

# TECHNICAL BULLETIN – TB048

## APPLICATION TRICKS WITH ARDEX EG15 EPOXY GROUT

Date, Thursday, 9 March 2017

### INTRODUCTION & SCOPE

The purpose of this bulletin is to give advice on the use of ARDEX EG15 EPOXY GROUT and to offer suggestions, solutions and explanations to typical site situations.

These issues are normally a result of unfamiliarity in handling this type of grout. Experienced tilers that have grouted with sand/cement grouts may have difficulty in handling epoxy grouts unless they are shown the new application methods required to handle these products. The tiler is encouraged to perform trials on unfamiliar tiles and to establish agreed appearance standards with their clients before embarking on any large application.

### ARDEX EG15 EPOXY GROUT

ARDEX EG15 EPOXY GROUT is a 100% solids chemically reactive epoxy that is intended for use in commercial and industrial grouting applications where the demand for physical and chemical resistance is critical. These areas include hospitals where tiles are exposed to high concentrations of biological contaminants followed by cleaning agents that are required to return the surfaces to a hygienic condition. Industrial applications in chemical plants provide exposure due to spillage of volatile solvents or acidic or alkaline environments that makes cement mortar grouts impractical due to their deterioration, reaction or absorption. It also find applications in domestic environments such as swimming pools and bathrooms where the customers wants a premium performance solution to grouting in showers.

Many experienced tilers will not have had to use a 100% epoxy to grout tiles so the application requires changes in their work practices in the areas of application methodology, cleaning of the joints and handling of the chemical components.

### HANDLING THE CHEMICALS

#### COMPONENTS

The ARDEX EG15 EPOXY GROUT\* is mixed in the volume ratio of

2 parts of Part A—resin

1 part of Part B - hardener and

6 parts of the Part C filler.

Please note that the ratio in some literature can appear different if it refers to weight measures because there is a difference in the bulk density of the powders.

The resin is mixed first and then the powder is added. Mixing is done with a power drill and mixing paddle.

Besides using the personal protective equipment outlined in our literature, had to use a 100% epoxy to grout tiles so the application requires changes in their work practices in the areas of application methodology, cleaning of the joints and handling of the chemical components.

\*EG15 supercedes Abapoxy in most applications.



Mixing in the filler powder



Mixing the combined Parts A+B resins and then adding the filler powder.

**TIP:** It is important that resin is mixed first before the powder is added. This makes sure the two resin components are correctly combined to react.

The minimum application temperature limit of 10 degrees centigrade can be attributed to two factors.

Firstly, below this temperature the reaction of the hardener and resin will stop. This is usually not a problem, provided the temperature of the substrates eventually rises above this value to enable the reaction to reach completion.

Secondly, the viscosity of the Part A compound and Part B hardener will increase dramatically (i.e. become less fluid) which will make the components difficult to handle and mix. The installer may then be reluctant to add the full 8 to 10 parts of the Part C filler that is required to provide its high strength and non-slump performance.

If the addition of insufficient filler occurs, then we could see slumping in larger vertical joints or slow slumping in incompletely filled floor joints that will appear as concave surfaces. Incomplete addition of all the filler will make it much harder to clean the surface of the tiles from excessive epoxy which will clog the sponge or scouring pad.

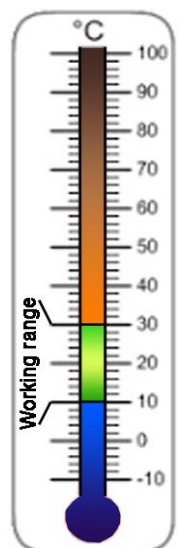
The solution when working at low temperatures is to warm Part A and Part B containers in warm water prior to mixing and ensure that the Part C powder is warmed by either keeping it indoors at 23°C before use or letting it warm in the bag in the heat of the midday sun prior to mixing. In some cases it would be wise to wait until the day warms up before mixing and application to ensure that the substrate temperatures reach 10°C.

At temperatures above 30°C the pot life of the mixed epoxy begins to quickly shorten and the material becomes more difficult to apply into the joints. The materials should be maintained at 23°C to optimise the 60 minute pot life. Application is best managed with enough material mixed to complete 1 to 2 square meters at a time.

**WARNING**—Bulk quantities of the grout left in the bucket react rapidly and develop significant self-heating. This becomes a self-sustaining reaction and the grout goes hard rapidly in the container.

#### APPLICATION METHOD

Application by means of a flexible metal trowel, spatula, gauging trowel or caulking gun are methods that experienced applicators have used successfully.





**TIP:** *The installer must always check the cleaning effectiveness of tiled surfaces before full-scale application to establish appearance standards.*

The key difference to cement based grouts is that the material is much stickier in nature. This stickiness increases during cure thus making it harder to fill the joints which can result in sagging due to its slower initial set compared with conventional grouts.

Also, as the curing reaction proceeds between Part A & Part B, heat is generated. If the mixed epoxy is left in the mixing bucket, the heat promotes faster curing and results in reduced working time making it difficult to fill the joints.

The sticky nature thus makes it harder to remove from the surface of the tile and requires positive tooling pressure to force it to flow to the bottom of the tile joint. This effect can be minimised by

ensuring the correct amount of filler powder is used in the mix, using a drill mixer and by emptying the mixed grout onto a flat board to minimise heat build-up.

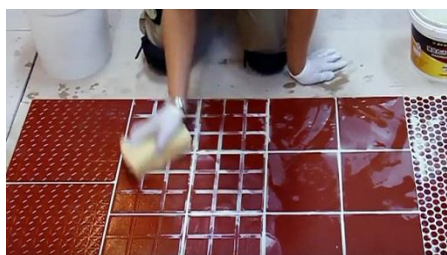
The solution to application includes the placement of the epoxy directly onto the joint without spreading it across tile surfaces as you would with a cement-based grout. This will reduce surface contamination but will require the applicator to actively work the material into the joint using a spatula to ensure full joint fill. In wider joints greater than 4mm good success has been achieved with the use of a caulking gun to apply the material into the joint. Ensure that the nozzle of the caulking gun is moved in the direction of the applied bead to ensure full joint fill. Tooling of the joint should always take place to force the material into the bottom of the joint which is required if good edge contact to the tiles is to be achieved.

### CLEANING OF THE JOINTS

Cleaning should be completed within 15 minutes of application of the epoxy grout, which normally results in grouting and cleaning one to two square meters at a time. This reduces a common complaint that arises when the material cures on the tile surface and appears to have been removed but which is apparent as an abrasive texture when a finger is run across the tile.

Normal cleaning involves the application of clean water using a refillable spray bottle onto the epoxy filled joint and leaving it for 3 to 5 minutes before using a damp scouring pad to gently scrub the tile surface in a circular motion to remove the excess epoxy.

A clean damp sponge, a “magic cloth” (micro-fibre) or open weave cloth soaked in warm



**TIP:** *A clogged sponge, ‘magic cloth’ or scouring pad will result in it dragging partially reacted epoxy grout out of the joints and depositing residue on the surface of the tiles. Use a small amount of household detergent or white vinegar (20ml in 5 litres) in clean water to wash the sponge and scouring pad to prevent epoxy residue build-up.*

**NOTE:** *DO NOT USE VINEGAR WITH STONE TILES*

**TIP:** Try and wrap a tile or straight edge with a damp towel in order to create a flat surface that can be used to remove remaining residue. There will be fewer tendencies for creases in the towel to dig into the joint.

A scouring pad used with a bit of household detergent, methylated spirits or white vinegar (can still remove epoxy smears that have been on the **tile surface** for a few hours. Do not get undiluted liquid on the grout lines.

**NOTE: DO NOT USE VINGEAR WITH STONE TILES**

**TIP:** To remove an epoxy smear that has cured for 24hours from the tile surface try using a more aggressive product paste such as proprietary **PAINT STRIPPER**, which contains a high concentration of Methylene Chloride solvent (also called Dichloromethane). This paste can be spread directly onto the surface of the smear and left for several minutes until the epoxy smear softens and then the paint stripper must be wiped off the tile. Repeated applications may be required to remove all trace of the epoxy residue. Immediately place all sponges or wash up rags in clean water to neutralise the paint stripper and thoroughly rinse the tile finish after the epoxy residues have been removed. This tip may be less effective on porous tile surfaces. Always test a trial area before application of cleaning solvents to verify compatibility with the tile type and refer to the manufacturer's product safety information for handling.

**WARNING—**Some porcelain tiles have seal coats or other treatments on them that interfere with the performance or cleaning of epoxy grouts. Inquiries should be made with the tile manufacturer concerning suitability of epoxy grouts.

water is then used to remove the loosened grout from the tile surface (soak the cloth first to remove any unfixed dye).

The grout joint can then be smoothed using a clean sponge or 'magic cloth' whereupon it should be frequently rinsed in clean water to reduce it clogging with epoxy. Continuously sponging or dragging a damp towel laid flat across the tile surface removes the remaining residue.

Do not flood the grout lines and use as little water as possible to clean the lines.

## **GLOSSARY**

**Bulk density**— This term means the weight per unit volume. Since powders are not heavily compacted and contain trapped air, the apparent density is lower than the true density of the component itself.

**Curing**—Where the Parts A and B react together to form a new crosslinked polymer plastic. Complete curing is when all available materials have been reacted.

**Epoxy resin**— A two part thermo setting synthetic polymer resin which is based on an epoxy base and an amine hardener. These polymers are a type of plastic which is non-water borne. Epoxy resins are known to be skin sensitising hence the need for protective gloves and aprons when used.

**Filler**— An inert powder added to the resin to add body and also colourant for the grout.

**Methylated Spirits** — Ethyl Alcohol which has been rendered undrinkable. Not to be confused with Acetone or other solvents such as paint thinners.

**Viscosity**—The technical definition of viscosity is the resistance of the liquid to applied shear stress, but in laymans terms it means thicker and harder to use or mix.



*White vinegar* – A solution of Acetic Acid in water. Food vinegar is about 5% by volume and has a pH of ~2.5. Cleaning vinegar can up to 10% by volume. Acetic Acid is a weak acid but also a solvent so must be diluted to prevent problems with the uncured grout.

**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 or Ardex New Zealand 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**

Some modifications to the text re cleaning and glossary

**DOCUMENT REVIEW REQUIRED**

24 months from issue

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