

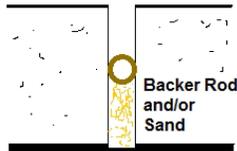
SealBoss® QuickFix

Important Joint Filler Guidelines

Construction Joints Fill Dimensions

- Depth of joint to be 2" (50mm)
- For joints exceeding 2" (50mm) use backer rod or other approved method to create 2" (50mm) joint depth
- Do not use backer rod in joints with depths less than 2" (50mm)
- Joint width typically predetermined by engineer during planning and construction

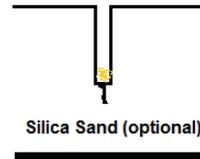
Construction Joint



Saw-Cut Control Joints Fill Dimensions

- Fill saw-cut joints to full depth
- Depth of joint to be 1" (25 mm)
- Width of joint to be 1/4" (5mm)

Saw - Cut Control Joint



QuickFix Joint Filler Application

SealBoss QuickFix Joint Fillers are chemical product formulations based on the latest polyurethane and polyurea technologies. These products offer new properties in terms of application speed, low temperature cure, durability and feasibility.

To ensure a complete chemical cure, color and desired physical properties it is important to pre-mix the product sufficiently, condition it to room temperature and to follow the preparation guidelines closely. As with any chemical product, the conditions during the application determine the quality of the results. Please read guidelines that help ensure a smooth fit and finish and longevity of your repair. Follow the basic application steps for successful joint filling and crack repair applications.

Timing For Product Installation

The American Concrete Institute (ACI) recommends minimum cure of 30 days before installing joint filler material to prevent adhesion failures, and to allow control and construction joints time to settle to their ultimate width through the concrete cure & shrinkage process. In a controlled freezer/cooler environment floors should be stabilized at general operating temperatures for 7 days prior to installation. Installation should be done during the thermal contraction period of the concrete when it is colder. In hot climates morning hours suit that purpose. High concrete temperatures may accelerate cure process unevenly.

Preparation Of Joints And Cracks

It is essential that all cracks and joints are dry at the time of application. Presence of moisture from outside sources or internal concrete moisture content, can cause bubbling and blistering in the cured product. Such affected product must be cut, removed, and reapplied. It is recommended that all cracks be chased and all joints be cut with dustless concrete saw with a diamond blade. The blade must be run along both joint walls (in one pass in narrow joints) to restore concrete surfaces to clean, bare condition. Joints must be completely free of concrete dust and other debris and must be cleaned to their full depth or 2" minimum. The absence of debris and freshly cut edges provide the necessary surface to which the polyureas adhere. Any crack and joint contamination and large variations in width and joint proportions may affect the physical properties of the material and joint dynamics and can lead to adhesive or cohesive separations. In most cases when detected early after a fresh installation, separation can be addressed with the addition of more material to the separated areas.

Note: In certain scenarios structural failures can cause crack and joint separations running the entire way through the repaired areas. This is not a product failure and must be addressed by structural strengthening of the slab or substrate.

Recommended: Double Pass Method

Many potential problems, such as uneven depth, moisture reactions and leakage into the substrate can be minimized by applying the jointfiller in two passes following in short sequence. The first pass should be a quick effort to apply an initial layer of product to the substrate and seal the surface. Any imperfections of the first layer will be covered with second, precisely applied pass minutes later when the filler meets the initial layer and now has a perfectly primed surface.

Types Of Joints

We differentiate **Saw-Cut Control Joints** (limited depth, cut into slab to prevent mainly shrinkage cracks) and **Construction Joints** (full slab depth between two concrete pours (forms) by design, to prevent mainly concrete expansion (thermal) cracks).

Saw - Cut Control Joints - Fill Dimensions

Basic recommendations:

- Fill saw-cut joints to full depth
- Depth of joint to be 1" (25 mm)
- Width of joint to be 1/4" (5mm)

The American Concrete Institute, ACI, standards call for semi-rigid industrial floor joint fillers to be installed at full joint depth in saw-cut control joints. In case saw cuts are too deep (>1", >25mm), do not use foam backer rod, use dry silica sand and fill to about 1" (25mm) depth. The joint width is recommend to be approximately 1/4" (6mm).

Construction Joints - Fill Dimensions

Basic recommendations:

- Depth of joint to be 2" (50mm)
- For joints exceeding 2" (50mm) use backer rod or other approved method to create 2" (50mm) joint depth
- Do not use backer rod in joints with depths less than 2" (50mm)
- Joint width to be predetermined by engineer during planning and construction

ACI standards call for semi-rigid industrial floor joint fillers to be installed at a 2" (50mm) minimum in construction joints deeper than 2" (50mm). Deeper penetration of filler is not recommended as it will negatively affect elongation properties and adhesion. Through-slab construction joints can either be filled with dry silica sand or by use of dry backer rod to 2" (50mm) depth. Construction joint width is determined by the slab in place.

Post Installation

Do not remove material overfill prior to full cure. Filler profile must be flush with floor surface to provide proper joint protection. Use appropriate shaving or grinding tools. If filler is concave, a cap bead of additional product can be applied after roughening surface and cleaning with a solvent.

SealBoss® QuickFix

Important Joint Filler QuickGuide

SealBoss QuickFix Jointfiller Applications In Bulk JointMaster Pro1 / Pro2 Pump Quickguide

Before applying product to the joint, first discard material through static mixer until a uniform mixture is achieved in order to eliminate any uncured sections (this must be done for each mixer replacement). Replace mixers regularly. The pump is not designed to apply product under pressure but to dispense the product evenly at a 1:1 ratio. Any obstruction or cured material in the hoses, pumps, or mixers can cause back pressure which may blow seals or simply throw the ratio off. Keep tank valves open during use. If the valves on the top of the pump are closed during operation, it could cause a suction effect which then distorts ratios. While QuickFix products offer the advantage of large application temperature ranges, the product itself must be conditioned to room temperature (77F / 20C). Tank specific heater bands are available. Clean the manifold and pumps with using grease zerks. Mixers must be replaced after each break, and the entire pump thoroughly cleaned after each run.

For detailed information please refer to the Product Data Sheets, MSDS and SealBoss.com website. Your Sealboss Technical Representative will gladly assist you with any further questions you may have.



SealBoss® QuickFix System Bulk



JointMaster Pro1 with Battery Pack Option

SealBoss Quickfix Cartridge System Quickguide

All QuickFix products must be applied in completely dry environments. SealBoss QuickFix cartridges **must be conditioned to room temperature and shaken thoroughly and vigorously** (a minute or longer) prior to connecting the static mixer. This will evenly disperse the hardener and pigments and prevent variations of color and isolated spots of uncured product which may otherwise present themselves during the cure process following application. Inconsistencies in product cure and color are a direct result of insufficient premixing of product at room temperature. Following mixing, attach plastic static mixers for dispensing. Low viscosity product may need a flow reducer. Prior to applying material to the joint discard a small portion of dispensed product until the mixture is even. Fast reaction times may cause material to cure inside the mixer if dispensing is halted or too slow. It is recommended to dispense entire cartridge at a steady flow and pressure without interruptions. If application needs to stop for any reason, it is recommended to replace the static mixer. Any cured product inside of the mixer can cause the mixture to be off ratio which may result in variations of color and isolated spots of uncured product.

If desired, dry silica sand or kiln heated sand can be added to the product up to 50% by volume. Added aggregate will make the product more rigid. While QuickFix products offer the advantage of large application temperature ranges, the product itself must be conditioned to room temperature (77F / 20C). The cartridges can most easily be maintained via the use of warm water basins. Lower temperatures result in thicker products and prolonged reactions while higher temperatures result in thinner products and accelerated reactions. If possible excessive substrate heat should be avoided (apply in the morning when in hot climates).

Please follow the guidelines and recommendations closely to achieve the best and most rewarding results.

For detailed information please refer to the Product Data Sheets, MSDS and SealBoss.com website. Your Sealboss Technical Representative will gladly assist you with any further questions you may have.



JointMaster Pro2 with Heater Band Option



SealBoss® QuickFix Cartridge System



SealBoss® QuickFix Crack Repair

SealBoss® QuickFix Understanding And Correcting Joint Filler Separation

Minimizing Separation

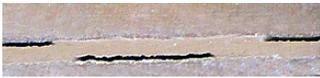
Joint filler separation of various degrees is a technical issue that can occur in post application joint repairs. Contractors not familiar with the inherent physical properties of quick polyurea / polyurethane and epoxy repairs may falsely view it as a product failure. The experienced contractor knows that separation is a result of application factors including design, timing and performance.

Good product knowledge, experience in applying joint fillers and willingness to follow recommendations closely will minimize separation and result in long lasting and high quality applications.

Types Of Separation - Adhesive & Cohesive

Separation may develop cohesively and adhesively. Adhesive separation occurs when the filler breaks bond with the joint walls. Cohesive separation occurs when the separation happens within the material itself. Both types can be present on the same job.

Adhesive Separation



Cohesive Separation



#1 Cause: Movement

Even with semi flexible joint fillers, excessive post application movement can lead to separation. This can be caused by thermal movement, stress movement and movement due to shrinking of the concrete.

Shrinking Concrete Creates Problems

Evaporation of water from freshly poured concrete leads to considerable linear shrinkage for prolonged times. Twenty eight to thirty days is a commonly accepted cure time but shrinkage may occur well beyond that time. Concrete shrinks gradually as water evaporates starting at the exposed surfaces. According to some experts shrinkage may occur as follows:

First 30 days.....Approx. 20-30%
Next 335 days.....Approx. 50-60%
One year total.....Approx. 70-90%

Problem: Most joint fillers are applied well before concrete shrinkage has seized.

Dimensions Of Concrete Shrinkage

As the concrete contracts the joints between the slab panels widen significantly. Shrinkage in a 6" (10cm) slab is approx. 1/8" (3mm) per 20' (7m). This means each 1/8" (3mm) joint will eventually open to almost 1/4" (6mm) or 100% based on mix design, aggregate size, ambient temperature, humidity, etc.

This may separate the filler material from the joint walls as they break bond from the concrete prior to tearing. Consequently, filler separation should not be considered a failure, as long as proper joint preparation methods were followed at the time of installation.

The American Concrete Institute (ACI) States

(Chapter 9, Section 9.10 of ACI 302.1R-04 - Guide for Concrete Floor and Slab Construction):

"It is advisable to defer joint filling and sealing as long as possible to minimize the effects of shrinkage-related joint opening on the filler or sealant. This is especially important where semirigid fillers are used in traffic-bearing joints; such fillers have minimal extensibility. If the joint should be filled before most of the expected shrinkage has occurred, separation should be expected between the joint edge and the joint filler or within the joint filler itself...Earlier filling will result in greater separation and will lead to the need for more substantial correction; this separation does not indicate a failure of the filler."

Other Joint Widening Causes - Thermal Changes

While concrete shrinkage during curing is one of the more common causes of widening joints there are other factors to be addressed. Thermal cycles in concrete also lead to contraction and expansion and need to be considered. When warm, concrete expands and the joints between slabs get narrower. As the concrete cools the joints open. Polyurea and polyurethane joint fillers should be applied during the cool phases of any known thermal cycles. During that time the joints will be in the wide open stage and more material can be applied. It is generally easier for the product to endure a compression cycle than expansion.

Other Joint Widening Causes - Stress

Stress caused by heavy loads, compressive, shifting and shear forces can lead to movement and temporary or permanent widening of joints. This can be observed in older structures or slabs not designed for the forces they are subjected to. Shear forces where one slab moves in a vertical fashion against the opposite slab can create stress that leads to filler separation.

Preventable Cause: Preparation Shortcuts

Avoid insufficient preparation and follow guidelines. Joints MUST be clean and dry. Only a well prepared surface will provide best adhesion possible. Mix product thoroughly and condition to room temperature! A complete and even chemical reaction is only possible with well mixed and tempered ingredients.

Minimize Separation

Besides good joint preparation and conditioning of product observe the following:

1. Reduce joint spacing
2. Use low shrinkage concrete design
3. If possible, defer joint filling until concrete is fully cured
4. Apply when structure is below or at ultimate operating temperature when joints are at the widest state of their 'cycle'.

Must All Separations be Corrected?

Minor separations that do not interfere with the ability of the filler to enhance physical edge strength of the joint do not have to be corrected as long as cosmetic and sanitation regulations are of no concern. A measure for the acceptable width of separation is approximately 1/32" or 0.8 mm.

When To Correct Separations

We recommend refilling separations as soon as possible for best appearance, joint edge protection and adhesion. Immediate correction, before any contamination has occurred, will provide best results at a minimum of preparation efforts.

SealBoss® QuickFix Understanding And Correcting Joint Filler Separation

Who Is Responsible For Correcting Separations?

The occurrence of separation being a function of slab shrinkage, insufficient preparation, untimely application, it is not regarded as a failure or defect. The cost and effort of correction should be defined as a part of the repair/application specification.

How To Correct Separations

Immediate corrections do not need any prep work and separations can be filled by applying the same product to fill the voids. A putty knife or similar tool may be used to force product into the separation. For corrections at a later time rake/blow separation voids clear and refill (overfill) with the same filler. In cases of contamination with oils it may be advised to clean surfaces with a rag and some solvent. Areas need to be absolutely dry and free of debris prior to applying product. After cure razor/shave off excess filler flush with surface. For smaller corrections you may want to use the SealBoss QuickFix Cartridge System.

Larger separations may require to saw out top 1/2" (12 mm) of filler using appropriate saw blade and refill (overfill) with same SealBoss QuickFix product. Razor/shave off excess filler flush with surface after cure. This will leave a uniform filler profile and color.

Know Joint Filler Grades And Limitations

To do its job to protect joint edges from wheel impact and heavy loads the joint filler product needs to have a certain strength and stiffness measured in Shore A Hardness which results in a semi rigid property comparable to a hard rubber. ACI recommends a Shore Hardness of A 80. A product of this hardness, such as SealBoss 6500 QuickFix just cannot elongate that much. Using a softer, more flexible product however would not be able to protect the joint edges from high impact compressive and shear forces.

For areas of minor impact and extensive movement, SealBoss QuickFix is available with lower hardness and better elongation properties. The joint edge protection will however be reduced.

For high strength spall repairs, SealBoss 6060 QuickFix polyurethane concrete mender is a rigid, high strength concrete repair product with even higher Shore Hardness.

Please contact your local SealBoss Technical Representative if you have any further questions or contact us directly at info@SealBoss.com or call 877-932-2293 or 714-662-4445.

Please Read ACI Recommendations

Taken From ACI Guide for Concrete Floor and Slab Construction ACI302.1R-04

CHAPTER 9—CURING, PROTECTION, AND JOINT FILLING

9.10—Joint filling and sealing

Materials for joint fillers and sealants are discussed in (Section 5.12) Contraction joints are normally sawn using the narrowest blade practical. Formed construction joints should be similarly sawn but to a depth of only 1 in. (25 mm). Sawcuts at the construction joints should not be introduced until a crack is perceptible at the cold joint between adjacent placements. Compressible backer rods should not be used in joints that will be exposed to heavy traffic. Isolation joints can be formed with preformed fiberboard, polyethylene foam, or similar materials before concrete placement begins. This is described in (Section 3.2.5.1) and detailed in ACI 504R. Isolation joints are sometimes sealed with an elastomeric sealant to prevent accumulation of moisture, dirt, or debris. Asphalt-impregnated or similar materials should not be used in isolation joints that will be sealed.

9.10.1 Time of filling and sealing—Concrete slabs-onground continue to shrink for years; most shrinkage takes place within the first 4 years. The most significant shrinkage takes place within the first year, especially the first 60 to 90 days. It is advisable to defer joint filling and sealing as long as possible to minimize the effects of shrinkage-related joint opening on the filler or sealant. This is especially important where semirigid fillers are used in traffic-bearing joints; such fillers have minimal extensibility. If the joint should be filled before most of the shrinkage has occurred, separation should be expected between the joint edge and the joint filler or within the joint filler itself. These slight openings can subsequently be filled with a low-viscosity filler recommended by the same manufacturer as the original filler. If construction traffic dictates that joints be filled early, provisions should be made to require that the contractor return at a preestablished date to complete the necessary work using the same manufacturer's products. Earlier filling will result in greater separation and will lead to the need for more substantial correction; this separation does not indicate a failure of the filler. For cold storage and freezer room floors, the joint filler should be installed only after the room has been held at its final operating temperature for a minimum of 48 h. For rooms with operating temperatures below 0 °F (–18 °C), the operating temperature should be maintained for at least 14 days before starting joint filling.

9.10.2 Installation—Elastomeric sealants should be installed over a backer rod or other bondbreaker as described in ACI 504R. The use of elastomeric sealants is not recommended in joints exposed to solid-wheel traffic. Semirigid epoxy and polyurea fillers should be installed full-depth in saw-cut joints. Joints should be suitably cleaned to provide optimum contact between the filler or sealant and bare concrete. Vacuuming is recommended rather than blowing the joint out with compressed air. Dirt, debris, saw-cuttings, curing compounds, and sealers should be removed. Cured semirigid fillers should be finished flush with the floor surface to protect the joint edges and to re-create an interruption - free floor surface. Specific installation instructions should be requested of the filler/sealant manufacturer if the floor is to receive a nonbreathing covering such as vinyl, epoxy, or a similar finish.



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