Crack Injection Guide for Crack-Pac® Flex-H_2O™ Crack Sealer

IMPORTANT: The following instructions are intended as recommended guidelines. Due to the variability of field conditions, selection of the proper material for the intended application and installation are the sole responsibility of the applicator.

Polyurethane injection is an effective and economical method of sealing cracks in concrete and solid masonry elements. Crack-Pac® Flex-H_2O™ crack sealer is suitable for sealing dry, wet, seeping and mildly leaking cracks in horizontal and vertical concrete and solid masonry elements ranging from 0.8–6.4 mm.

For larger-scale crack repair projects, Simpson Strong-Tie recommends preparing and attaching a few injection ports and paste-over for trial to ensure that the port spacing is adequate to achieve full epoxy injection penetration.

Definitions

Dry Crack: A crack containing no moisture.

Wet Crack: A crack containing moisture (damp or containing standing water). The surface can be dried and will remain dry during the paste-over operation.

Seeping Crack: A wet crack that slowly oozes water. After being dried, the surface slowly becomes wet again.

Mildly Leaking Crack: A crack with a slow trickle of water emitting from its face.

Preparation of the Crack for Injection

Clean the crack and the surface surrounding it to allow the paste-up material to bond to sound concrete. At a minimum, the surface to receive paste-over should be brushed with a wire brush. Oil, grease or other surface contaminates must be removed in order to allow the paste-over to bond properly. Take care not to impact any debris into the crack during cleaning. With dry cracks, use clean, oil-free compressed air to blow out as much dust and debris from the crack.

For many applications, additional preparation is necessary in order to seal the crack. Where a surfacing material has been removed using an acid or chemical solvent, prepare the crack as follows:

1. Using clean, oil-free compressed air, blow out any remaining debris and liquid.
2. Remove residue by high-pressure washing or steam cleaning.
3. Blow any remaining water from the crack with clean, oil-free compressed air.

If a coating, sealant or paint has been applied to the concrete it must be removed before placing the paste-over material. Under the pressure of injection these materials may lift and cause a leak. If the surface coating is covering the crack, it may be necessary to rout out the surface of the crack in a "V" shape using a grinder in order to get past the surface contamination.

Sealing of the Crack and Attachment of E-Z-Click™ Injection Ports

Dry or Wet Crack (use EIP-EZA)

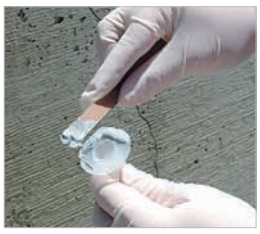
1. To adhere the port to the concrete, apply a small amount of epoxy around the bottom of the port base (Picture 1). Place the port at one end of the crack and repeat until the entire crack is ported (Picture 2). As a rule of thumb, injection ports should be placed 200 mm apart along the length of the crack.

IMPORTANT: Do not allow paste-over to block the port or the crack under it; this is where the injection epoxy must enter the crack.

2. Using a putty knife or other paste-over tool, generously work epoxy along the entire length of the crack (Picture 3). Take care to mound the epoxy around the base of ports and to work out any holes in the material. It is recommended that the paste-over should be a minimum of 5 mm thick and 25 mm wide. Insufficient paste-over will result in leaks under the pressure of injection. Allow the paste-over to cure before beginning injection.

3. Allow the paste-over to harden before beginning injection.

NOTE: CIP-LO and ETR epoxies are fast-cure materials and may harden prematurely if left in a mixed mass on the mixing surface while installing ports. Spreading paste-over into a thin film (approximately 3 mm) on the mixing surface will slow curing by allowing the heat from the reaction to dissipate.



Picture 1

Picture 2

Picture 3

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Sealing of the Crack and Attachment of E-Z-Click™ Injection Ports (cont.)

Seeping Crack Application (use EIP-EZA)

1. Mix a small amount of quick-setting hydraulic cement with water in a container per manufacturer's recommendation (leave cement thick so it can be moulded). Apply the cement generously to the top of the port flange and hold the port onto the concrete/masonry surface at one end of the crack until it sticks when the hand is released (usually about 1 minute). Repeat until the entire crack is sealed and ported.

IMPORTANT: Be sure not to cover the port opening/closing interface with the cement. If this interface is covered, the cement must be cut away from this interface with a utility knife once it is cured, otherwise, the port will not close.

2. To seal the remaining portions of the crack, mix small amounts of the hydraulic cement and apply it to the crack in a similar fashion. It is recommended that the paste-over be 5 mm thick and 25 mm wide. Once the entire crack is covered, all leaking water should be directed through the open ports. If water is leaking from any parts of the paste-over, be sure to patch these areas with additional hydraulic cement before injecting the crack.

Mildly Leaking Crack (use EIPX-EZ-RP20)

1. Using a hammer drill or roto-hammer, drill 16 mm holes 19 mm deep at each end of the crack and along the crack approximately 200 mm apart.
2. Using the E-Z-Click Drilled-In port (model EIPX-EZ-RP20), gently hammer the port into the drilled hole at the top of a vertical crack or at either end of a horizontal crack. Mix a small amount of quick-setting hydraulic cement with water in a container per manufacturer's recommendation (leave cement thick so it can be moulded).
3. Apply the cement generously to the top of the port flange and hold until it sticks when the hand is released (usually about 1 minute). Repeat until the entire crack is sealed and ported.

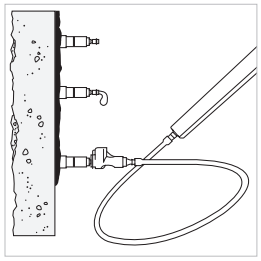
IMPORTANT: Be sure not to cover the port opening/closing interface with the cement. If this interface is covered, the cement must be cut away from this interface with a utility knife once it is cured, otherwise, the port will not close.

4. To seal the remaining portions of the crack, mix small amounts of the hydraulic cement and apply it to the crack in a similar fashion. Starting at one end and working toward the other. In vertical applications start at the top and work down. It is recommended that the paste-over be at least 5 mm thick and 25 mm wide. Once the entire crack is covered, all leaking water should be directed through the open ports. If water is leaking from any parts of the paste-over, be sure to patch these areas with additional hydraulic cement before injecting the crack.

Injection Procedure

1. Follow cartridge preparation instructions on the cartridge label. Verify that the material flowing from the nozzle is a uniform green colour.
2. Attach the E-Z-Click™ fitting to the end of the nozzle by pushing the tubing over the barbs at the end of the nozzle. Make sure that all ports are pushed in to the open position.
3. Attach the E-Z-Click™ injection fitting to the first E-Z-Click™ port until it clicks into place. Make sure that the head of the port is pushed in to the open position. In vertical applications, begin injection at the lowest port and work your way up. In a horizontal application start at one end of the crack and work your way to the other end.
4. Inject polyurethane into the first port until material shows at the next port. Remove the E-Z-Click fitting by bracing the base of the port and pulling out gently on the head of the port to close it. Pulling too hard may dislodge the port from the surface of the concrete, causing a leak. Depress the steel tab on the head of the E-Z-Click fitting and remove it from the port.
5. Move to the next port and repeat until all ports have been injected.

Picture 4



Picture 5