARDEX E90 STS8W + ARDEX E90 ARDEX S28N ± ARDEX E90



**Table (2) Adhesives for External Installations to be used when glaze surface is ground away by 80-100%**

Tile Type	External Walls (shaded)	External Floors (shaded)	External Walls Exposed	External Floors Exposed
<b>Monocottura or Bicottura. Terracotta</b> <i>Remove glaze and prime with Multiprime / P9</i>	ABAFLEX STS8W + ARDEX E90 X56 X77 ± ARDEX E90	ABAFLEX STS8 + ARDEX E90 X56 X77 ± ARDEX E90	OPTIMA ABAFLEX STS8W + ARDEX E90 X77 ± ARDEX E90	OPTIMA ABAFLEX STS8W + ARDEX E90 X77 ± ARDEX E90
<b>Mosaics</b> <i>Remove glaze and prime with Multiprime / P9 if surface is porous</i>	ABAFLEX STS8W + ARDEX E90 X77 ± ARDEX E90	ABAFLEX STS8W + ARDEX E90 X56 OPTIMA X77 ± ARDEX E90	OPTIMA ABAFLEX STS8W + ARDEX E90 X77 ± ARDEX E90	OPTIMA ABAFLEX STS8W + ARDEX E90 X77 ± ARDEX E90
<b>Vitrified and Glass</b> <i>Grind surface mechanically and optionally prime with P9 or P82</i>	ABAFLEX STS8W + ARDEX E90 X56 X77 ± ARDEX E90	ABAFLEX STS8W + ARDEX E90 X56 OPTIMA X77 ± ARDEX E90	OPTIMA ABAFLEX STS8W + ARDEX E90 X77 ± ARDEX E90	OPTIMA ABAFLEX STS8W + ARDEX E90 X77 ± ARDEX E90
<b>Marbles/Granite</b> <i>Mechanically remove coatings and prime with Multiprime / P9</i>	ABAFLEX STS8W + ARDEX E90 X56 X77 ± ARDEX E90	ABAFLEX STS8W + ARDEX E90 X56 OPTIMA X77 ± ARDEX E90	OPTIMA ABAFLEX STS8W + ARDEX E90 X77 ± ARDEX E90	OPTIMA ABAFLEX STS8W + ARDEX E90 X77 ± ARDEX E90

**OPTION 3 – USING AN OPTIMA SKIM COAT**

Another method involves using a skim coat of Optima adhesive applied with a flat trowel, followed by a different adhesive.

In all cases the second adhesive applied must be a high polymer type and not a basic cement type adhesive.

The full adhesive bed thickness must not exceed the maximum for the main adhesive used to bond the tiles.

This process is NOT acceptable for ponding water or pool applications.

- The tiles must be thoroughly washed down with sugar soap and any residual oils, fats, dirt, sealers or other contaminants removed thoroughly. Failure to do so can result in tile de-bonding.
- The Optima is mixed in the ratio of 1 Part Liquid to 2 Parts Powder which makes a thinner paste.

This is then applied with a flat steel trowel to get a 100% coverage 1mm thick skim coat, not a thin scratch coat.

The surface of the Optima must be non-glazed finished and if required can be lightly broom finished after developing a degree of cure to provide a rough keyed surface. The adhesive is then allowed to cure for 24 hours prior to over-coating with the second adhesive.



**Table of Adhesives for Installations to where Optima is used a Skim Coat**

<b>Base</b>	<b>Internal Walls</b>	<b>Internal Floors</b>	<b>External Walls (shaded)</b>	<b>External Floors (shaded)</b>
<b><i>Optima skim coat 1mm thick over cleaned tiles</i></b>	X56 ABAFLEX STS8W + ARDEX E90 MPP	X56 ABAFLEX STS8W + ARDEX E90	ABAFLEX STS8W + ARDEX E90 X56	ABAFLEX STS8W + ARDEX E90 X56 OPTIMA X77 + ARDEX E90

**EPOXY ADHESIVES AND BONDING BRIDGES**

It is feasible to bond tiles over clean tiles using the epoxy adhesives ARDEX WA100, ARDEX WA and ARDEX RA88. The best performance will be achieved when the surface glazing is removed. These resin based adhesives are inherently stronger than the cement based ones.

It is also feasible to roll coat the mixed resin component of ARDEX EG15 (Parts A+B) over de-glazed tiles, followed by broadcast clean dry ARDEX primer sand to cover the surface at least 90%. When the epoxy is cured (usually overnight), the excess sand is vacuumed off and new tiles can be bonded with the cement based adhesives listed in Table 1 applications.

**TEMPORARY AND NON-CRITICAL SITUATIONS**

For bonding of small areas of tiles onto cleaned internal wall tiles (such as splash backs) ARDEX CA20P can be used to hold the new tiles. This application is intended to 'tidy up' tiled areas in domestic or office environments and is not recommended for tiles larger than 200mm square, any stone tiles or heavy thick tiles. Note that this adhesive remains flexible so cement grout must have polymer additive included; alternatively use an epoxy, a premixed type grout or even CA20P itself or a silicone such as ARDEX SE or ST.

**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 THIS REVISION**

ARDEX Tileset has been removed from the ARDEX range into the ABA range and hence deleted from this doc. Addition of ARDEX **S28N with changes** in the text relating to epoxy adhesives, CA20P adhesive **and other amendments**.

**REVIEW REQUIRED**

24 months from issue.

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