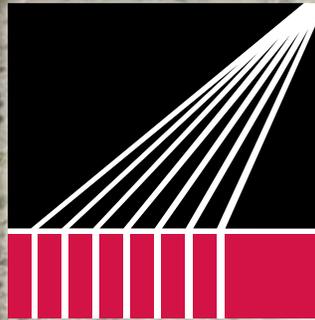


NEW 2019 GUIDE



METZGER/McGUIRE

GUIDE TO BASIC FLOOR REPAIRS

**Basic Repair Guidelines for Common Floor Defects
Including RANDOM CRACKS, SPALLED JOINTS,
GOUGES, JOINT FILLER SEPARATION AND MORE...**



A Note about Metzger/McGuire Floor Joint Protection Systems

For nearly 50 years, Metzger/McGuire has been the industry leader in developing joint protection systems for trafficked concrete floors. Our Heavy Duty Semi-Rigid Epoxy Joint Filler, MM-80, was the industry's first semi-rigid epoxy joint filler and set the standards by which all joint fillers are evaluated today.

Prior to the development of semi-rigid filler concept, the widely accepted joint treatment practice was to "seal" joints with an elastomeric sealant such as a polyurethane. Elastomeric sealants were well suited for preventing the intrusion of moisture and dirt into the joint cavity, but lacked sufficient rigidity to protect the joint edge itself. Over time some contractors and designers recognized the protection limitations of sealants and accordingly some moved instead towards the use of high strength epoxies to provide joint edge protection. Unfortunately, such products often brought their own potential issues, including brittleness and joint restraint.

As a caulking contractor struggling with these imperfect options, Steve Metzger developed a notion that what was really needed was a product that was both "firm and flexible." Steve retained a chemist and began field trials on some of his projects using multiple formulations with varying adhesive, tensile and hardness properties until he found a product with the ideal balance of these properties. The result was a product with a Shore Hardness of A 80 and accordingly he named it MM-80. For the next several years the product was tested and monitored in some of the most demanding floors in the country, showing excellent results. Based on this proven success, in the late 1970's the American Concrete Institute (ACI), the Portland Cement Association (PCA) and other industry organizations began recommending A 80+ semi-rigid fillers as the best known solution to prevent joint edge deterioration. These same standards remain in place today.

Since the creation of our MM-80 Semi-Rigid Joint Filler, many industry changes have occurred which have had a direct impact on semi-rigid fillers. Changes in the material handling industry - to smaller wheels and heavier loading - changes in floor construction techniques such as joint spacing and finishing practices, and changes in construction schedules, including fast track buildings and multi-use spaces, have all lead to the need for continual evolution and innovation in floor joint filler technology.

At Metzger/McGuire, we have always done our best to anticipate, monitor and evaluate change and to adjust our products or develop new ones to meet the industry's ever evolving needs. As a recognized industry leader with a singular focus on joint fillers and joint edge protection, we take our obligation to the industry seriously. Providing "industry standard" products is the foundation of our company. Pairing these products with unequalled technical support, field support and customer service is the only way we know how to do things. Satisfying the building owner's long term floor protection needs is critical to our ongoing success and to ensuring that we remain "Known by the Floors We Protect."

If allowed the opportunity to partner with you on your next concrete floor project, rest assured you can place your confidence and trust in the entire Metzger/McGuire team to do everything in our power to meet or exceed your expectations and to provide you with the best floor joint protection systems the industry has to offer.

Your Partner in Floor Protection,

Scott Metzger

4 CRITICAL STEPS TOWARDS ACHIEVING PERMANENT, DURABLE FLOOR REPAIRS

1. DETERMINE CAUSE(S) OF FLOOR DETERIORATION

Before you begin repairing floor defects, it's important to identify their underlying causes in order to determine the best long-term repair strategy.

Example: Joint spalling may be the result of an improper joint filler installation (i.e. low filler profile or poor joint cleaning prior to filling), the wrong joint filler (i.e. urethane that is too soft to support traffic), or no joint filler at all. These are material problems. Joint spalling could also result from differing slab elevations (slab curl) or rocking slab conditions (subgrade deficiencies or voids). These are structural problems that need to be corrected prior to performing standard joint repair.

2. SELECT APPROPRIATE FLOOR REPAIR MATERIAL(S)

It's important to choose the repair material(s) best suited to meet the requirements of the facility's operations. Considerations may include frequency of traffic, vehicle loading and types, building temperature, time allowed to perform repairs, defect width, etc.

Example: The repair material best suited for repairing a spalled joint may be heavy-duty, semi-rigid epoxy or polyurea or a structural epoxy mortar... depending upon the width of the spalled joint (wider exposures require more rigid products), the access time required (will an epoxy take too long to cure?), structural condition of the floor (are the joints still opening?), is the defect in a freezer/cooler (polyurea is likely best)...

3. PREPARE DEFECT FOR REPAIR MATERIAL

The key to achieving long-lasting repairs is making sure the edges of the defect are defined and the defect is cleaned properly prior to filling with repair material.

Failure to properly clean and prepare a floor defect is probably the #1 cause of ultimate failure. Even the best possible repair material will not function properly if it's placed into a poorly cleaned joint or crack, or if the repair material is "feather-edged" along the outside of the defect. The edges of joints, cracks, and surface spalls all should be at least 1/2" deep vertically, and clean and dry prior to filling, to ensure the long term durability and structural stability of any repair.

4. FINISHED REPAIR SHOULD BE FLUSH WITH FLOOR

The goal in any floor defect repair is to restore a smooth, continuous transition across the floor surface. To achieve a flush profile, repair materials should be placed slightly higher than the floor, then shaved or ground flush with the surface.

The finished profile of any repair should be "flush" with the floor's surface. Simply filling a defect "even" with material generally results in a finished profile that is concave or dished, as repair materials typically settle a bit during cure. Repair materials should always be placed slightly higher than the floor surface and be allowed to cure. Once cured, excess material can be shaved or ground flush with the surface.

(I) = INDUSTRIAL OR HEAVY DUTY APPLICATION
(D) = DECORATIVE OR RETAIL APPLICATION

JOINT FILLER SEPARATION

Minor to Severe

Difficulty Of Repair



Adhesive Separation

Separation less than 1/32" (.75mm) typically requires no correction.

Cohesive Separation

REPAIR MATERIAL OPTIONS

Semi-Rigid Epoxy or Polyurea Joint Filler

MM-80 (I)

MM-80P (I)

Rapid Access

Edge-Pro 90 (I)

Spal-Pro RS-88 (I)

Edge-Pro 80 (D)

Spal-Pro RS-65 (D)

Freezer/Cooler

Spal-Pro 2000 or RSF (I)

TOOLS & EQUIPMENT NEEDED

Preferred:

Joint clean-out saw with dustless shroud, Abrasive Blade, Diamond blade, Vacuum system, Razor scraper/heat (**MM-80/MM-80P**)

Minimal:

Right angle grinder, Nyalox wheel, Shop vacuum, Razor scraper/heat (**MM-80/MM-80P**)

OPTION 1 Partial Removal of Existing Filler

Before choosing this option, ensure that existing filler is well bonded structurally to one or both sides of the joint, and exhibits signs of being properly installed originally (i.e. flush with floor, proper depth, etc). If filler is not well bonded or original installation appears deficient, remove filler completely and re-apply with new material.



Step 1

Use joint cleaning saw or right angle grinder equipped with an abrasive or suitable diamond blade to remove existing joint filler to a nominal depth of 1/2" below surface. It's important that all filler residue remaining on joint walls be removed back to clean concrete.



Step 2

Vacuum joint clean.



(I) = Industrial (D) = Decorative

JOINT FILLER SEPARATION

Minor to Severe (Continued)

Difficulty Of Repair



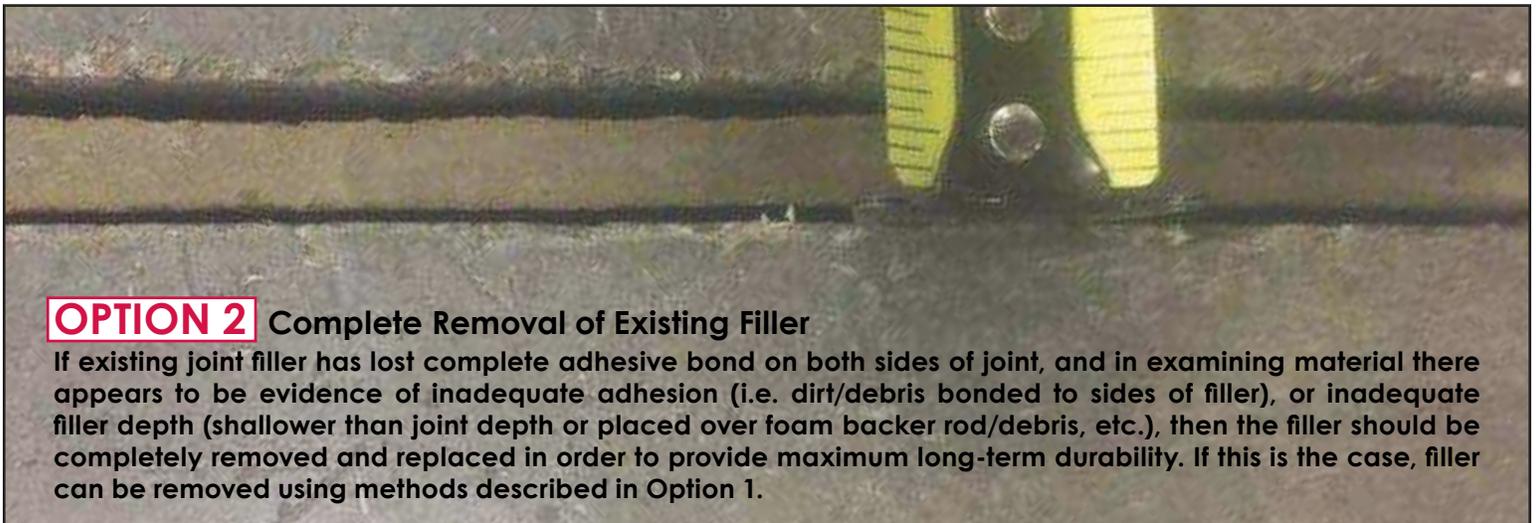
Step 3

Overfill joint with appropriate semi-rigid filler. Monitor carefully during initial material placement as filler may run through joint bottom and leave filler profile low when cured.



Step 4

Allow filler to cure, then razor flush with floor surface. (MM-80/MM-80P heat, then shave)



OPTION 2 Complete Removal of Existing Filler

If existing joint filler has lost complete adhesive bond on both sides of joint, and in examining material there appears to be evidence of inadequate adhesion (i.e. dirt/debris bonded to sides of filler), or inadequate filler depth (shallower than joint depth or placed over foam backer rod/debris, etc.), then the filler should be completely removed and replaced in order to provide maximum long-term durability. If this is the case, filler can be removed using methods described in Option 1.

(I) = Industrial (D) = Decorative

JOINT SPALLING, MINOR

Up to 1" Wide

Difficulty Of Repair



REPAIR MATERIAL OPTIONS

Semi-Rigid Epoxy or Polyurea Joint Filler

MM-80 (I)

MM-80P (I)

Rapid Access

Edge-Pro 90 (I)

Spal-Pro RS-88 (I)

Edge-Pro 80 (D)

Spal-Pro RS-65 (D)

Freezer/Cooler

Spal-Pro 2000 or RSF (I)

TOOLS & EQUIPMENT NEEDED

Preferred:

Joint clean-out saw with dustless shroud, Abrasive Blade, Diamond blade, Vacuum system, Razor scraper/heat (**MM-80/MM-80P**)

Minimal:

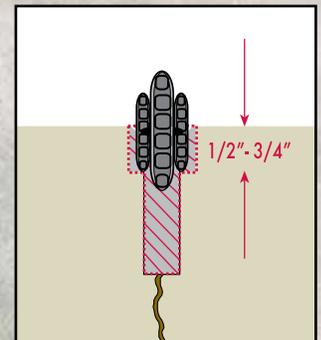
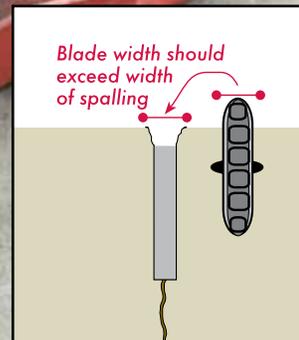
Right angle grinder, Nyalox wheel, Shop vacuum, Razor scraper/heat (**MM-80/MM-80P**)

OPTION 1 Semi Rigid Filler (Neat)

The final width of a spalled joint, including the spalls, will determine the best cleaning/re-sawing method required to recreate a proper joint for filling. If spalled joint is narrow, it may be possible to use a single diamond blade to cut a "new" joint to the same depth as the original joint (or 2" minimum).

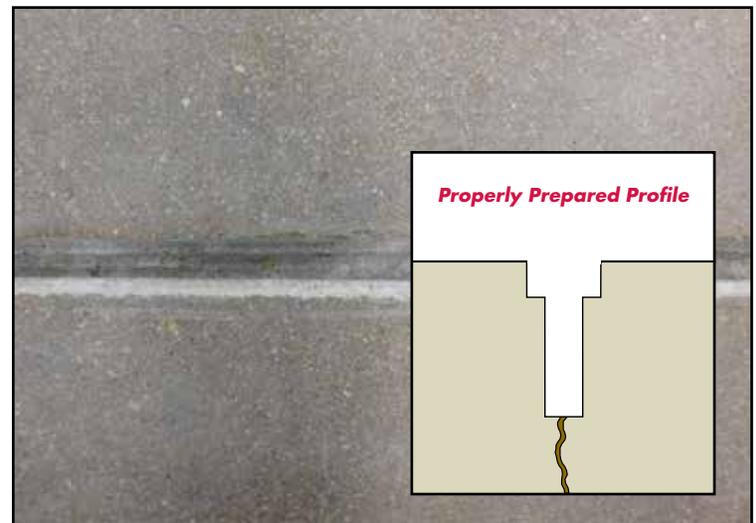
Step 1

If joint spalling is wider than a single blade width can achieve, consider the use of a series of blades to reach the proper width. If using multiple blades, the center blade should reach the depth of the original joint and the outer blades should achieve a cutting depth of 1/2" - 3/4", creating a "T" shape after cutting.



Step 2

Clean out any remaining debris or loose elements. Vacuum thoroughly joints should be dry.



(I) = Industrial (D) = Decorative

JOINT SPALLING, MINOR

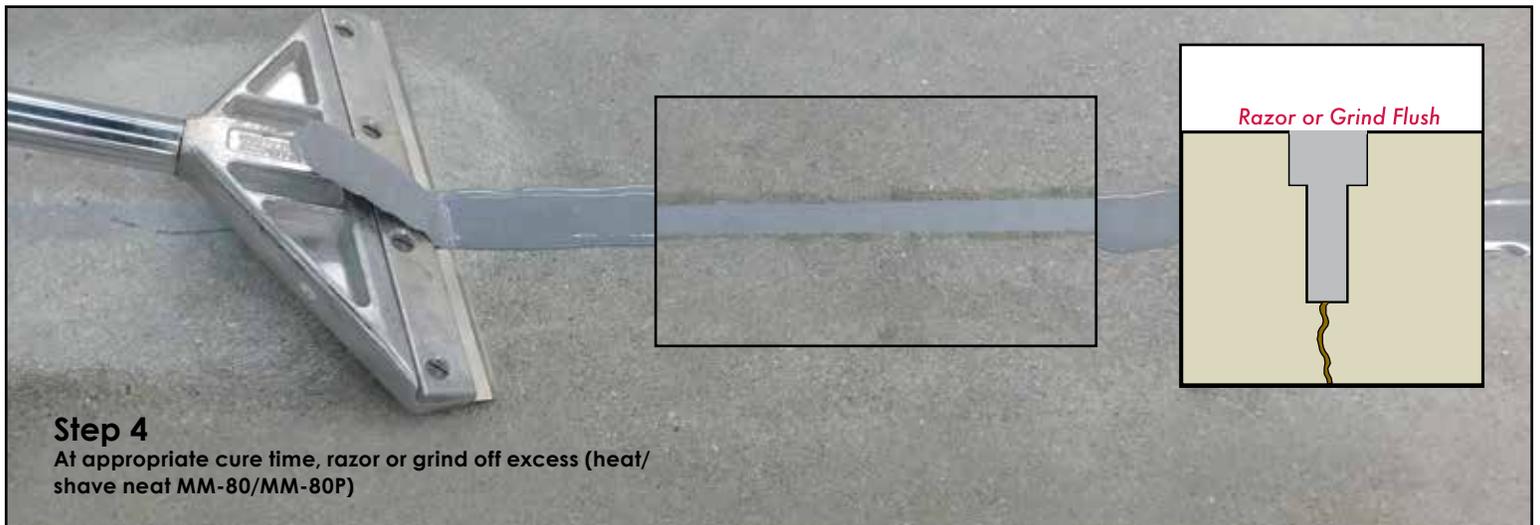
Up to 1" Wide (Continued)

Difficulty Of Repair



Step 3

Slightly overfill cleaned joint with semi rigid filler (several passes may be required) and allow to cure.



Step 4

At appropriate cure time, razor or grind off excess (heat/shave neat MM-80/MM-80P)



OPTION 2 (I) SAND MODIFIED MM-80/MM-80P

(Follow Steps 1 & 2 for joint preparation)

Step 3

If using MM-80/MM-80P and joint width exceeds 1/2", it is preferable to modify the MM-80/MM-80P with silica sand. Most common ratio is 1 part mixed MM-80/MM-80P to 1 part silica, by volume.

(I) = Industrial (D) = Decorative

JOINT SPALLING, MINOR

Up to 1" Wide (Continued)

Difficulty Of Repair



Step 4

After cure grind flush with floor surface. Grinding pad may be a diamond cup wheel, or similar silicon carbide disc.



Step 5

Re-seal/densify slab surface if necessary.



Re-sealed/Densified

(I) = Industrial (D) = Decorative

JOINT SPALLING, MAJOR

Greater than 1"

Difficulty Of Repair



REPAIR MATERIAL OPTIONS

Structural Epoxy Mortar
Armor-Hard (I)
Armor-Hard Extreme (I)
Armor-Hard Primer (I)

Sand Modified Semi Rigid Epoxy
MM-80/MM-80P (I)

Freezer/Cooler
Spal-Pro 2000 or RSF (I)

TOOLS & EQUIPMENT NEEDED

Preferred:

Stand up walk behind dry cut saw with dustless shroud, Diamond blades, Vacuum system, Razor scraper/heat (**MM-80/MM-80P**), Pneumatic/electric chipper, Diamond cup wheel or similar

Minimal:

Right angle grinder with dustless shroud, Nyalox wheel, Shop vacuum, Razor scraper/heat (**MM-80/MM-80P**), hammer/chisel, Diamond cup wheel or similar

OPTION 1

Structural Epoxy Mortar

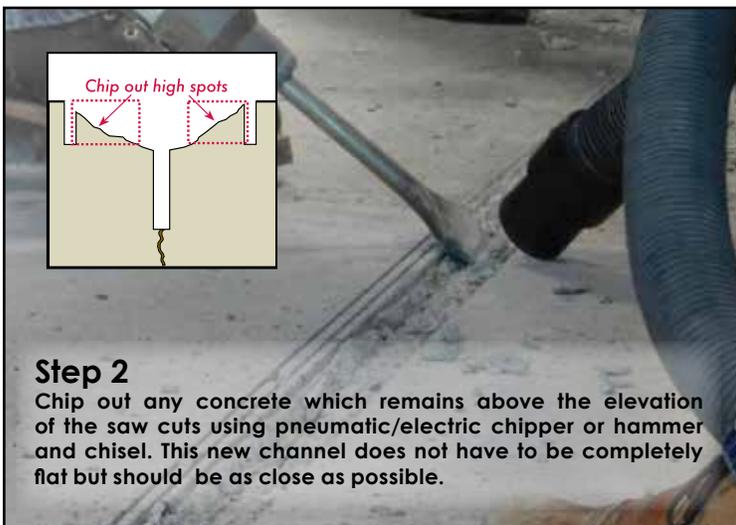
OPTION 2

Sand Modified MM-80/MM-80P



Step 1

Create a vertical edge beyond the spalled edges on both sides using a dry cut saw or right angle grinder with diamond blade. The depth of these cuts should be 1/2" minimum (3/4" preferable).



Step 2

Chip out any concrete which remains above the elevation of the saw cuts using pneumatic/electric chipper or hammer and chisel. This new channel does not have to be completely flat but should be as close as possible.



Step 3

Vacuum new joint channel clean. Backfill original joint opening with silica sand up to the base of the newly formed channel. (Skip silica sand step if doing Option 2)

(I) = Industrial (D) = Decorative

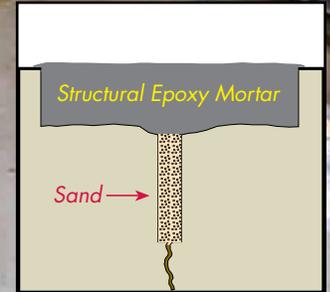
JOINT SPALLING, MAJOR

Greater than 1" (Continued)

Difficulty Of Repair

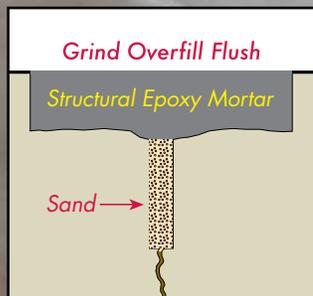


OPTION 1 Structural Epoxy Mortar



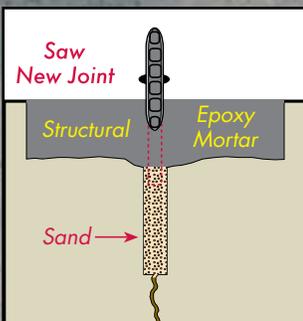
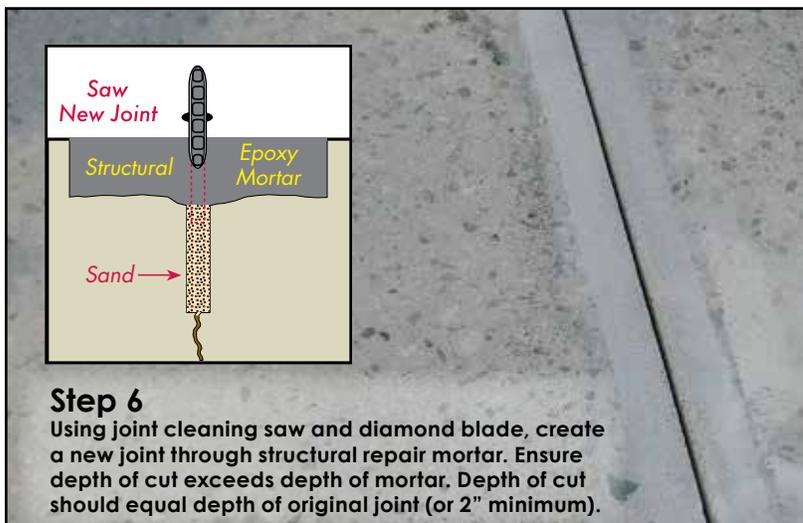
Step 4

Trowel *Armor-Hard*/*Armor-Hard Extreme* mortar smooth and only slightly higher than edges of the slab panels. Pending how dry of mix is used, priming repair area first with *Armor-Hard Primer* may be required.



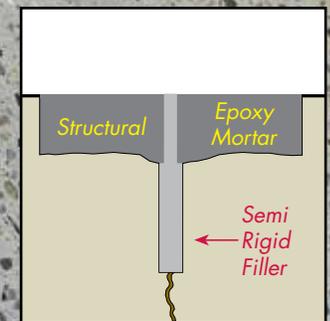
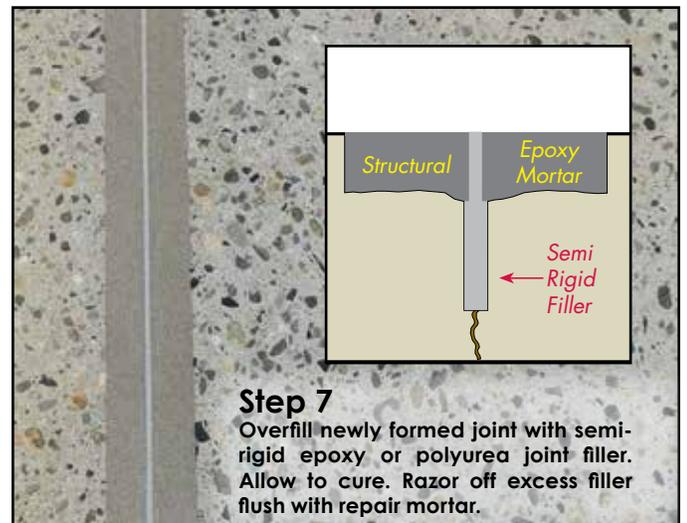
Step 5

Allow mortar to cure. Grind off overfill until repair surface and edges are flush with both slab panels.



Step 6

Using joint cleaning saw and diamond blade, create a new joint through structural repair mortar. Ensure depth of cut exceeds depth of mortar. Depth of cut should equal depth of original joint (or 2" minimum).



Step 7

Overfill newly formed joint with semi-rigid epoxy or polyurea joint filler. Allow to cure. Razor off excess filler flush with repair mortar.

(I) = Industrial (D) = Decorative

JOINT SPALLING, MAJOR

Greater than 1" (Continued)

Difficulty Of Repair

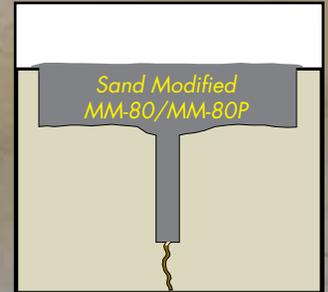


OPTION 2 Sand Modified MM-80/MM-80P

(Follow Steps 1-3 for joint preparation)

Step 4

Pour sand modified MM-80/MM-80P into prepared channel slightly higher than panel edges. Most common ratio is 1 part mixed MM-80/MM-80P to 1 part silica, by volume.



Step 5

Allow semi-rigid mortar to cure.

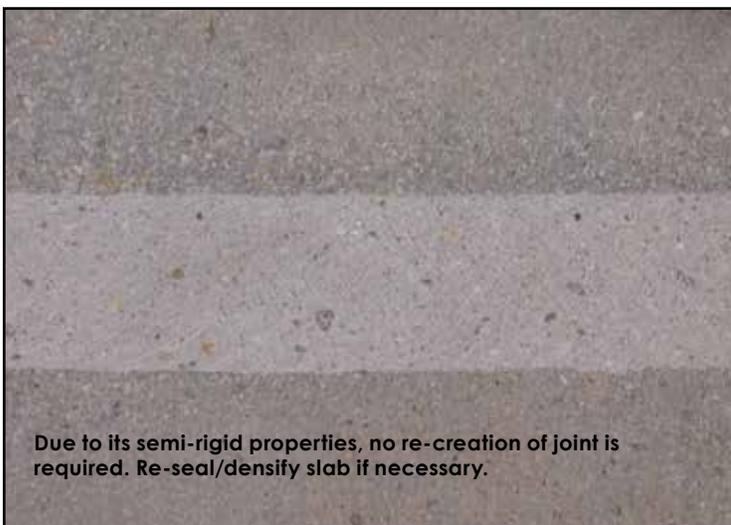


Grind Overfill Flush

Sand Modified MM-80/MM-80P

Step 6

After cure grind flush with floor surface. Grinding pad may be a diamond cup wheel, or similar silicon carbide disc.



Due to its semi-rigid properties, no re-creation of joint is required. Re-seal/densify slab if necessary.



Re-sealed/Densified

(I) = Industrial (D) = Decorative

FLOOR JOINT FILLERS FOR CONCRETE FLOORS

For more than 45 years, Metzger/McGuire has been the world leader in concrete floor joint protection systems. From MM-80, the industry's first and widely acknowledged industry standard heavy-duty epoxy joint filler, to the cutting edge Spal-Pro and Edge-Pro lines of rapid-setting polyurea joint fillers, you can rely on Metzger/McGuire joint fillers to provide superior joint edge protection and to enhance the long term durability of your industrial or retail floor.

PRODUCT													
	NEW CONSTRUCTION		NEW CONSTRUCTION		NEW CONSTR./REPAIR		NEW CONSTR./REPAIR			NEW CONSTR./REPAIR		NEW CONSTR./REPAIR	
APPLICATION RANGE	Ambient	Cooler	Ambient	Cooler	Ambient	Cooler	Ambient	Cooler	Freezer	Ambient		Ambient	Cooler
PRODUCT DESCRIPTION	Rapid-Set Semi-Rigid Polyurea Joint Sealant		Moderate-Duty Semi-Rigid Polyurea Joint Filler		Rapid-Set Semi-Rigid Polyurea Joint Filler		Low-Temp Semi-Rigid Polyurea Joint Filler			Heavy-Duty Semi-Rigid Epoxy Joint Filler		Heavy-Duty Semi-Rigid Polyurea Joint Filler	
TYPICAL USES	Seal control and construction joints in retail and commercial concrete floors. Repair active cracks exceeding 1/8" in width.		Fill and protect joints in exposed concrete retail floors and in moderate-duty warehouse concrete floors.		Fill or repair control and construction joints in industrial and retail concrete floors. Repair active cracks exceeding 1/8" in width.		Fill and protect joints in freezer/cooler or ambient concrete floors subject to hard wheels and heavy loads.			Fill and protect joints in heavy duty industrial concrete floors subjected to frequent and demanding traffic. Repair joint deterioration.		Fill and protect joints in heavy duty industrial concrete floors subjected to frequent and demanding traffic. Repair joint deterioration.	
SHORE HARDNESS	A 64-69		A 80-81		A 86-90		A 88-94			A 90-95		A 90-92	
TENSILE STRENGTH	393 psi		505 psi		970 psi		930 psi			1200 psi		920 psi	
TENSILE ELONGATION	162%		152%		180%		170%			80-90%		238%	
ADHESION TO CONCRETE	350-400 psi		350-400 psi		350-400 psi		350-400 psi			300-350 psi		300-350 psi	
APPLICATION METHOD	Dual Pump or Cartridge		Dual Pump or Cartridge		Dual Pump or Cartridge		Dual Pump or Cartridge			Dual Pump or Hand Mix		Dual Pump or Cartridge	
POT LIFE	NA-No Hand Mix		NA-No Hand Mix		NA-No Hand Mix		NA-No Hand Mix			10-15 minutes		NA-No Hand Mix	
TACK FREE AT 70°F	10-15 minutes		3 minutes		5 minutes		30 minutes (at 32° F)			5 hours		10-15 minutes	
FULL TRAFFIC READY	30-60 minutes		1 hour		1 hour		3-5 hours (at 32° F)			8-12 hours		45 minutes	
COLORFAST	Yes		Yes		Yes		No			No		Yes	
MIX RATIO	1:1 by Volume		1:1 by Volume		1:1 by Volume		1:1 by Volume			1:1 by Volume		1:1 by Volume	
AVAILABLE PACKAGING	600 ml dual cartridge 10 gallon unit		600 ml dual cartridge 10 gallon unit		600 ml dual cartridge 10 gallon unit		1500 ml dual cartridge 10 gallon unit			1 gallon unit (MM-80) 10 gallon unit		600 ml dual cartridge 10 gallon unit	

When it comes to concrete floor joint fillers and repair products, "standard gray" is no longer the only color standard...



RAPID SET CONCRETE FLOOR REPAIR PRODUCTS

No one offers more innovative and durable repair solutions for industrial and polished concrete floors than Metzger/McGuire. Our rapid-setting repair products offer unequalled long-term durability with fast access times, thus ensuring minimal interruption to facility operations. All Metzger/McGuire products are 100% solids with no/minimal odor for safe and hassle free installation in all types of facilities.

																				
REPAIR			REPAIR			REPAIR			REPAIR			REPAIR			REPAIR					
Ambient	Cooler	Freezer	Ambient			Ambient	Cooler	Ambient	Cooler	Ambient	Cooler	Ambient	Ambient	Cooler						
Rapid-Set Semi-Rigid Polyurea Joint Polymer			Rapid-Set Surface Restoration Polymer			Fast-Set Low Viscosity Surface Repair Product			Fast-Set Low Viscosity Structural Repair Product			Fast-Set Extended Pot Life Structural Repair Product			Early-Set Structural Epoxy Mortar			Quick-Set Multi-Temp Structural Epoxy Mortar		
Repair control/construction joints and cracks in ambient or freezer/cooler concrete floors.			Fill/repair concrete floor surface imperfections such as air holes, popouts, surface pitting, scratches and gouges, etc.			Structurally repair concrete floor surface imperfections such as air holes, popouts, surface pitting, scratches and gouges, etc.			Structurally repair concrete surface defects, including popouts, gouges, nail holes, etc. Repair static cracks less than 1/8" wide.			Repair surface defects in industrial or stained/polished concrete floors including surface spalls/popouts, surface pitting, bolt-holes, random cracks and more.			Early-set system designed specifically for the repair of industrial concrete floors. Rebuild joint edges or repair large surface defects.			Rebuild/repair control and construction joints in industrial and retail concrete floors. Repair large surface defects.		
D 95-100			D 70-75			D 70-75			D 70-75			D 75-80			D 86+			D 92		
2850 psi			4184 psi			5100 psi			5500 psi			4300 psi			1400 psi			2000 psi		
Not Tested			2.8%			7-9%			6-8%			14-18%			NA			NA		
350 psi			Concrete Fails			Concrete Fails			Concrete Fails			Concrete Fails			Concrete Fails			Concrete Fails		
Dual Pump or Cartridge			Hand Mix			Cartridge			Cartridge			Hand Mix			Hand Mix			Hand Mix		
NA-No Hand Mix			5 minutes			1-1/2 minutes			NA-No Hand Mix			3/2-4 minutes			30-40 minutes			12-15 minutes		
3-5 minutes			20-30 minutes			15 minutes			5-8 minutes			5-8 minutes			3-4 hours			1 hour		
30 minutes			1 hour			45 minutes			15-30 minutes			60-120 minutes			4-8 hours			2-4 hours		
No			Yes			Yes			Yes			Yes			No			No		
2:1 by Volume			1:1 by Volume			1:1 by Volume			1:1 by Volume			1:1 by Volume			4:1 by Volume			5:1 by Volume		
450 & 900 ml dual cartridge 15 gallon unit			2 gallon unit 10 gallon unit			1500 ml dual cartridge			600 ml dual cartridge 250 ml universal cartridge			2 gallon unit 10 gallon unit			540 cubic inch kit (2.3 gallons)			300 cubic inch kit (1.3 gallons) Liquids only: 1 gallon unit and 30 gallon unit		

With the increased use of integral colors, stains and polishing on concrete floors, concrete has gone from being a simple, utilitarian gray work surface to a canvas of creativity. Exposed, decorative concrete is rapidly replacing traditional floor coverings as a cost-effective and earth friendly alternative work and showroom surface. Today's floors demand the availability of joint fillers and repair products in a range of colors to both protect and enhance the floor, while offering cost-effective and durable solutions. Metzger/McGuire's ColorFast line is the perfect solution when aesthetics are just as important as durability and longevity.

RANDOM CRACKS

1/8" Width or Less

Difficulty Of Repair



REPAIR MATERIAL OPTIONS

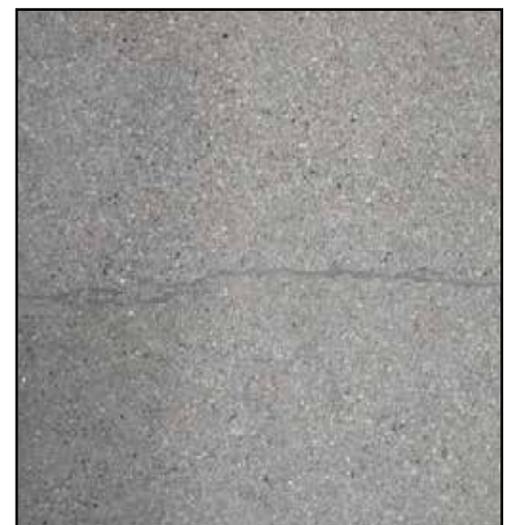
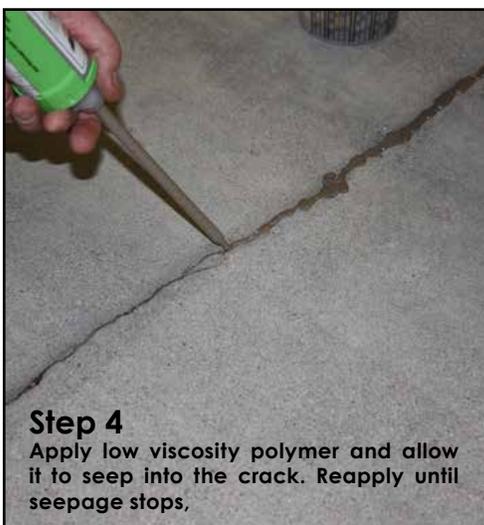
Low Viscosity Structural Repair Polymer
Rapid Refloor (I, D)
Rapid Refloor XP (I, D)
SRG (D)
Freezer/Cooler
Rapid Refloor (I, D)

TOOLS & EQUIPMENT NEEDED

Preferred:
Drill with Nyalox wheel, Medium grit grinding pad, Vacuum

Minimal:
Wire Brush, Vacuum

If a crack is approximately 1/8" wide or less, we recommend not to rout the crack wider.



(I) = Industrial (D) = Decorative

RANDOM CRACKS

1/8 - 1" Wide

Difficulty Of Repair



REPAIR MATERIAL OPTIONS

Semi-Rigid Epoxy or Polyurea Filler
MM-80/MM-80P (I)
(Neat or Sand Modified)
Spal-Pro 2000 (I)
Edge-Pro 90 (I)
RS-88 (I/D)
EP-80 (D)
RS-65 (D)

Freezer/Cooler
Spal-Pro 2000 or RSF (I)

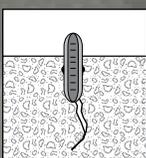
TOOLS & EQUIPMENT NEEDED

Preferred:
Right angle grinder, with dustless shroud,
Crack chasing saw, Diamond blades "U" or
"V" shaped, Vacuum system, Razor scraper /
heat (**MM-80/MM-80P**)

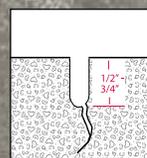
Minimal:
Right angle grinder, Diamond blades "U" or
"V" shaped, shop vacuum, Razor scraper /
heat (**MM-80/MM-80P**)



Step 1
Use a right angle grinder with a diamond "U" or "V" blade to rout out crack to a depth of 1/2" minimum, (3/4" preferred) creating a vertical edge. Be sure that remaining concrete along edge is structurally sound.



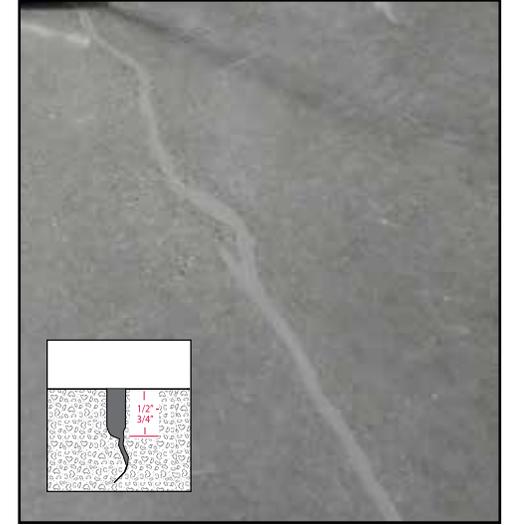
Step 2
Clean out any remaining debris or loose elements. Vacuum thoroughly.



Step 3
Apply joint filler and allow to seep into the crack. Reapply until seepage stops.



Step 4
Allow to cure. Razor off excess. (If using neat MM-80/MM-80P, apply heat prior to shaving). Grind flush if using sand modified MM-80/MM-80P.



(I) = Industrial (D) = Decorative

SURFACE SPALLS/DEFECTS

Less than 6" Unmodified

Difficulty Of Repair



REPAIR MATERIAL OPTIONS

Low Viscosity Structural Repair Polymer (Neat)
Rapid Refloor (I, D)
Rapid Refloor XP (D)
SRG (D)

Freezer/Cooler
Rapid Refloor (I, D)

TOOLS & EQUIPMENT NEEDED

Preferred:

Drill with Nyalox or soft wire wheel, Chipping hammer/hammer & chisel, Medium grit grinding pad, Vacuum

Minimal:

Wire brush, Vacuum, Medium grit grinding pad

Note: These repairs do not need to be "squared up" (such as structural epoxy/mortar repair) These products are designed to adhere in a "feathered edge" scenario.



Step 1

Remove any unsound or loose concrete. Run drill with Nyalox or soft wire wheel over defects twice (in opposite directions). If bolt is present pound/cut down to allow 1/2" material cover.



Step 2

Clean out any remaining debris or loose elements. Vacuum thoroughly. Repair surface must be dry.



Step 3

Slightly overfill defect with repair polymer material and allow to cure.



Step 4

Grind off overfill flush to floor surface with Norton Rapid strip pad or similar medium grit grinding pad.



(I) = Industrial (D) = Decorative

SURFACE SPALLS/DEFECTS

Less than 6" Modified



Difficulty Of Repair



REPAIR MATERIAL OPTIONS

Low Viscosity Structural

Repair Polymer

Rapid Refloor (I, D)

Rapid Refloor Pit Grout (I, D)

Rapid Refloor XP (D)

SRG (D)

TOOLS & EQUIPMENT NEEDED

Preferred:

Drill with Nyalox or soft wire wheel, Chipping hammer/hammer & chisel, Vacuum, Diamond cup wheel or similar

Minimal:

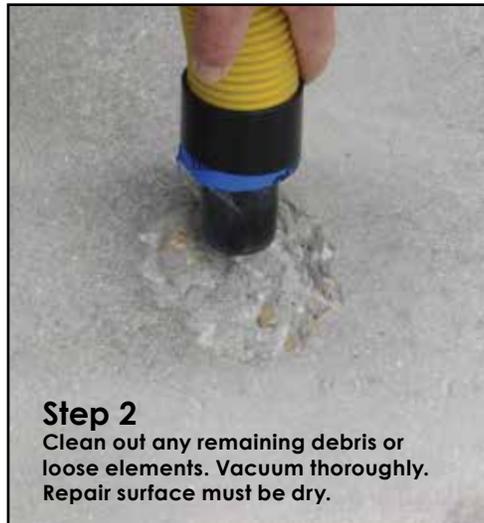
Wire brush, Hammer & Chisel, Vacuum, Diamond cup wheel or similar

Note: Polymer modification will depend highly on which product is chosen. Polymers with very rapid initial set times (Rapid Refloor & Rapid Refloor Pit Grout, 1-1^{1/2} minutes) may allow a quick sprinkling/mixing of dry sand/aggregate. Polymers with a slower initial set time (Rapid Refloor XP & SRG, 3-5 minutes) allow for a more customized blend to be added.



Step 1

Remove any unsound or loose concrete. Run drill with Nyalox or soft wire wheel over defects twice (in opposite directions). If bolt is present pound/cut down to allow 1/2" material cover.



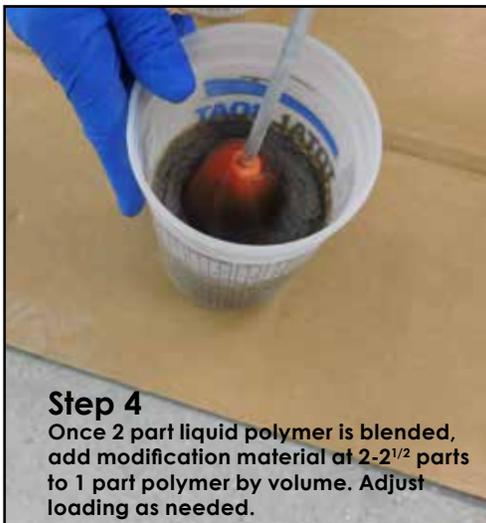
Step 2

Clean out any remaining debris or loose elements. Vacuum thoroughly. Repair surface must be dry.



Step 3

If a dry mix is preferred, pre-prime repair with mixed polymer liquid.



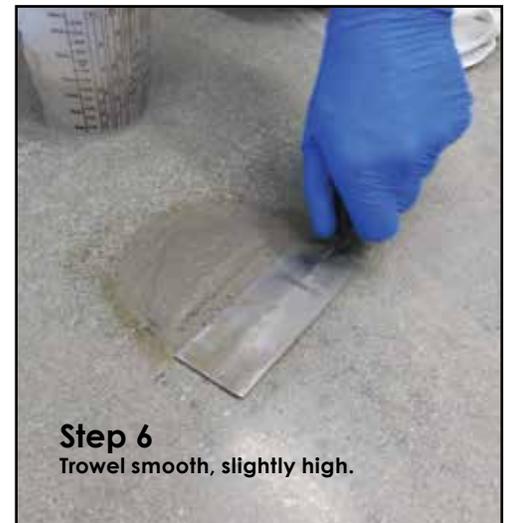
Step 4

Once 2 part liquid polymer is blended, add modification material at 2-2^{1/2} parts to 1 part polymer by volume. Adjust loading as needed.



Step 5

Slightly overfill area with repair material.



Step 6

Trowel smooth, slightly high.

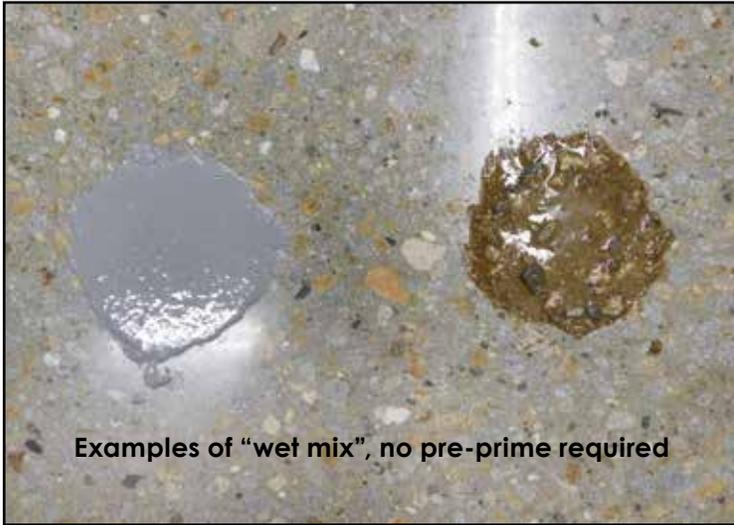
(I) = Industrial (D) = Decorative

SURFACE SPALLS/DEFECTS

Less than 6" Modified



Difficulty Of Repair



Examples of "wet mix", no pre-prime required



Step 7

Remove overfill to create smooth, flush surface by grinding flush with cup wheel or similar.



If "pin holes" are present at surface, a "grout coat" may be desired.



Step 8 (Optional)

Grout surface area with color matching Rapid Refloor Pit Grout or SRG - remove grout coat film upon cure, and continue with finishing steps.



Unmodified

Modified



Examples of 3 different polymer colors used with the same sand blend.

(I) = Industrial (D) = Decorative

SURFACE SPALLS/DEFECTS

Larger than 6"

Difficulty Of Repair



REPAIR MATERIAL OPTIONS

Structural Epoxy Mortar
Armor-Hard (I)
Armor-Hard Extreme (I)
Armor-Hard Primer (I)

Rapid Access
Rapid Refloor XP (D)
SRG (D)

Freezer/Cooler
Spal-Pro 2000 (I)
Armor-Hard Extreme (I)

TOOLS & EQUIPMENT NEEDED

Preferred:

Right angle grinder with dustless shroud, Diamond blades, Chipping hammer, Diamond cup wheel or similar, Vacuum system

Minimal:

Right angle grinder with dustless shroud, Diamond blades, 3 lb. hammer, Cold chisel, Diamond cup wheel or similar, Shop vacuum

Note: This same process can also be used for defects less than 6" in heavy trafficked floors.



Step 1

Make cuts with blade or chip out section at outer edges of spalling, 1/2" deep (minimum) to 3/4" deep (preferred). Creating a vertical edge.



Step 2

Chip or grind out any high spots above level of cuts.



Step 3

Clean out any remaining debris or loose elements. Vacuum thoroughly. Repair surface must be dry. If a dry mix is preferred, prime repair area with Armor-Hard Primer prior to placement of Armor-Hard/Armor-Hard Extreme.



Step 4

Slightly overfill area with repair material and trowel smooth, slightly high.



Step 5

Remove overfill to create smooth, flush surface by grinding flush with Diamond cup wheel or similar.



Re-seal/surface if necessary

(I) = Industrial (D) = Decorative

SURFACE REFINEMENT

Difficulty Of Repair



REPAIR MATERIAL OPTIONS

Low Viscosity Structural Repair Polymer
Rapid Refloor Pit Grout (I, D)
SRG (D)

Proper grinding/polishing equipment is necessary for use of these products. Please speak directly to Metzger/McGuire technical support for guidance.

TOOLS & EQUIPMENT NEEDED

Preferred:

Shot blast equipment, Drill with Nyalox or soft wire wheel, Vacuum, Steel trowel (stand up)

Minimal:

Drill with Nyalox or soft wire wheel, vacuum, Hand held steel trowel

Note: When grinding and polishing interior floors there may be small surface imperfections which need to be filled. These imperfections may vary from small air (pin) holes to larger surface deterioration. This system encapsulates surface repairs less than 1/2" in diameter.



Step 1

Perform initial grind on floor up to 70/80 metal step (or similar). ****All steps must be dry****



Step 2

Properly repair any surface defects 1/2" diameter or larger.



Step 3

Thoroughly vacuum slab surface.



Step 4

Apply pre-mixed polymer generously to floor surface and spread with either stand up hard edge tool or hand held steel trowel. Pull material down tightly to the floor surface.



(I) = Industrial (D) = Decorative

SURFACE REFINEMENT

Difficulty Of Repair



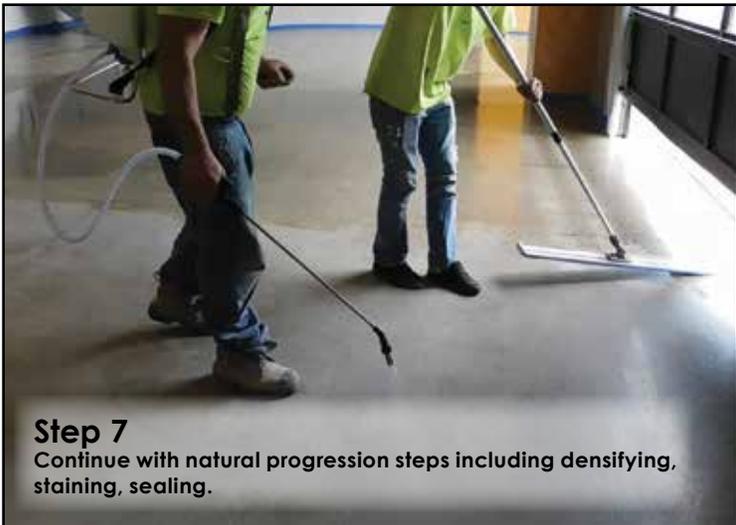
Step 5

Allow polymer to cure (approximately 45-60 minutes at 70°F)



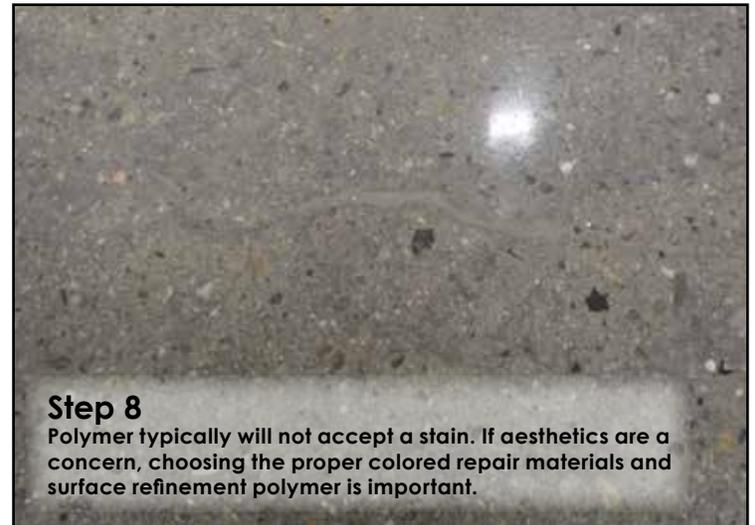
Step 6

Use least aggressive tooling on grinder to remove surface film, typically this will be the next natural progression step in the grinding/polishing process.



Step 7

Continue with natural progression steps including densifying, staining, sealing.



Step 8

Polymer typically will not accept a stain. If aesthetics are a concern, choosing the proper colored repair materials and surface refinement polymer is important.



(I) = Industrial (D) = Decorative

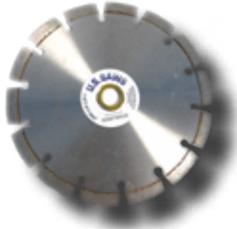
TOOLS & ACCESSORIES REFERENCED IN THIS GUIDE

— TYPICAL EXAMPLES —

DIAMOND U BLADE



**JOINT CLEANING/PREP
DIAMOND BLADE**



**STELLITE JOINT FILLER
REMOVAL BLADE**



**JOINT FILLER
REMOVAL BLADE**



HEAVY ABRASIVE PAD



**TELESCOPING FLOOR
RAZOR SCRAPER**



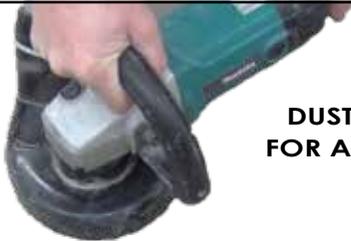
**DUAL CARTRIDGE
DISPENSING GUN**



DIAMOND CUP WHEEL



**DUSTLESS SHROUD
FOR ANGLE GRINDER**



**SINGLE CHAMBER
BULK-TYPE
CAULKING GUN**



**MEDIUM GRIT
FINISHING PAD**



**.75" NYALOX
END BRUSH**



**2.5" NYALOX
CUP BRUSH**



**3" & 4" NYALOX
WHEEL**



0" 1" 2" 3" 4" 5" 6" 7"

0" 1" 2" 3" 4" 5" 6" 7" 8"

APPROXIMATE MATERIAL COVERAGE RATES

Narrow Joints and Cracks

$1/8 \times 3/4" = 200 \text{ lf/gal.}$	$3/16 \times 3/4" = 135 \text{ lf/gal.}$	$1/4 \times 3/4" = 100 \text{ lf/gal.}$
$1/8 \times 1" = 150 \text{ lf/gal.}$	$3/16 \times 1" = 100 \text{ lf/gal.}$	$1/4 \times 1" = 80 \text{ lf/gal.}$
$1/8 \times 1-1/4" = 125 \text{ lf/gal.}$	$3/16 \times 1-1/4" = 85 \text{ lf/gal.}$	$1/4 \times 1-1/4" = 60 \text{ lf/gal.}$
$1/8 \times 1-1/2" = 100 \text{ lf/gal.}$	$3/16 \times 1-1/2" = 70 \text{ lf/gal.}$	$1/4 \times 1-1/2" = 50 \text{ lf/gal.}$
$1/8 \times 1-3/4" = 85 \text{ lf/gal.}$	$3/16 \times 1-3/4" = 60 \text{ lf/gal.}$	$1/4 \times 1-3/4" = 45 \text{ lf/gal.}$
$1/8 \times 2" = 75 \text{ lf/gal.}$	$3/16 \times 2" = 50 \text{ lf/gal.}$	$1/4 \times 2" = 40 \text{ lf/gal.}$

Wider Joints and Cracks

$3/8 \times 3/8" = 135 \text{ lf/gal.}$	$3/4 \times 1/2" = 50 \text{ lf/gal.}$	$1 \times 3/4" = 25 \text{ lf/gal.}$
$3/8 \times 1/2" = 100 \text{ lf/gal.}$	$3/4 \times 3/4" = 35 \text{ lf/gal.}$	$1 \times 1" = 20 \text{ lf/gal.}$
$1/2 \times 1/2" = 80 \text{ lf/gal.}$	$1 \times 1/2" = 40 \text{ lf/gal.}$	$1 \times 2" = 10 \text{ lf/gal.}$

Converting Gallon Coverage Rates for Cartridge Units

To determine coverage rates for cartridge units divide the gallon rates listed above by the following factors:

- | | |
|---------------------------------------|---|
| 450 ML Divide Gal. Yield by 8 | 900 ML Divide Gal. Yield by 4 |
| 600 ML Divide Gal. Yield by 6 | 1500 ML Divide Gal. Yield by 2.5 |
| 250 ML Divide Gal. Yield by 15 | |

Sand Modification Yields

Liquid Epoxy + Silica Sand = Mortar Yield

GAL. EPOXY + GALS. SAND = GALS. MORTAR

1	1	1.6
1	1.5	1.9
1	2	2.2
1	2.5	2.5
1	3	2.8

Defect Repair Yields

Standard Material Kit and Cartridge Units

UNIT SIZE	NET MATERIAL YIELD
250 ML UNIT	= 16.50 cubic inches
450 ML UNIT	= 28.75 cubic inches
600 ML UNIT	= 38.34 cubic inches
900 ML UNIT	= 57.50 cubic inches
1500 ML UNIT	= 98.83 cubic inches
GALLON UNIT	= 230.00 cubic inches

Note: The above figures are approximate and for estimating purposes only. The rates shown do not allow for substantial waste, overfill, etc. Results may vary due to factors including material loss at joint base, grade of silica used, etc. Metzger/McGuire assumes no liability for results from using these figures.



METZGER/McGUIRE

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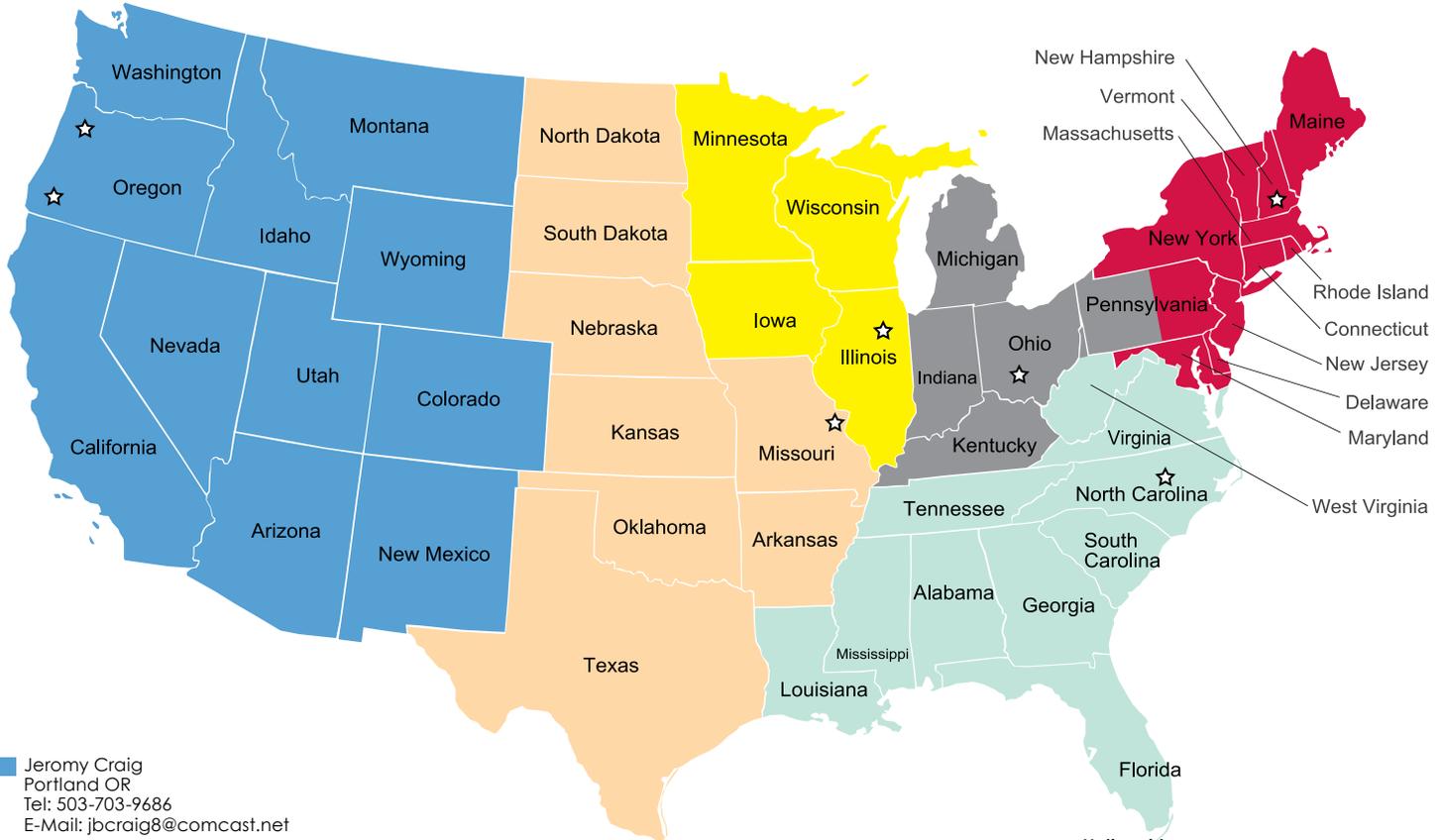
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