a.b.e.® Construction Chemicals

METHODOLOGY

epidermix crack injection system

All the relevant product data sheets are to be read for additional information like pot life, mixing instructions, surface preparation, ventilation, temperature application limitations, etc.

REPAIRS TO STATIC CONCRETE CRACKS FORMED BY SHRINKAGE OR DYNAMIC LOADS

DESCRIPTION

The repair of cracks in concrete by injecting them with **epidermix** pumped in under pressure is a well tried and tested process.

A properly executed crack injection will restore strength to the concrete and will seal it against entry of moisture dirt and chemicals. Cores taken from injection repaired concrete will often be found to have a higher crushing strength than the parent concrete. This is due to the reinforcing effect of the resin.

Crushing fracture should not occur on the plane of the injected crack. Often it will occur at right angles to the cracked plane.

NB - Structural cracks are to be evaluated for dynamic or static properties and the required method of repair is to be approved by the responsible engineer.

IMPORTANT

Before attempting a crack repair the cause of cracking must be established. If the crack is dynamic the amount of movement must be determined. There is no point in repairing a crack if the structure is still subject to the stresses that caused the crack. The structure will simply crack again at the next weakest point. If it is proved that the crack is dynamic it should be cut out and or introduce a suitable new joint to be sealed with the appropriate sealant to accommodate the movement. This will exclude moisture and dirt ingress but will not provide strength to the element. (See sealant selector chart for the type of sealant to be selected).

METHOD OF CARRYING OUT CRACK INJECTION SYSTEM

1. The surface over the entire length of the crack should be wire brushed to remove laitance from the concrete.
2. If the surface of the concrete is unsound chase a "V" cut at least 10 mm deep and 20 mm wide into the crack.
3. Remove all debris.
4. Drill into the crack using the 6 mm bit. Drill at least 50 mm deep. Ensure that the crack lies within the sides of the hole.
5. Using a fine stiff wire, scratch out the debris/dust that may block the crack in the sides of the hole.
6. Holes should be between 250 mm and 300 mm centres, the finer the crack the less the centre spacing.
7. Seal the grease nipples into the holes with a collar of **epidermix 314** or **epidermix 372**. Cover the head of the nipple with a short length of rubber or plastic tubing to ensure the inlet is kept free of epoxy. Also ensure that the outlet is kept free of epoxy.
8. Having sealed the nipples into the crack, seal the entire face of the crack with **epidermix 314** or **epidermix 372** applied about 3 mm thick and approximately 50 mm wide. Where the crack is chased out the chase should be filled with **epidermix 314** or **epidermix 372** and finished flush with the concrete surface.
9. Allow to cure overnight.
10. Next day, open the non-return ball valves of the nipples by forcing in pins.
11. Fill the injection gun with correctly mixed **epidermix** liquid.
12. Starting at the lowest point of the crack or at one end, if the crack runs horizontally, pump in liquid resin. Continue pumping until resin exudes from the next nipple. Remove pin and carry on pumping for a few more strokes of the gun.
13. Disconnect gun from inlet and attach it to the nipple from which resin exuded.
14. Continue this sequence working either up or along the crack. After about 30 minutes return to the first nipple that was filled, re-open the ball valves with pins and try to pump in further resin. This can usually be done as the resin may have seeped away into finer cracks or pockets of honeycomb. If foamy resin extrudes continue filling until clear resin is evident.
15. Once injection of crack has commenced, work must continue until the crack has been filled.

a.b.e.® is an ISO 9001:2008 registered company
PO Box 5100, Boksburg North, 1461, South Africa
Website: www.abe.co.za | Tel: +27(0) 11 306 9000
Durban | Johannesburg | Cape Town | Port Elizabeth | East London | Bloemfontein | George

16. Before injection work starts, a rough calculation should have been made as to the amount of resin that will be needed to fill the crack.
17. Twenty four hours after injection, the surface seal and protruding nipples may be cut off with a grinding wheel.

The calculation:

Length of crack x Depth of crack x Width of crack (all in cm) divided by 1000 = litres of resin required.

If epoxy usage exceeds this figure by more than 4 times, the matter should be referred to the Engineer as excessive internal honeycomb may be present. If the crack in the slab is in contact with another sub-slab or in the wing wall of an abutment it is likely that the resin is going straight through the member into the void or the ground.

REPAIR OF SMALLER HONEYCOMB AREAS IN CONCRETE – ELSE SEE HONEYCOMB REPAIRS METHOD STATEMENT

Essentially the process is the same as outlined with the following exceptions.

a) Holes must be drilled right through the member and not merely 50 mm deep. They should be spaced not more than 150 mm vertically and horizontally apart.
b) The entire honeycomb area must be surface sealed with **epidermix 314**.
c) On the day after the injection process has been done, a second set of holes should be drilled moving the matrix 50% horizontally and vertically and repeating the entire nippling and injection process.

CLEANING

epidermix products should be removed from tools, equipment and mixers with **abe® super brush cleaner** immediately after use. Hardened material can only be removed mechanically.

PRODUCTS REQUIRED

- **abe® super brush cleaner**
- **epidemix 314/372** – for surface sealing prior to the injection process.
- **epidermix 365** – if crack width exceeds 0,10 mm
- **epidermix 389** – if crack width lies between 0,10 and 0,05 mm
- **epidermix 395** – used in crack repair of concrete roads.
- **epidermix** compounds used in the crack injection system

EQUIPMENT NEEDED

- Cold chisel and hammer.
- Fine stiff wire.
- Flat paddles for mixing injection resins.
- Long shank grease nipples (± 30 mm long).
- Manually operated pump type grease gun.
- Pins.
- Power drill with 6 mm masonry bit.
- Putty knives for mixing epidermix 314/372.
- Rubber or plastic tubing – 6 mm I.D.
- Wire brush.

IMPORTANT NOTE

This data sheet is issued as a guide to the use of the product(s) concerned. Whilst **a.b.e.® Construction Chemicals Limited** endeavours to ensure that any advice, recommendation, specification or information is accurate and correct, the company cannot - because **a.b.e.®** has no direct or continuous control over where and how **a.b.e.®** products are applied - accept any liability either directly or indirectly arising from the use of **a.b.e.®** products, whether or not in accordance with any advice, specification, recommendation, or information given by the company.

FURTHER INFORMATION

Where other products are to be used in conjunction with this material, the relevant technical data sheets should be consulted to determine total requirements. **a.b.e.® Construction Chemicals Limited** has a wealth of technical and practical experience built up over years in the company's pursuit of excellence in building and construction technology.