MASTER® BUILDERS SOLUTIONS

bluey

Structural Crack Repair

PROCEDURE

Structural Crack Repair
INTRODUCTION

Crack repairs on concrete fall into 2 main categories, waterproofing or structural repairs. These 2 applications require 2 differing injection resins so it is important to understand what the required goal is to ensure the correct resin is selected.

Where it is required to repair dry cracks to maintain the structural integrity of the concrete structure, the required resin should have low viscosity, low shrinkage, high bond strength, and high stability at the repair temperature. Bluey Technologies offers our BluRez 111 to meet these requirements. The BluRez 111 will not just improve the structural, however will also improve the corrosion protection to possibly exposed reinforcing bars.

Detailed technical data sheets (TDSs) are available for each product in the Bluey Technologies range; you can find these on our website (www.bluey.com.au).

REPAIR PROCEDURE

The repair procedure will differ depending on the location of the cracking. Repairs to horizontal surfaces are generally best to be completed using a gravity feed process, whereas cracks in vertical plane are best repaired using an injection method.

For both types of cracks it is important to wait till the shrinkage is complete prior to attempting repairs, as repairs to active cracks, may end up requiring further treatment.

HORIZONTAL SURFACES

The first step of this process is to chase out the crack using a 5" diamond V blade to a depth of 10mm. Once this step has been completed remove all dust from the crack by blowing it out with an air hose. Mix up the BluRez 111 as per the TDS instructions. A sauce bottle or funnel can be used to gravity feed the BluRez 111 into the crack. Continue along the full length of the crack, allowing 1-2 minutes for the resin that has been placed into the crack to settle before reapplying. Repeat this process until the entire length of the crack is full of resin. Monitor the effectiveness of the repair over 2-3 days and once you are satisfied the crack is full of resin you can seal over the top of the crack using the BluRez 575.

VERTICAL SURFACES

The injection process requires a pumping system to apply pressure to the injection material (BluRez 111). These systems include hydraulic pumps, paint pressure pots, air-actuated caulking guns, or hand-operated application guns.

Once you have chosen the pumping system the crack needs to be prepared for injection. This involves chasing out the crack using a 5" diamond V blade to a depth of 10mm.

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Following this, holes are to be drilled to insert the injection packers. We recommend that you drill the holes at 45° to the crack line and at least 100 mm away from the crack. You should also drill the access holes approximately 200 mm apart along the full length of the crack (see Figure 1).

If this method of drilling is found to be difficult due to the proximity of steel reinforcing bars to the crack, it is possible to drill the holes directly into the crack itself. Issues may arise with this method when the crack is formed on an angle as the end of the packer may in fact miss the crack. The orientation of the crack may be checked prior to drilling by inserting wire into the crack to check its orientation.

If the above two methods of injection are not deemed suitable it is also possible to use surface mounted packers (Figure 2). These specialty packers are adhered directly over the crack. The crack is then pasted over using BluRez 575 and allowed to cure prior to injection.

If the crack runs through the full length of the structure and is visible from the underside BluRez 575 must be used to seal both sides of crack to prevent loss of the injected product.

Once the crack has been sealed start by pumping at the widest part of the crack and proceed outwards along its length in each direction. Turn on the pump and slowly increase the pressure to a maximum of 30 bar, or as the product's TDS advises. Stop pumping for every litre injected and allow one to two minutes for setting. Start and stop the injection until the packer no longer accepts material or you have reached the specified pressure.

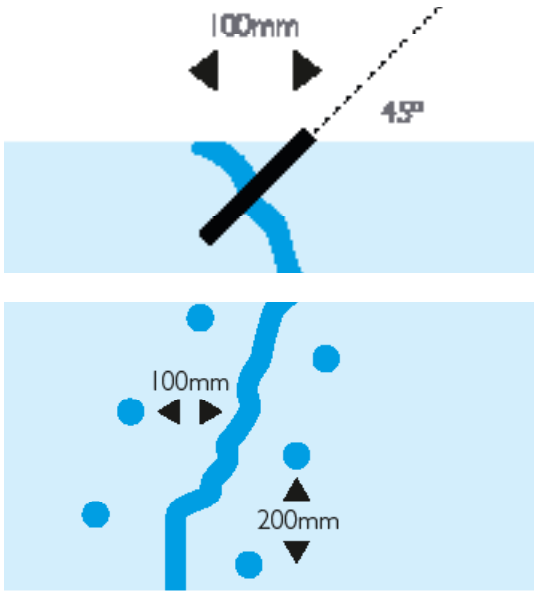

Figure 1: Drill holes.

Figure 2: Surface mounted packers

Crack Repair - Injection Method

PROCEDURE

Then move to the next packer and repeat the injection process. Continue until the crack is full and adequately sealed. Allow the material to settle for two to three days before returning to the site and completing any additional injections that may be necessary. Figure 3 provides a schematic representation of the pumping setup.

We at Bluey Technologies advise all applicators to monitor the effectiveness of the work at each stage of the injection process and to make any necessary adjustments should they be required.

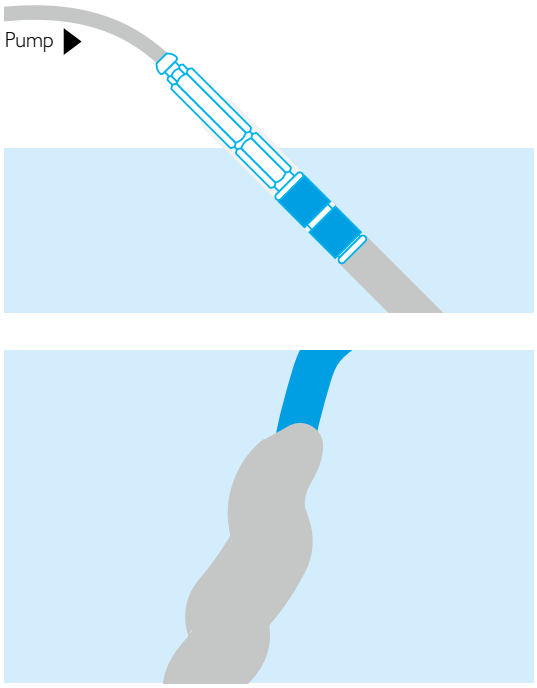

Figure 3: Pump until resin is coming out of the top of the crack.

FACTORS TO CONSIDER WHEN INJECTION

It is important not to exceed the manufacturer's guidelines for the maximum pumping pressure to use when injecting a product. We at Bluey Technologies have specified the maximum pumping pressure for each of our products. Exceeding the recommended pressure can aggravate existing cracks and cause additional damage.

It is important to undertake extensive cleaning procedures before injecting grout in order to remove dirt and fine particles. Flush with water and then dry with compressed air unless you are using a hydrophilic injection resin. These cleaning techniques require a high degree of skill and specialist equipment to ensure their effective execution.

You need to monitor the success of any injection repair system. We recommend ultrasonic testing or drilling concrete cores as acceptable methods for evaluating the state of the repair.

SAFETY

Refer to the SDS for BluRez 111 and BluRez 575 for safety measures. Applicable site safety rules must be abided by at all times.

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- Product technical knowledge
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Our products have Government and Regulatory Authority approvals across Australia and New Zealand.

R01/2023