Concrete Crack Polyurethane Resin Injection Repair Guide

The information for waterproofing cracks in poured concrete has been compiled from several professional sources as recommended guidelines. Due to the variability in poured wall conditions, the selection of the proper material for the intended application and installation is the sole responsibility of the applicator.

REPAIR KIT CONTENTS

The Mar-flex kit includes all of the materials and accessories for low-pressure injection and repair of approximately 6-10 linear feet of cracks.

- 2 jars Mar-flex Crack Seal and Port Adhesive (1 jar 8 oz. Part A, 1 jar 8 oz. Part B)
- 2 wooden sticks
- 15 surface ports and caps
- 2 cartridges Mar-flex Injection Polyurethane Resin
- 2 3/8x24 mixing nozzles (for use with Injection Resin)
- 1 injection hose assembly with white plastic shut-off valve
- Safety glasses
- 2 pair nitrile gloves
- 1 plastic trowel
- 1 wire brush
- 1 drop cloth
- Complete instructions & instructional CD
- Product Data Sheets & MSDS

TOOLS REQUIRED

- Standard caulking gun
- Paper plate or scrap cardboard for mixing Surface Seal and Port Adhesive.
- Clean used plastic bottle (soap, ketchup) filled 1-2 cups of water

CRACK PREPARATION

Place drop cloth on the floor in front of work area. Clean the surface surrounding the crack using the wire brush. Remove loose or flaking concrete, efflorescence, paint or coating to approximately 1-2 inches on either side of the crack. Wipe the surface clean of dust after brushing. The surface must be dry for proper installation of injection ports and surface seal. For best results if the surface is wet, wait a few days until dry or if necessary, use a hot air gun, hair drier, or oil free compressed air to dry.

SURFACE PORT PLACEMENT

Ports are placed apart the thickness of the concrete wall (usually about 8") centered over the crack, starting at a point closest to the floor (vertical cracks). Mark port locations on the wall.

SURFACE PORT ATTACHMENT AND SEALING OF THE CRACK

1. Prepare Crack Seal & Port Adhesive using **separate** wooden sticks to remove equal amounts of Parts A and Part B, about 1/3 of each jar. Sticks should not be shared between containers to prevent remaining material from hardening. Place equal amounts of adhesive on a scrap piece of cardboard and mix with the trowel (repeat this step each time you run out of mixed adhesive). Remove the cap from the surface port then apply a small amount of mixed adhesive to the bottom of the port base. Place the first port starting at the bottom of the crack and repeat every 8" until the entire crack is ported. *NOTE! Do not allow epoxy to block the bottom of the port opening or the crack under It.*
2. The next step is to work the mixed surface seal epoxy paste along the entire length of the crack using the plastic trowel. The recommended epoxy paste application is 1/8" thick and 2" wide. Make sure to mound sufficient extra epoxy around the base of the ports. Expect to use 16 ounces, the total amount provided, for an 8-foot crack. Do not work the epoxy "into" the crack, just paste over the surface.
3. Let the surface seal and port adhesive cure before beginning injection, about 2-4 hours until fingernail hard. (Not recommended to wait overnight.)

INJECTION PROCEDURE

1. Flush the crack with 1-2 cups of water poured into the top port using plastic bottle or by filling the hose assembly several times. Water should come out of every port below the top port indicating that the crack is contiguous and that ports are not blocked by epoxy. Water is also necessary to flush the crack and aid in resin activation.
2. Place the Mar-flex Injection Resin cartridge in your caulking gun. Remove the plastic nut and pull to remove the plastic seal. Place the 3/8 X 24 mixing nozzle over the end of the cartridge attaching with the plastic nut.
3. Attach the flexible hose assembly (wide end) over the mixer tip by pushing firmly.
4. For vertical cracks attach the small end of the hose assembly into the lowest port by pressing firmly. For horizontal cracks begin at either end if one is not lower than the other.
5. Begin injecting slowly through the port with low pressure (allowing the resin time to flow into and fill all small fissures) until the resin begins to flow from the port above it. Use the white plastic pinch valve on the hose assembly to turn off resin flow, plugging the first port with the cap provided, and move up to the next port. Repeat this procedure until the entire crack has been injected with resin. *Note! The secret to effective crack injection is patient low-pressure introduction of the resin. Small or hairline cracks will require 3 - 4 minutes at each port for proper filling to take place.*

   The ports can be removed by striking with a hammer after foaming is complete in about 3 or 4 hours. The surface seal epoxy is paintable if desired. Place all disposable items on drop cloth which is a garbage bag and dispose of properly.

PRODUCT DATA SHEET

Mar-flex
6866 Chrisman Lane, Middletown, OH 45042
www.Mar-flex.com 1-800-498-1411

Mar-flex Injection Foam

GENERAL DESCRIPTION

Mar-flex Injection Foam is a hydrophobic polyurethane liquid which is designed to stop water infiltration or exfiltration. When Mar-flex Injection Foam meets water, it reacts with it and then repels it forming a closed cell foam barrier which will not allow water to pass through it. It adheres tenaciously to practically all substrates, wet or dry.

Mar-flex Injection Foam is typically used to stop water leaks coming through cracked or honeycombed concrete, voids between wall and floor, wall and ceilings, expansion joints, cold joints and pipe intrusions. It is used to repair concrete walls, ceilings and floors that are leaking.

Mar-flex Injection Foam is designed to be used when greater than 20% movement (expansion and contraction) of the substrate is anticipated.

TEST TYPE	RESULTS	TEST METHOD
DENSITY (CORE)	FREE RISE 2.02 LBS/FT	ASTM D-1622
LOW TEMPERATURE		ASTM D-2126
AGING (-20f) (SHRINKAGE)	<0%	1 DAY
(SHRINKAGE)	<0%	7 DAYS
WATER ABSORPTION		
(VOLUME CONFINED)	<1%	ASTM D-2127
SHEAR STRENGTH	34PSI	ASTM C-273
TENSILE STRENGTH	31PSI	ASTM D-1623
ELONGATION	45%	ASTMD-1623
VISCOSITY	100-200 CPS	
% SOLID	100	
COLOR	AMBER	
TDI CONTENT	0%	

APPLICATION

Package: Mar-flex Injection Foam is packaged in a unique split cartridge consisting of 4 ounces of Part A and 4 ounces of Part B. The use of cartridges is suitable for low pressure injection with manual tools.

Quantity to Use: It is difficult to determine the amount of material to adequately seal a given crack. Experience in home foundation cracks (8'long with a wall thickness of 8-10") suggest the usage of 10-16 ounces of Mar-flex Injection Foam per 8'crack. Thus, while Mar-flex Injection Foam can theoretically foam to 20 times its volume, more typical is 2-3 times its unfoamed volume for small cracks (1/32 - 1/4") as often found in foundation cracks.

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Mar-flex Crack Seal and Port Adhesive

GENERAL DESCRIPTION

Mar-flex Crack Seal and Port Adhesive 1:1 is a high modulus epoxy gel designed for surface sealing of cracks prior to injection and for attaching surface ports. It can also be used for bonding miscellaneous materials to concrete.

AREAS OF APPLICATION

As with any epoxy adhesive, surface preparation is critical. Concrete surfaces should be cleaned by wire brushing or other mechanical means. All loose or unsound material must be removed. Surfaces should be dry and dust free to insure a superior bond. Application onto wet surfaces is not recommended.

CLEAN UP

Use M.E.K. Xylene, or any other solvent. Clean equipment immediately after use.

SAFETY PRECAUTIONS

This product can cause skin irritation. Always wear protective clothing. Wash contaminated area with soap and water never solvent. In case of eye contact, flush with water for 15 minutes; immediately see a physician.

TECHNICAL DATA

PROPERTIES	PART A	PART B	MIXED
Solids by Volume	100%	100%	_____
Color	White	Black	Grey
Shelf Life	2 year	2 year	_____
Weight by Gallon	9.9 - 10.1 lbs	9.9-10.1 lbs	9.9 - 10.1 lbs
Mix Ratio (Vol.)	_____	_____	1:1
Pot Life: (3 oz)	_____	_____	10-20 minutes
Gel Time (5 mil)	_____	_____	1- 2 hours
Final Cure	_____	_____	1 - 3 days
Viscosity	_____	_____	Non sag gel
Hardness (Shore)	_____	_____	80-D
Ultimate Pull Out Strength	_____	_____	18,000 lbs (Concrete Failure)

PHYSICAL PROPERTIES

Tensile Strength,	ASTM D - 638	6,000 psi
Tensile Elongation	ASTM D - 638	3-4%
Compressive Strength	ASTM D - 695	13,500 psi
Bond Strength	ASTM C - 321	2,400 psi
Flexural Strength	ASTM D -790	8,000 psi
Deflection temp	ASTM D - 648	190°F

Warranty

Recommendations concerning the performance or use of this product are based upon independent test reports believed to be reliable. If the product is proven to be defective, at the option of the Manufacturer, it will be either replaced or the purchase priced refunded. The Manufacturer will not be liable in excess of the purchase price. The user will be responsible for deciding if the product is suitable for his application and will assume all risk associated with the use of the product. This warranty is in lieu of any other warranty, expressed or implied, including but not limited to an implied warranty of merchantability or an implied warranty of fitness for a particular use.