TECHNICAL BULLETIN – TB042

ARDEX STS8W (WHITE) AND ARDEX RA88 IN THE POOL UNDERWATER REPAIRS TO CERAMIC TILING

Date Tuesday, 10 July 2018

INTRODUCTION & SCOPE

In the 1970's Royal Navy divers carried out repairs to the damaged floor tiling in Eastney Baths at Portsmouth using the original ARDEX GmbH ARDURIT X7. The existing tiles had become chipped and cracked due to impacts of equipment, and restoration was performed with the water kept in the pool, using ARDURIT X7 White.
Historically a number of repairs had been done using Vibro manufactured ARDURIT X7 in Australia over the years in pools as well and the photos in this bulletin were taken with that product in use.

With improvements in technology, ARDEX updated and improved the product, releasing a successor named ARDEX STS8 during 2004. With similar application properties, STS8W (White) is used in the same situations as the ARDURIT X7 White, and so can be utilised for this specialised repair.

More recently improved technology epoxy repair products have been introduced into the market. An example of this technology is ARDEX RA88 which is a grey coloured fast cure cartridge adhesive which can be 'gunned' onto tiles which are placed underwater.

THINGS TO CONSIDER ABOUT THIS APPLICATION

When the water level is low, say less than 2 feet (60cm), it is not that difficult to reach down into the water to repair the base or side of the pool. However in deeper water, and repairs have been done below 2m, this is not practicable and SCUBA or air-line diving equipment is required. At this point, it is obvious that a specialist is required who can dive and lay tiles. A number of southern Sydney based tile shops have access to these rare species, but do you? The pool owner then needs to seriously consider whether it might be simpler to empty the pool and do the repairs, given that if one tile is loose, others might be as well and a thorough inspection may be called for.

The other point to remember is that underwater is a far from an ideal environment to be tiling, with issues such as surface preparation being problematic. Therefore when using this procedure, installers must keep in mind that this repair will never be as good as a full repair with the pool empty. It is also only applicable to concrete faced pools.

PROCEDURE

The damaged tiles are carefully chiselled out, taking care not to damage adjacent intact tiles, and about 2mm to 3mm of the surface of the original bedding is removed to provide a better surface for the new adhesive.

METHOD 1 (Based on the original 1970's procedure)

STS8W is mixed to a suitable fairly stiff slump-free consistency and placed in a plastic bag, which is sealed once the excess air had been expelled. A corner was cut out of the bag and the divers swim down with the bag and squeeze out the STS8W onto the exposed base to provide a mortar bed into which the new tiles can be bedded.

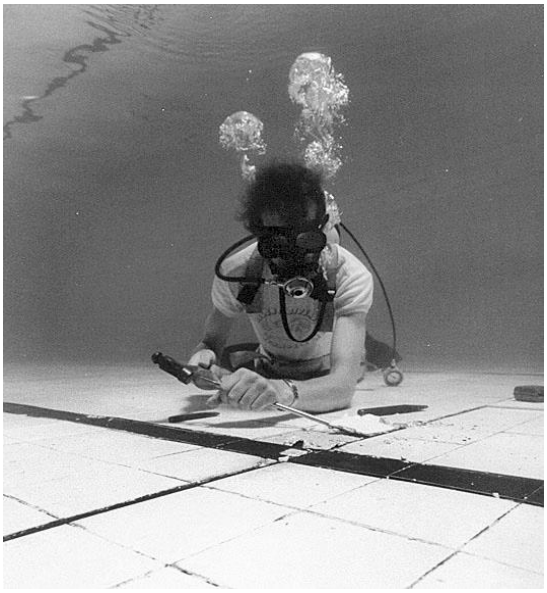
The new tile is carefully bedded in so that any water and excess STS8W is expelled up through the joints. The application of the mortar is effected so it is proud in the middle of the excavated area so that, as the adhesive mortar is flattened as the tile is bedded in,

one can ensure that no voids are left beneath the tile. The excess adhesive that squeezes up through the joint is carefully and slowly smoothed off with a finger (naturally wet) to form a “white” mortar joint. A weight is then placed on the tile to identify it and prevent accidental dislodgement so that, after 24 hours, the weight can be removed and the tile exposed to normal usage 3 days later.

METHOD 2

Subsequent to the procedure described in Method 1, the technique was modified by contractors to bed in extruded tiles with keyed back profiles.
The damaged tile is removed and the old bedding excavated to an adequate depth. The new tile is then buttered with fairly stiff slump-free STS8W to form a flat pyramid of mortar so that it is proud along the centre of the back of the tile. This mortar is allowed to air dry (to skin over) for 30 minutes or more. The diver carefully swims down and places the tile, bedding it in and smoothing off the join so that no voids are left beneath the tile. The main tricky point is to estimate how much adhesive is needed on the back of the tile, not only to displace the water, but also to fill the joints.

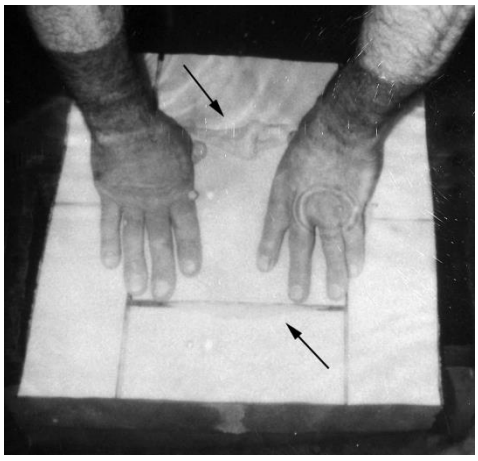
The picture at right shows a diver lifting the old damaged tiles prior to scraping out the old mortar bed.



The diver is placing a new tile onto the bed of adhesive that has already been squeezed onto the surface as per Method 1.

An example of a tile buttered with adhesive as per Method 2. The pyramid form has been highlighted with lines to show the shape of the adhesive.

Pushing the tile into place. As can be seen the adhesive squeezes out around the edges and this excess material is formed up by hand to become the grout lines.



METHOD 3

Above the water, ARDEX RA88 is applied to the back of the cleaned or fresh tile, with sufficient material applied to achieve at least 90% coverage and to form a bed 2-3mm thick. Sufficient paste needs to be applied around the edges so that the adhesive can be squeezed to reach the grout lines. The tile is pressed into the gap and the RA88 squeezed out around the edges with any excess **removed** from the grout lines.

Where the tile is on a vertical section it needs to be held in place (smaller tiles only) for a period till the bond firms up, or on the pool floor can be weighted down. Epoxy will take longer to cure under water than in the air.

SUMMARY

The techniques work well for isolated tiles or possibly a couple of tiles with one shared joint. Several tiles have to be bedded one at a time, allowing the first adequate time for the adhesive to harden before applying the second and so on.

It is obviously important when fixing underwater not to physically agitate the mortar and water too much when bedding the tiles in since you will start to disperse the mortar in the water.

When doing repairs to filled pools in the non-swimming cold months, it needs to be recognised that cold water (below 10^0C will delay the curing of the adhesive). Conversely heated pools will see the adhesive cure more rapidly.

Use of STS8W + ARDEX E90* admix, is not an application we have any experience with in such repairs underwater with flat-backed highly vitrified tiles. If it is used, it may mean a modification of the technique to allow an initial coat of STS8W + ARDEX E90 skim on the back of the tile to dry and harden before proceeding as before. (* ARDURIT X7+ARDION 90 was not trialled in this application either).

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

Removal of CA20P, and inclusion of RA88. Some changes to the text concerning history of the installation.

REVIEW PERIOD

36 months from issue.

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