TECHNICAL BULLETIN – TB209

PREPARATION OF SEISMIC DAMAGED CONCRETE FLOORS PRIOR TO INSTALLATION OF UNDERLAYMENTS WITH DULUX FLOOR COATINGS

Date, Tuesday, 14 October 2014

INTRODUCTION & SCOPE

New Zealand lies in an active seismic zone astride the boundary between the Indo-Australia and the Pacific tectonic plates. As a result, buildings and structures in New Zealand are at risk from damage due to earth movements (earthquakes).

This bulletin gives some guidelines for NON-STRUCTURAL repairs to concrete floors which have cracked due to ground movements.

QUALIFICATIONS

The recommendations in this bulletin are based on the following requirements:

- Repairs are for cosmetic purposes only and not to reinstate any loss of strength or structural integrity.
- Structural repairs require advice from suitably qualified engineers and using materials certified for this type of repair.
- The cracks must be in-active. Ongoing movement of the crack is likely to result in further development of new cracks away from the repair or re-opening of the old crack. Re-cracking as a result of subsequent direct seismic or post earthquake activity is not warranted.

REPAIR METHODS

There are a number of approaches to cosmetic repairs for cracks in concrete slabs. For larger cracks, one approach is to use a cement based patch mortar while another is to use a "filled" epoxy mortar.

For smaller hairline cracks, other cover methods can be used.

HAIRLINE CRACKS

- Before the Dulux floor coatings are installed, smaller damp or dry hairline cracks in the concrete can be treated by the application of Ardex WPM300 Hydrepoxy. The treated area is then smoothed using an Ardex Levelling & Smoothing compound.
- The Ardex WPM300 is liberally brush applied across and to a width of 100mm either side of the crack. Ardex Deckweb is then immediately embedded into the liquid film using a metal fluted (ribbed) roller to remove air bubbles and ensure uniform wetting through of the Ardex Deckweb.
- A second coat of Ardex WPM300 Hydrepoxy is then brush applied over the embedded Deckweb. While wet, broadcast dry sand (0.3 to 0.5mm size) over the surface to provide a "key" for the subsequent smoothing cement. If the second coat is not sand seeded and finished with Ardex smoothing cement, the line of the Deckweb reinforcement may show through thin applied coatings.

LARGER CRACKS

Patch Mortars

In this case, the cracks are V-notched out to ensure the mortar patch is thick enough to remain in the crack. Typically cracks are cut in a V-shape to around 20mm wide and deep

Technical Bulletin TB209.002 14-Oct-14

Page 1/3



TB209.002 © Ardex Australia 2011-2014 using a bolster & chisel or a small impact hammer. The crack is then vacuumed to remove dust and debris prior to filling.

Where the concrete is considered dry;

• The crack can be filled with a patch mortar worked into the V-shaped cut.

Where the concrete is considered damp;

- The crack shall be coated with two coats of Ardex WPM300 Hydrepoxy Moisture Barrier at a wet coverage rate of 3m² per litre per coat.
- The first coat is allowed to dry for at least 2 hours before the second coat is applied. Whilst the second coat is wet, broadcast clean dry sand (0.3 to 0.5mm size) over the surface. Let dry and then brush or vacuum to remove unbonded loose sand.
- A patch mortar is applied to the sanded surface. Suitable patch mortars include Ardex A46 or Ardex A30.
- The remainder of the floor area is treated with Ardex WPM300 Hydrepoxy Moisture Barrier as per Ardex Technical Bulletins TB178 or TB192

A Moisture Resistant Patching Mortar can be made using the following formula.

- 1 part (by vol) mixed Ardex WPM300 Hydrepoxy
- 1 part Portland Cement
- 1 to 1.5 parts washed & dried sand (0.3 to 0.5mm size)
- 1 part washed & dried aggregate (3 to 8mm or 2 to 5mm size ranges)
- The mixed mortar is trowelled into the crack and allowed to dry. Further protection can be obtained by coating the mortar with Ardex WPM300 prior to the main application of the moisture barrier as per TB178 & TB192.

Epoxy Stitching

This process is intended to hold the sides of the crack in position and requires a recommendation from a consulting engineer as to the preferred size and spacing of the pins, and the maximum crack width to be stitched.

It should be noted that stitched floors may develop cracks removed some distance away from the original crack if the concrete subsequently moves or is put under further strain.

- A number of cuts are placed across the crack at spacings determined by the engineer. These cuts are to be large enough & deep enough to take the stitching pins.
- The pins used are typically made from threaded steel rod at least 6mm diameter and 50 – 75mm long.
- Mixed Ardex Abapoxy epoxy is then poured into the slots covering the pins
- Whilst the epoxy is still wet, clean dry (0.3 0.5mm size) sand is broadcast over the top to provide a bonding key.



Technical Bulletin TB209.002 14-Oct-14

Epoxy Filling

This process is used to fill the cracks without gouging them out. This application is **not** intended to be structural repairs.

- Ardex EP2000 or Ardex ABAPOXY can be mixed with sand cement filler to a suitable workability and then trowelled into the crack (the cement is not reacted/hydrated in this case).
- While still wet, broadcast clean dry sand (0.3 0.5mm size) over the top to provide a bonding key.

Where cracks are identified as potentially active, repairs can be made under the advice of the engineer, using the Ardex concrete repair injection system based around CRACKBOND LR321 or SLV302 multipurpose epoxy crack repair.

Summary

Thin applied surface coatings are not designed for concealing cracks in concrete floors and this bulletin provides some methods for repairing these cracks so that the coatings may be applied to achieve an aesthetically pleasing appearance. Once the cracks have been made good using any of the above procedures, the surface can be coated as required with Dulux approved coatings such as Dulux Luxafloor ECO₂.

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

Deletion of EP2000. Addition of CRACKBOND LR321 and SLV302. Document Review Required 24 months from issue. Technical Services 1800 224 070 email: technical services@ardevaus

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