

CRACK-PAC® FLEX-H₂O™ Polyurethane Crack Sealer



Crack-Pac® Flex-H₂O™ is a high solids hydrophobic polyurethane injection resin designed to seal leaking cracks, voids or fractures in concrete or solid masonry. The polyurethane is packaged in the cartridge and an accelerator is packaged in the nozzle. When the two are combined in the cartridge and mixed, the result is a low viscosity, water activated polyurethane. When the resin encounters water as it is injected into the crack, it becomes an expanding foam that provides a flexible seal in leaking and non-leaking cracks.

FEATURES:

- Seals seeping or mildly leaking cracks
- 400% elongation provides a flexible seal for moving cracks
- Can be dispensed with a standard caulking tool
- Can also be used on dry cracks
- Can be used with a reduced amount or without accelerator to slow down reaction time
- Expands to fill voids and close off the back of the crack
- Expanding nature makes it suitable for sealing cracks in solid masonry
- Fast reacting - reaction begins within 1 minute after exposure to moisture; expansion may be completed within 3 minutes (depending on the amount of moisture and the ambient temperature).
- Non-shrinking hydrophobic formula with the elongation and flexibility of a hydrophilic resin
- 20:1 expansion ratio (unrestricted rise) means less material needed

APPLICATION:

Suitable for sealing cracks ranging from 1/32" to 1/4" wide in concrete and solid masonry. Can be used to repair cracks in dry, damp and wet conditions with excellent results. Designed to perform in applications where water is seeping or mildly leaking from the crack.

SHELF LIFE:

12 months from the date of manufacture, unopened.

USAGE TEMPERATURE:

60° - 90°F

STORAGE CONDITIONS:

For best results store in a dry area between 45° - 95°F. Product is very moisture sensitive.

COLOR:

Polyurethane - clear, accelerator - green, cured - green

CLEAN UP:

Uncured material – Wipe up with cotton cloths. If desired scrub area with abrasive, waterbased cleaner and flush with water. If approved, solvents such as ketones (MEK, acetone, etc.), lacquer thinner, or adhesive remover can be used. DO NOT USE SOLVENTS TO CLEAN ADHESIVE FROM SKIN. Take appropriate precautions when handling flammable solvents. Solvents may damage surfaces to which they are applied. Cured material – scrape or brush off surface with a putty knife or wire brush. Tip: wetting the concrete or masonry surface immediately prior to injection will make cured resin easier to remove.

PROPERTY

TEST METHOD

RESULTS

Viscosity (77°F)	ASTM D 1638	600 cps (liquid state)
Density	ASTM D 1622	Highly restricted rise - 65 lbs./ft ³ Lightly restricted rise - 10 lbs./ft ³
Elongation	ASTM D 638	Highly restricted rise - 400% Lightly restricted rise - 400%
Tensile strength	ASTM D 638	Highly restricted rise - 2200 psi Lightly restricted rise - 300 psi
Tear strength	ASTM D 624	Highly restricted rise - 400 psi Lightly restricted rise - 55 psi

CHEMICAL RESISTANCE

Very good to excellent against water, most hydrocarbons and alkalis. Poor to fair against ketones, chlorinated solvents and concentrated acids.

Additional Components Needed for Crack Repair

Condition	Paste-Over Material	Ports
Dry Crack	ETR, CIP or CIP-F*	EIP-EZA or EIP-EZ Flush-Mount
Wet Crack		
Seeping Crack	Hydraulic Cement	EIPX-EZ Drill-In
Mildly Leaking Crack		

*CIP-F requires EIP-EZA port.

See page 109 for information on Crack Repair Accessories.

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.

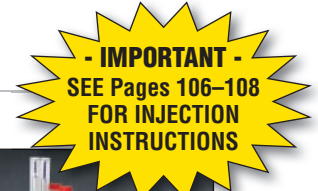


Crack-Pac® Flex-H₂O™ Crack Sealer

Dispensing System: U.S. Patents 6,737,000 and 6,896,001 B2



For Leaking Cracks



Crack-Pac® Flex-H₂O™ Kit (CPFH09KT)



Crack-Pac® Flex-H₂O™ Kit Components

Crack-Pac® Flex-H₂O™ crack sealer is also available in the Crack-Pac Flex-H₂O Injection Kit. The kit includes everything needed to pressure inject approximately 8 lineal feet of cracks:

- 2 Crack-Pac Flex-H₂O cartridge/nozzle sets
- 12 E-Z-Click™ injection ports
- 2 E-Z-Click™ injection fittings with 12" tubing
- 1 pint of paste-over epoxy (8 oz. of resin + 8 oz. of hardener)
- 4 disposable wood paste-over applicators
- 1 pair latex gloves

Crack-Pac® Flex-H₂O™ Cartridge System

Model No.	Capacity ounces (cubic inches)	Cartridge Type	Carton Quantity	Dispensing Tool(s)
CPFH09	9 (16.2)	single	12	CDT10 or Standard Caulking Tool
CPFH09KT	18 (32.4)	single	2 (kits)	

Crack-Pac® Flex-H₂O™ Bulk Packaging

Model No.	Description	Capacity	Dispensing Tool/Equipment
FH05*	Flex-H ₂ O Resin	5 Gallons	Bulk Pump/Meter Mix Machine or Grease Gun
	Flex-H ₂ O Catalyst	16 Ounces	

*For standard reaction time, use a 30:1 resin: catalyst ratio. For a faster reaction time, add more catalyst, for a slower reaction time, use less.

ACCESSORIES: See pages 109 for information on mixing nozzles, parts, fittings and paste over material.

CRACK-PAC® FLEX-H₂O™ Polyurethane Crack Sealer



Wear gloves when handling the Crack-Pac® Flex-H₂O™ cartridge. Eye protection is recommended.

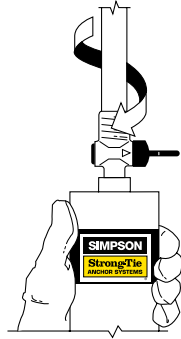
CARTRIDGE PREPARATION AND MIXING INSTRUCTIONS:

Usage tip: After the product is mixed, a small volume of air will remain in the cartridge. Keeping this cushion of air at the back of the cartridge during dispensing will allow the dispensing of the final bit of epoxy from the nozzle once the cartridge is empty.

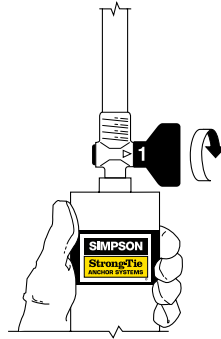
Crack Injection



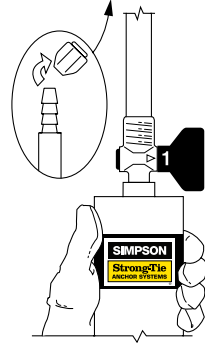
1. Remove the red cap from the top of the cartridge.



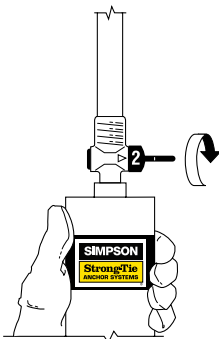
2. Screw the threaded portion of the nozzle into the cartridge.



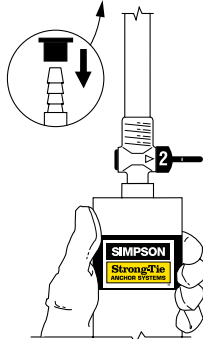
3. Turn the black valve so that the #1 on the valve aligns with the arrow on the neck of the nozzle.



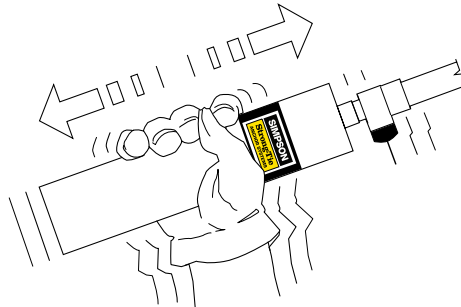
4. Twist off the tip of the nozzle and allow the material contained within to drain into the cartridge.



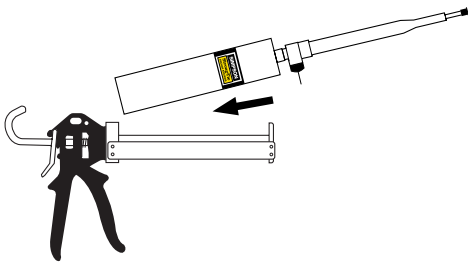
5. Turn the black valve to the #2 position.



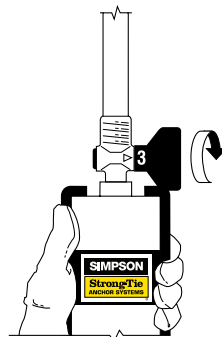
6. Attach the black cap securely to the end of the nozzle.



7. Shake the cartridge at a rate of 2 shakes per second for 2 minutes or until the mixed material is a uniform color.



8. Insert the cartridge into the caulking tool.



9. Turn the black valve to the #3 position and remove the black cap from the end of the nozzle. Attach the E-Z-Click™ injection fitting to the end of the nozzle for injection.



Warning: Do not open cartridge until ready to use. The polyurethane will react to atmospheric moisture if left exposed. To prevent pressure build up possibly resulting in cartridge breach and injury, remove cartridge from the caulking tool when not dispensing.



Important: These 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.

Application

Polyurethane injection is an effective and economical method of sealing cracks in concrete and solid masonry elements. Crack-Pac® Flex-H₂O™ crack sealer is suitable for sealing dry, wet, seeping and mildly leaking cracks in horizontal and vertical concrete and solid masonry elements ranging from 1/32" - 1/4".

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.

NOTE: Multiple applications may be necessary to fill all voids.

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 contaminants 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, 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 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 route out the surface of the crack in a "V" shape using a grinder in order to get past the surface contamination.

Dry or Wet Crack Application - Sealing of the crack and attachment of E-Z-Click™ flush mount injection ports (Model EIP-EZ or EIP-EZA)

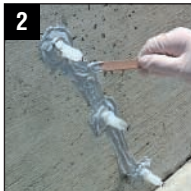
1. To adhere the port to the concrete, apply a small amount of epoxy around the bottom of the port base. Place the port at one end of the crack and repeat until the entire crack is ported. As a rule of thumb, injection ports should be placed 8" apart along the length of the crack. Important: Do not allow epoxy to block the port or the crack under it, this is where adhesive must enter the crack.



2. Using a putty knife or other paste-over tool, generously work epoxy along the entire length of the crack. 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 1/8" thick and 1" wide. Insufficient paste-over will result in leaks under the pressure of injection. Allow the paste-over to cure before beginning injection.



3. For Dry Cracks- Crack-Pac Flex-H2O reacts with water and needs moisture present to cure. Therefore, if the crack to be sealed is completely dry, water must be introduced into it. Once ports are in place and the crack surface is pasted over, use a syringe or spray bottle to introduce approximately 1 ounce of water into each port.



Note: CIP and CIP-F and ETR epoxies are a fast cure, manually mixed 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 1/8") on the mixing surface will slow curing by allowing the heat from the reaction to dissipate.

Seeping Crack Application - Sealing of the crack and attachment of E-Z-Click flush mount injection ports (Model EIP-EZ)

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 molded). 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 3/16" thick and 1" 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.

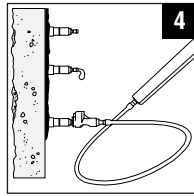
Mildly Leaking Crack Application - Sealing of the crack and attachment of E-Z-Click™ drill-in injection ports (Model EIPX-EZ)

1. Using a hammer drill or roto-hammer, drill 5/8" holes 3/4" deep at each end of the crack and along the crack approximately 8" apart.
2. Using the E-Z-Click Drilled-In port (model EIPX-EZ), gently pound 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 molded).
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 3/16" thick and 1" 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.

CRACK-PAC® FLEX-H₂O™ Injection Guide

Injection Procedure for Crack-Pac® Flex-H₂O™ crack sealer

1. Follow cartridge preparation instructions on the cartridge label. Verify that the material flowing from the nozzle is a uniform green color.
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 metal 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.



Injection Tips

- For narrow cracks it may be necessary to increase the pressure gradually until the polyurethane begins to flow. It may also be necessary to wait a few minutes for the material to fill the crack and travel to the next port.
- If desired, once the polyurethane has cured, remove the injection ports and paste-over epoxy or hydraulic cement. The paste-over can be removed with a chisel, scraper or grinder.

Troubleshooting

Polyurethane is flowing into the crack, but not showing up at the next port.

This can indicate that either the crack expands and/or branches off under the surface of the concrete. Continue to inject and fill these voids.

Back pressure is preventing polyurethane from flowing.

This can indicate several situations:

- The crack is not continuous and the portion being injected is full.
- The port is not aligned over the crack properly.
- The crack is blocked by debris.

Polyurethane is leaking from the pasted-over crack or around injection ports.

Stop injecting. If using a fast cure paste-over material (ETR or CIP), wipe off the leaking injection epoxy with a cotton cloth and re-apply the paste over material. Wait a approximately 10–15 minutes to allow the paste-over to begin to harden. If the leak is large (e.g. the port broke off of the concrete surface) it is a good idea to wait approximately 30 minutes, or longer as necessary, to allow the paste-over to cure more completely. Check to see that the paste-over is hard before reinjecting or the paste-over or ports may leak.

Another option for small leaks is to clean off the injection adhesive and use paraffin or crayon to seal the holes.

More polyurethane is being used than estimated.

This may indicate that the crack either expands or branches off below the surface. Continue to inject and fill these voids.

Less polyurethane is being used than estimated.

This may indicate that the crack is shallower than originally thought, or the polyurethane is not penetrating the crack sufficiently before moving to the next port.