

Method Statement for Epoxy Resin Injection- BC EPR Injection



1. Introduction

BC EPR Injection is a method used to repair cracks in concrete structures. It restores the structural integrity and prevents water ingress. This method involves injecting a low-viscosity epoxy resin into cracks, bonding the crack surfaces together and creating a strong, permanent seal.

2. Scope of Work

The scope covers the repair of concrete cracks using the epoxy injection method. This method is applicable to both horizontal and vertical cracks in structural elements such as slabs, beams, columns, and walls.

3. Materials

BC EPR Injection : A two-part epoxy injection resin suitable for concrete repair.
Injection Packers: Mechanical or surface-mounted packers for injecting resin into cracks.
Solvent/Cleaning Agent: For cleaning cracks and injection equipment.
Protective Equipment: Personal protective equipment (PPE) such as gloves, masks, goggles, and protective clothing.

4. Tools and Equipment

Injection pump (manual or electric)
Air compressor (for cleaning cracks)
Grinding machine (if needed)
Wire brush, scraper, or other cleaning tools
Injection packers and hoses
Measuring tools (for resin mixing)

5. Preparation

Inspection and Assessment:

Identify cracks and measure their width, depth, and length. Determine if the crack is active or dormant.

Surface Preparation:

Clean the crack thoroughly to remove any loose debris, dust, oil, or grease using a wire brush and air blower.

If necessary, use a grinding tool to create a clean surface around the crack for packer installation.

Packer Installation:

Install injection packers along the crack at intervals of 150-300 mm, depending on the crack width and depth.

Ensure that the packers are tightly secured to avoid resin leakage during the injection process.

6. Mixing BC EPR Injection

Prepare the epoxy resin according to the manufacturer's instructions.

Mix the two components (resin and hardener) in the correct ratio, ensuring a homogeneous mixture.

Avoid excessive mixing, which may cause air entrapment or premature hardening.

7. Injection Process

Crack Sealing:

If necessary, seal the surface of the crack using an epoxy paste to prevent leakage during injection. Leave access to the packers.

Start Injection:

Begin the injection process from the lowest point for vertical cracks or one end for horizontal cracks.

Inject resin slowly and consistently until the epoxy starts to flow from the next packer or from the top of the crack.

Monitor and Adjust:

Continue injecting the resin into the next packer, repeating the process until the entire crack is filled.

Monitor resin flow and adjust pressure as necessary to ensure proper penetration without creating excessive pressure that could widen the crack.

8. Post-Injection

Curing Time:

Allow the epoxy to cure as per the manufacturer's recommendations, typically between 24 to 48 hours.

Packer Removal:

Once the epoxy has cured, remove the packers carefully. Fill the holes left by the packers with epoxy mortar or patching material.

Finishing:

Grind or smooth the injected surface to match the surrounding concrete, if necessary.

9. Quality Control

Ensure proper filling of cracks by visually inspecting the injection points and the surrounding area.

Perform testing (if necessary) to verify the strength of the repair, such as coring or ultrasonic testing.

10. Health and Safety

All personnel involved should wear appropriate PPE, including gloves, goggles, masks, and protective clothing.

Ensure proper ventilation in enclosed areas.

Avoid direct skin contact with epoxy resin and inhalation of vapors.

11. Environmental Considerations

Dispose of any waste materials (such as empty containers or unused resin) in compliance with local environmental regulations.

Prevent resin spills, and ensure proper containment during the mixing and injection processes.

12. Documentation

Record the crack location, size, and details of the repair.

Maintain logs for the type of resin used, mixing ratios, and curing times.

This method ensures that cracks in concrete are effectively sealed, restoring the structural integrity of the structure while minimizing future risks of water ingress or further deterioration.



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