TECHNICAL BULLETIN – TB167

SMOOTHING CONCRETE POOL SURROUNDS FOR INSTALLATION OF SAFETY MATTING

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INTRODUCTION & SCOPE

Historically, swimming pool surrounds were typically bare concrete, but the preferred surface for indoor pools and some external pools is now safety rubber or polyurethane matting.

In common with other resilient flooring, these coverings need a smooth surface and so the concrete normally requires both patch repair, and flood coat smoothing. These surfaces typically also have to provide falls to allow drainage.

This technical bulletin describes a number of systems that allow the concrete to be waterproofed and smoothed prior to the installation of the matting.

QUALIFICATIONS

The described systems are not intended for immersion, and are therefore unsuitable to be run down to the permanent water line or into the water itself. Where the floor covering is to be run to a gutter type drain around the pool edge, correct detailing and waterproofing of the topping and floor covering is required.

The concrete surround must be sound, and any signs of major concrete damage, concrete cancer or salt attack must be rectified prior to any smoothing operations.

This procedure is not intended for application over pre-existing tile or fibreglass surfaces.

Construction joints in the slab need to be maintained and suitably detailed through to the covering surface. Filling joints with smoothing cement can lead to potential cracking and show through problems.

SURFACE PREPARATION

Commonly the concrete surfaces around pools have a degree of salt or chloride contamination, and would be classified as damp slabs. The surface therefore requires combined mechanical and clean water wash down prior to waterproofing.

FOR EXISTING POOLS

1) The concrete surface shall be prepared by a mechanical method such as diamond grinding or shotblasting. If the surface of the concrete is salt affected sufficiently that heavy duty methods such as scabbling or scarifying are required to remove weak concrete, the integrity of the concrete is questionable for the application of smoothing cements. Where more severe methods are used, the resultant surface is likely to require bulk filling prior to final smoothing.
2) The surface is then vacuumed free of debris.
3) The surface shall be high pressure water washed or high pressure detergent washed using a nozzle pressure of not less than 7-10 MPa (1,000-1,500 p.s.i.) to remove salts and surface contaminants. The surface is allowed to dry sufficiently that no free water is present.

FOR NEW POOLS

As these pools will not have contaminated concrete, the surface only requires mechanical preparation and vacuuming.

PATCHING

Where there are holes or other small areas in the concrete requiring patching prior to the application of the membrane, three options are recommended;

WATER RESISTANT MORTARS

a) The concrete can be patched with Ardex A46 repair mortar to a maximum depth of 30mm. Apply with a steel hand trowel working the mixed mortar well into the surface. Ardex A46 can also be used for final patching and modelling on the top of the smoothed surface if required.

b) Where the depth exceeds 30mm, Ardex A46 can be substituted by Ardex B34 bonding bridge and Ardex B36 rendering mortar. This has a maximum thickness of 100mm

WATERPROOF MORTAR

A mix of epoxy modified concrete can be used to fill holes. This mix is effectively waterproof and has a degree of salt resistance. By volume:

1 Part mixed Ardex WPM300 Hydrepoxy

1 Part Portland cement

1-1.5 Parts washed dry sand ~0.3mm

1 Part washed dry aggregate 3-8mm

Curing time for this mix is approximately 24 hours.

WATERPROOFING

The application of a moisture barrier to the prepared concrete substrate achieves two things;

a) Firstly it can suppress rising salt and other contaminants deeper in the concrete than the surface preparation can reach, and

b) Stops rising moisture, since existing concrete surrounds would likely be classified as damp slabs due to splashing water. For new concrete this method will eliminate issues with construction moisture, and suppress moisture travelling into the concrete over time, rising to beneath the mat covering and producing problems

The main moisture barrier is two coats of Ardex WPM300. The second coat has a sand blinded surface to provide a bond for the smoothing cement.

1) The Ardex WPM300 is mixed as per the product data sheet and applied at not more than $3m^2$ per litre with a nap roller. The first coat is applied and allowed to cure for 2 hours.

2) A second coat is applied at $3m^2$ per litre, and whilst the Ardex WPM300 surface is still wet, sand is broadcast onto the surface at a rate of $700gms/m^2$. The sand required has a particle size of 0.3-0.5mm, is washed clean of organic material and clay, and is dry.

3) The sand blinded Ardex WPM300 is allowed to cure for 24 hours and then any loose or excess sand is broomed and vacuumed off the surface.

NOTE: Since the last version of this document was released, WPM256 has been removed from the product range, so the 'contaminated' concrete system is no longer applicable.

SMOOTHING CEMENT FOR SURFACE

The surface requires smoothing with a liquid applied smoothing cement, but where the concrete has insufficient fall, the smoothing cements have a limited capacity to create falls and a bulk fill may be required. A number of smoothing cement options are provided.

PRECAUTIONS

* External and exposed smoothing operations are subject to weather vagaries such as rain, strong wind and high temperatures.

a) Where rain is expected, smoothing cements shall not be applied, since rain falling onto smoothing cements less than about 12-18hrs old is likely to affect the material.

b) High winds and raised temperatures can cause premature curing and loss of water which can result in polygonal surface cracking.

* Liquid smoothing cements will flow down slopes and this needs to be considered.

* Ardex internal and Ardurapid™ products shall not be used in this application.

ARDEX K301

Ardex K301 smoothing cement is designed as an external wear surface and is fresh water and frost resistant. The surface can be covered with the matting (or left 'open', though close to the pool edge should be protected as pool water is quite chemically aggressive).

The minimum thickness of application is 2mm and maximum 20mm. The product has moderate falls/ramping capabilities and is better used as a smoothing coating.

Open K301 surfaces can be coated or have stencilled patterns applied. The surface of K301 itself is relatively smooth and is difficult to broom finish so slip resistance requirements need to be reviewed.

ARDEX A38

Ardex A38 is a engineered screeding cement which can be used directly under floor coverings when the surface is correctly closed, or provide a bulk filled base for K301 toppings, or a skim coat of A46 or B34/B36. This product can be used externally and in wet areas.

The minimum thickness applied to concrete with the bonding bridge is 15mm and the maximum is unrestricted, but nominally 50mm is recommended. If used un-bonded when applied over waterproofing for example, the minimum thickness is 40mm.

The smoothing cement surfaces are allowed to cure for 48hrs prior to the installation of the floor covering.

The recommended adhesives used to bond the matting down shall be water resistant and Ardex AF545 is suitable for this application.

WATERPROOFING THE SMOOTHING CEMENT SURFACE

This process will improve the moisture resistance of the system where the smoothed surface goes down to a dish drain or edge gutter without a hob. As already noted it is not recommended that the smoothing cement are exposed to fully immersed or constantly wet situations. There are two approaches to this problem.

The first involves either leaving a small gap between the smoothed area and the gutter, or cutting a channel after the smoothing cement is applied. A generous coat of Ardex WPM300 is coated onto and into this cut joint to provide a waterproof coating.

The section option involves creating a continuous finish into the gutter.

The smoothing cement can be waterproofed with two coats of Ardex WPM300, or Ardex WPM002 back to a minimum of 300mm from the edge.

1) A bond breaker of neutral cure silicone or polyurethane sealant should be applied along the edge between the gutter and the smoothing cement and smeared for 10mm either side of the joint.

2) The applied membrane needs to be turned down into the gutter (gutter material needs to be bond compatible) and the edge re-inforced with Ardex Deckweb embedded in the membrane.

3) The resilient covering adhesives applied must be compatible for direct application to the membrane. Ardex WPM300 is a water based polyamide cure epoxy and Ardex WPM002 is a cement-acrylic. Where a polyurethane mat adhesive is used the recommended membrane is Ardex WPM300.

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
Removal of systems using WPM256 due to product deletion. Deletion of Coving Bandage.
Contaminated concrete system no longer available.

DOCUMENT REVIEW REQUIRED
24 months from issue

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