Clean—Remove Soil

To best define Clean, the surface to which a product is to be applied must be in a condition that will allow a fully-connected bond between the primer and concrete. A 100% bond must be from the final top coat all the way down into the concrete voids. That said, there are conditions that can weaken a bond—general soil, excess oil, grease, and/or fat impregnation, excess concrete dust, paint or high-build epoxy, silicone residue, etc.

Moisture Testing & Corrective Actions (Optional)

As moisture vapors move up in the concrete, soluble alkaline materials such as sodium, potassium and calcium hydroxides also move. As corrosive materials become concentrated in the upper portions of the concrete, they can damage the flooring systems or the concrete itself. The damage may be evidenced by coating separation, surface crumbling, moisture vapor bubbles, adhesive breakdown (e.g. black oozing around floor covering seams), and mold or staining.

The goal of moisture vapor remediation is to keep excessive moisture and soluble corrosive alkalinity isolated from the flooring system by creating a strong moisture barrier on the concrete surface. A barrier sealer must not allow moisture vapor to push primers and coatings away from the concrete surface.

To determine the extent of any moisture vapor pressure, you will need to perform the Anhydrous Calcium Chloride Moisture Test. The test kits are available from flooring supply wholesalers and Internet vendors. If testing shows moisture pressure greater than 3 lbs., check with a Gabriel Concrete Specialist for remediation options.

If the floor has had problems that cause suspicion or you will be doing a sizable area, it is well worth the time and effort to perform the testing.

Patch Cracks and/or Replace Missing Concrete to Restore Floor Integrity

Gabriel Con-Patch Epoxy Mortar enables no-breakaway patching by permanently locking to the old concrete. Cracks less than ¼” wide and/or 2” deep need to be opened more by using a crack chaser, hammer drill, etc. Clean-out and vacuum the cavity well. If on-grade floor slabs have dropped or moved, call Gabriel for advice on how to correct the problem.

Filling Expansion or Control Joints

Expansion Joint board is erected before the pouring to form smaller slabs, provide space for slab expansion, and help prevent cracking. Control Joints get cut into set concrete to help route future cracking to the cut.

Board may be pulled and the space filled with Flexible Joint Compound.

Control Joint cutting depth should be 25% of the depth of the slab. Cuts need to be made a few hours after concrete placement.

Fill cuts with Flexible Joint Compound.
The straight seam-like saw-cuts help future cracking to follow the pre-cut path of less resistance in an effort to prevent unsightly random crack lines. Filling the seams with **Flexible Joint Compound** prior to a permanent coating being applied helps minimize problems associated with soil collecting in the partially-filled cavity.

As with any repair, surfaces needs to be clean and dry before installing the joint compound.

### Epoxy Primer

After the surface has been cleaned and patched, it is ready for priming. A primer penetrates the concrete surface to stop dusting and make the surface super hard. A primer fills in concrete surface voids and acts as a liquid double-sided tape to grab onto the next coat to ensure the bond. When each succeeding coat is bonded well and the concrete surface is super-hard, problems of peeling, gouging, flaking, etc. are minimized or prevented.

### Correcting Spalled (Pocked) or Unlevel Surfaces (Optional)

The last step before starting the application of the epoxy primer is to check the look and feel of the surface. Is the surface level, rolling, pockmarked (spalled), with golf-like divots, or pitched?

Severly pitched, pocked, or golf divot-type dents should be reviewed with Gabriel before proceeding. Gabriel **Con-Patch** epoxy mortar will be needed in the very deep parts of the damaged areas.

If the texture and the pitch of the floor is acceptable, move to applying the traffic-bearing top coat(s) over the set primer.

If you wish to smooth or re-pitch the surface, mix and apply **Levelex** or **Tuf ‘N Qik** over the set primer. They are two-part high-build 100%-solid epoxy liquids. **Levelex** has a granular third ingredient to produce a thicker build for use in severely rough, patched, or damaged conditions.

Both products are spread with a V-Notched Trowel or Squeegee and produce a super-hard base over which top finish coatings are to be applied.

### Top Finish Coating(s)

In addition to making a floor look bright and inviting, the job of a floor coating is to help prevent concrete deterioration or discoloration as well as to help cut the cost of cleaning and upkeep.

**Permanent Coating compared to Provisional Sealer**

Permanent products are called coatings. They protect the concrete from extreme traffic wear, harsh acids, oils, and even brake and hydraulic fluids. Permanent coatings are locked to the substrate by the interlocking of each previous coat.

Permanent coatings come in a variety of solvent or water-based formulations:

1. **Standard Epoxy**
2. **Novolac Epoxy (Chemical Resistant)**
3. **Urethane (Chemical Resistant)**

**Permanent** coatings normally come in a 2-part, clear or pigmented, liquid system that gets mixed just prior to application. The finished job should look like a well-painted floor—the only difference is that the bond of each coat is inseparable.

To make a decorative floor, colored vinyl chips are broadcast into an epoxy flood coat and then capped with coats of clear urethane. For added slip-resistance, #60 aluminum oxide powder may be added into final coats.

For added slip resistance and/or in an industrial application, the vinyl chips may be replaced with a single- or multi-color-blend of granular quartz aggregate.

**Provisional Sealers:** Gabriel **Premier** is a provisional, single part, water-based sealer for concrete. **Premier** is extremely tough and may be applied to a variety of surfaces from bare concrete to paint or most any permanent coating.

A **Provisional** sealer is used to:

1. Help prevent premature scratching and wearing of permanent coatings.
2. Restore gloss quickly & inexpensively.
3. Make upkeep easier and less expensive.

On bare concrete, a **Provisional** sealer/finish can halt concrete wear and dusting as well as produce high gloss.

**Gabriel Premier** works as does a regular floor finish—burnishable and strippable.
Stabilizing Sinking or Moving Floors

Floor Slabs That Move

Due to earth shifting or sinking, on-grade floor slab movement may result in unsafe or unpassable conditions.

Floor movement is either active or firm. Active floor movement is when a floor teeters as heavy objects move over it. Firm floor movement is when a slab position changes but does not move when traffic passes over it.

In either case, floor slab movement may end up with severe cracking, broken and dropped sections, or slabs not in level with neighboring slabs.

Here are corrective measures to make floors safe and ready for coating with permanent coatings or provisional sealers.

When a floor slab has moved but remains well in place, follow the floor leveling procedures outlined on the Con-Patch Epoxy Mortar page.

If many cracks converge to a common spot of the floor, it is most likely that earth has dropped under where the cracks converge.

How to Stabilize an At-Risk Concrete Floor Using Galvanized Pipe

1. Jackhammer or core drill through to the ground under the slab. MAKE SURE THAT THERE ARE NO UTILITIES UNDER THE WORKING AREA.

2. Drive connected sections of pipe through concrete into earth until the pipe will no longer move. Then drive the cap about 1” below the surface.

3. Pour Con-Patch around and over pipe and cap. Fill until level with floor.

When Con-Patch dries, pipe, floor, and cracks have been fused together to make one well-supported floor.

Underground is sinking most where cracks converge. Stop the sinking.
It is important to provide a clean surface free of contaminants and defects with a profile or texture. Nearly all of coating failures can be attributed to improper or insufficient prep.

Three Optional Methods of Preparing Concrete Surfaces, if necessary, are Shot Blasting, Scarifying, and Grinding.

**Shot Blasting** – works much like sandblasting. A blast wheel spinning at high speed throws steel shot at the concrete and profiles the smooth floor. A vacuum system then draws the shot and concrete dust off the floor. Shotblasting is the most common form of preparation for horizontal surfaces.

**Shotblasting Benefits**
- Eliminates use of harsh chemicals and leaves the concrete floor with the desired profile.
- As a dry process it allows for immediate application of coatings, shortening installation times.
- Efficient disposal of dust and other contaminants.
- Can be performed indoors or outdoors.

**Shotblasting Drawbacks**
- May remove too much concrete especially with soft concrete or inexperienced operators.
- May leave overlap marks requiring extra material or fill.
- May have difficulty removing flexible or soft materials or high-build coatings and resurfacers.

**Scarification** – works by using steel and/or carbide cutters (see cutter styles) mounted on shafts on a rotating drum. The cutters rotate loosely on the shafts and chip away at the concrete at they revolve around the drum.

**Scarification Benefits**
- Excels at removing thicker old coating and resurfacers.

**Scarification Drawbacks**
- Leaves a more aggressive profile than shotblasting. This texture usually requires at least 1/8 inch of resurfacert to restore the surface to a smooth uniform texture.
- Cost of wear items such as cutters & cages result in a higher cost per sq. ft. than other removal methods and is of moderate output speed.

**Concrete Grinding** – is a generic term to describe a variety of ways to remove concrete by using abrasives (carbide, diamond, steel) and a specific term to describe a specific method of removing concrete. Concrete grinding typically uses a machine called a Concrete Grinder that has a disk on the bottom and spins much like a floor polisher.

Diamond, stone, or carbide abrasives may be installed on this disk.

**Concrete Grinding Benefits**
- Produces a very smooth uniform surface.

**Concrete Grinding Drawbacks**
- Much slower than shotblasting.
- Consumption of diamond blades and abrasives can be costly especially when removing thick coating or smoothing rough concrete.
- Diamond grinding may require re-cutting of expansion joints or grinding out inside cracks.
Paint Tray
- Green polypropylene resists solvents and paint buildup.
- Handy edge compartments hold brushes and tools.
- Roll off area for 18” frames.
- Size: 16” L x 21” W
  No. 8142-T003

Solvent-Proof Chip Brush
- White China Bristle.
- Plain wood sanded handle.
- These one-time-use brushes stay in one piece.
  No. 8142-T012 ... 2”
  No. 8142-T015 ... 4”

Extension Pole
Extends 6’ - 12’
- Fiberglass outside section, aluminum inside sections to maintain shape.
  No. 8142-T021

Cast Metal Threaded Handle
15/16” x 72” Length
- Cast metal threaded.
  No. 8142-T024

Spiked Shoes
- Durable black polypropylene shoes with 13 replaceable ¾” steel spikes.
- Adjustable straps.
- One size fits all.
- Spikes already in place.
  No. 8142-T033

Finishing Trowel
14” x 4” Blade
  No.8142-T036

Marginal Trowel
5” x 2” Blade
  No. 8142-T037

Excellent for working crack-patch mortar.
### Shed-Resistant Roller Covers

**Heavy Duty Construction for Even Application**

- High quality white fabric nap cover.
- Phenolic core, shed resistant.
- \(\frac{3}{4}\)" nap • \(\frac{7}{8}\)" nap

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
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<tr>
<td>8142-T046</td>
<td>Roller Cover End Caps</td>
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### Spiked Roller Covers

**Available in 9” or 18” Length**

- Solvent resistant high density and ultra-high-molecular-weight polypropylene rollers for easy clean-up and extended wear.

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<td>8142-053</td>
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### Carpet Nap Roller Covers

**Available in 9” or 18” Length**

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### Regular Core Roller Covers

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<td>8142-T059</td>
<td>Roller Cover End Caps</td>
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### Roller Frame

- Adjusts to fit 9” or 18” Roller Covers.
- Comes with roller cover end caps.
- Accepts \(\frac{15}{16}\)" or 1¼” diameter handle.

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<tr>
<td>8142-T061</td>
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<td>8142-T046</td>
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### Jiffy Mixer

Use to mix coatings, epoxies, hi-viscosity liquids, mortars, paint, resins, etc.

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<tr>
<td>8142-T067</td>
<td>Fits 1 Gallon</td>
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<tr>
<td>8142-T069</td>
<td>Fits 5 Gallon</td>
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### Roller Frame

- 9” heavy duty frame. \(\frac{5}{16}\)” stem
- \(\frac{5}{16}\)” stem for maximum strength, 5 wire cage.
- Reinforced threaded handle hold.

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<tr>
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### Dual Cartridge Caulking Gun

Used for Concrete Joint Sealing

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