EVERLAST EPOXY

Best Practices & Guidelines For Successful Installation

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Sheen Spots “Puddles”

- If there are depressions in the subfloor, left unfilled, they will show up as “puddles” of clear resin in the finish floor. This is due to the aggregate settling and the resin seeking its own level.

- The best way to prevent this is to fill in these depressions prior to installing Everlast Industrial Floor.



- If you have these sheen spots in a finished floor, broadcast some 60 grit white aluminum oxide into these areas as you are glazing. This will help to hide these areas as it will cut the sheen.





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Light Colors

We recommend priming the floors with a white primer before trowelling light colors. If you are ever in doubt, test an area first by installing a kit to see if you will be able to “see thru” the finish floor.



Much like this photo of the paper on the wood floor, a darker colored floor, like quarry tile, has the potential to almost bleed through when a lighter color epoxy floor is applied.



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How to Prep Obstructions

- Floor drains and other obstructions in the floor need to be 1/8” above the substrate.
- This is one of the first things to address when completing floor prep. Drains that are low need to be keyed around. We recommend keying around drains regardless of whether they are low or not.
- This gives a better surface to bond to, as drains are usually the first point of floor failure. Ideally you should chip out a 1” deep “trench” around each drain and prefill it with cove base material or epoxy floor patch.
- This will ensure a good bond. Pipes and other kinds of protrusions should get a cove at the same time you are installing the other cove base.
- This will provide a much better seal around these areas.





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Underlayments

- We only recommend using our underlayment - Everlast Epoxy Underlayment.
- We also recommend that you first prepare the substrate and then prime it with Everlast Epoxy Hi-Grip Primer before installing the underlayment.



Many contractors try to skimp and use a cement based underlayment such as an ardex, but we have seen too many failures with this method.



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Concrete Conditions

- Concrete must be clean, dry, and free of any grease, paint, oil, dust, curing agents, or any foreign material that will prevent proper adhesion. The concrete should be at least 2500 psi and should have the pores open which will then allow the concrete to absorb resin. A minimum of 28 days cured is required on all concrete.

- Before installing Everlast Industrial Floor, test existing concrete slab to make sure there is no efflorescence or high amounts of alkalinity. Alkalinity refers to a high pH reading which means the floor is not neutral. A high alkaline environment can cause salts to creep up through the cement called efflorescence. These salts have a tendency to prevent or destroy the bonding of coatings to the concrete. The most common form of testing is the use of a wide-range pH paper or tape. Make sure the floors pH reading ranges between 5-9 to ensure adhesion.

- Calcium chloride tests should be conducted to determine if the concrete is sufficiently dry for the installation of Everlast Industrial Floor. The calcium chloride tests should be conducted in accordance with the latest edition of ASTM F 1869, Standard Test Method for Measuring Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride. When running a calcium chloride test, it is important to remove any grease, oil, curing agents, etc. so accurate readings can be obtained. Concrete hydrostatic, capillary or moisture pressure must be no greater than 3.0 lbs./1000 sf/24 hours.

- Maintain minimum concrete surface temperature between 60°F and 85°F., and relative humidity above 30% and below 75% for a minimum of 48 hours before, during , and after installation, or until cured. Surface temperature must be 5°F above dew point.

- Failing to adhere to these strict guidelines can result in product not bonding, discoloration, blistering, or altogether failure of the system. Testing is the responsibility of the installer. Everlast Epoxy bears no resp e to any of the above conditions.





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Dusty Concrete

- Excessive moisture on the surface of concrete as it dries leaves a powdery surface when it cures. Not having enough cement in the mix will cause this as well.

- It is a problem because the excessively dry concrete “drinks” much of the resin so the finish floor needs a larger amount of topcoat, and it is harder to get your coverage out of each kit. It also mixes with the resin while you are trying to install the floor, and creates a dirty looking finished floor.

- Treat dusty concrete the same as you did with plywood, prime it first with Everlast Hi-Grip Primer. This will treat the concrete, as well as keep the dust down so you are not breathing it while you are installing the floor.





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Existing Kitchen Floor Prep

Commercial kitchens pose a series of challenges in floor preparation.

They are usually soaked in grease, oils and animal fats 24/7 as well as being always wet. This can create more prep time as the substrate should be free of these, clean and of course dry (3.0 lbs./1000 sf/24 hours).

Here is what you need to have in order to install Everlast Industrial Floor in an existing kitchen. This goes for the Fast Dry floor as well.

1. The floor needs to be dry, and stay dry for the duration of the curing process. This includes closing off any water supply lines during the installation process if needed.

2. Any unstable existing flooring needs to be removed. Hollow tiles, resinous flooring that is peeling from the subfloor, any sheet flooring, any VCT (this is bonded or not as VCT will become saturated with water and/or grease in kitchen settings) as there is likely water underneath it.

3. The existing floor, concrete, tile, stable resinous floor – any existing floor or subfloor needs to be gone over with a diamond grinder to open the pores and remove the saturated grease.

4. Wood subfloors need to be covered with cement board first. Don't take the chance on them, the wood has likely been saturated for years and is rotting out. Before covering them with cement board, get a contractor to check the structural properties.

5. Cove Base: Existing walls, unless cement board or concrete block, 90% of the time, need to have the sheathing removed and replaced. It is likely rotted out. You will have a hard time getting cove base to stick to damaged wet sheathing.

6. The only underlayment we recommend is Everlast Epoxy Underlayment installed over a wet coat of Everlast Epoxy Hi-Grip Primer.



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Epoxy and Cold Weather

Firstly, let us take a look at making it easier to apply. Step one of the application involves getting the product out of the bucket and, in really cold temperatures, that can be a task in itself as they can “stiffen” considerably due to the rise in viscosity. It is also extremely difficult to trowel when the material is cold.

With this in mind, storing the product in a cold room on a concrete floor is NOT going to help your cause. Instead, look to store the product in a heated space, somewhere indoors away from the extremes and closer to 77°F. Keeping the product at moderate temperatures will also stop the products from crystallizing (turning into a paste-like semi-solid),which epoxies can be prone to when held at cooler temperature for long periods of time. Crystallization can be reversed by heating the product and “melting” the solid particles, however it can be frustrating and time consuming.





If for some reason you cannot store the product at a reasonable temperature, then do what most applicators do by using “hot boxes” to warm the product directly before use. These devices are essentially metal boxes that house a few kits of product and are heated via an electric fan-forced heater. They work great for getting the product up to a warm temperature for use.
Alternatively pallet or bucket heating blankets work well as well.

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Everlast Industrial Floor and Cold Weather

But even these may not necessarily help you if the substrate you are coating is a cold concrete slab. Such a surface will tend to act like a big heat sink when applied onto. Which means that even if your pre-heated product at 77°F hits the floor, it will quickly drop to the temperature of the slab once applied (which could be as low as 50°F) and take you all the way back to square one. In some situations the cold substrate issue can be alleviated by heating the room first. However, if you're using a gas heater your floor could be susceptible to amine blushing. You will need to be extra careful. Because these heaters increase the levels of carbon dioxide when operating, which is one of the conditions required for blushing, it might actually make the film blush even more. Not a good idea! If your heater does not put out carbon dioxide, then continuing to heat the room after application can be a good way of accelerating the hardening process.

Rather than creating your own heat box, check out http://www.caulkwarmer.com. They make great bucket warmers that take up little space when not in use.

Also note: keep the aggregate in a warm place as well, otherwise it will act like ice in a glass of water, and negate all your resin warming.

If you install Everlast Industrial Floor in cold conditions and your attempts at raising the temperature fail, the floor may still be tacky after it cures. This can be fixed with a coat of topcoat, so long as you first get the temperature up before topcoating. Make sure when raising the temperature, that you do not introduce carbon monoxide as this will cause amine blushing as stated above.

Cove base applied at temperatures below 70°F will still cure but has a tendency to sag or fall off the wall. If it is hard to the touch and not sticky, it is ready to topcoat. In cold weather conditions, it can take much longer to cure; also if the substrate is cold it can take much longer to cure. If the substrate is less than 60°F, than DO NOT attempt to install Everlast Industrial Floor. If the substrate is between 60°F and 65°F it can take up to 3 days to cure and could remain sticky until the topcoat is applied. Between 65°F and 70°F allow one extra day for curing.



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Foam in Hot Weather

- Everlast Epoxy floor resins are epoxies and are sensitive to temperature. The viscosity changes and the properties will not remain consistent as the temperature and humidity changes. Often you will notice a difference throughout the same day.

- When temperatures are high there can be foam that is noticeable when trowelling. It is manageable in moderately warm (80°F) temperatures, but in hotter – especially in 90°F and above conditions, the foam can be excessive.

- This foam will go away as the floor cures and is not an alarm, but it can and does hinder your ability to trowel the floor evenly. It blocks your view as well as it is a sign that your mix has a low viscosity, which means that you have to work harder to trowel it evenly. So at a time when your trowelling skills are tested, there is foam to block your view and make things harder.

- What to do? This is an easy fix, although it does require one more step. Keep an extra 5-gallon bucket near you, skim the foam off the finish floor with your finish trowel, and scrape it off the trowel and into the bucket. This sometimes has to be done twice – once during the initial spreading of the mix, and once during the finish trowelling.





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Seams in the Seamless Floor

Before you start a floor, plan where you are going to break and/or stop for the day. Although Everlast Industrial Floor bonds to itself and is seamless at the joints, the seam can still be very much visible.

It is structurally seamless, aesthetically not. It is best to put the seams directly underneath where a closed door will be, although that is not always possible. When you must have a seam, there are two ways to make them look better.

1. Use a 1/8" zinc strip, and leave the metal edge exposed. When doing a large floor, it's best to grid it out with these strips into 1000-2000 square-foot squares. Also put these strips in the doorways. This makes the seam more visible, but also the seams look like they belong there.

2.1. The other way is to take a piece of 2" (duct) tape and stretch it out straight and adhere it to the floor where you want the seam. Then trowel the floor to the tape and even cover the tape a little. Remove the tape immediately when finished trowelling and remove any residue from the unfinished side of the floor. Use your gauge trowel and neaten the wet edge as removing the tape causes the marble chips on the edge to stand up.

2.2. Trowel the second half of the floor up to the seam, then using the flat end of the trowel remove any stone residue from the cured floor. There will be resin residue, which is ok, but remove the stones. Detail the seam with your gauge trowel after finishing the mix with your finish trowel.

2.3. After both halves are cured, use a rub stone to go over the seam before topcoating.



With practice you can make the seams less visible. But you won't be able to make them invisible so plan the best place to put them. You should consult your customer about seam placement if it has to be in the middle of a room as he/she probably will have a preference of where to put it.

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Transitions to Other Flooring

Always protect the other flooring edge with tape. The type of tape depends on the surface you are trying to protect, but make sure to use a tape that sticks well and removes easily. Always remove the tape while the floor is still curing. This allows you to be able to neaten the edge with your gauge trowel, and to remove any excess or mess on the existing flooring while the resin is still wet and can be wiped off with solvent.

If the floor to be transitioned to is the same height as the substrate you are installing Everlast Industrial Floor over you can:

1. Just tape the joint, Everlast Industrial Floor will be about 1/8" higher than the other finish floor.

2. Or, key-in the substrate, cut about 1/8" deep, this will allow Everlast Industrial Floor to be the same height as the existing floor.

If the substrate to get Everlast Industrial Floor is recessed more than 1/8" lower than the floor you are transitioning to, build a ramp with Everlast Epoxy Underlayment, to bring the recessed edge up to 1/8" deep.

1/8" zink strips and other transition strips can be used as well.





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Cove Base to Wall Transitions

Drywall – Other flat wall surface: Transitions can be made in one of 2 ways: For either method, first mark a level line where the cove is to terminate. Note that 95% of the time the floor is not level and should not be used as a guideline to terminate the cove. Use a level and/or laser instead. Also: Note that chalk lines and other markings are difficult to remove from the wall later, so either make the marks ¼" below the cove termination, so they will be completely covered, or make miniscule pencil marks.

1. Use a 1/8" plastic peel-n-stick termination strip, and trowel the cove to it.

2. Use blue painters tape. Remove the tape immediately after each cove kit. Take your gauge trowel and neaten the top edge so it does not cure jagged and unsightly.

IFRP – We recommend the FRP to terminate at a J-Mold and then trowel the cove up to the J-Mold. If the FRP is installed lower than the cove termination line, cut it off. Do not install cove over the FRP as the FRP moves and you will not be able to get the cove to stay. If the FRP is solid with no movement, then scratch the surface with a sander or grinder before attempting to install cove base over it.

Ceramic Tile – Other Wainscots protruding past 3/16": If the customer wants the cove base to be flushed with the wainscot, then you will need to install a backer first. Plywood, Concrete board, Masonite, Drywall – all work finely, furring it to within a 3/16" to 1/8" recess. Then protect the wainscot with blue tape, make sure to remove the tape and neaten the edge with your gauge trowel immediately after each cove kit.



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Epoxy Sensitization and How to Avoid It

This goes for all epoxy flooring including but not just Everlast Industrial Floor.

Have you ever had, or heard of someone, get a rash when working with epoxies? Well, that rash was more than likely some form of sensitization to the epoxy. So what causes it, I hear you ask? In simple terms, sensitization is the process where your body gradually becomes more and more sensitive to the effects of certain chemicals. Initially you might not notice anything different or any reaction at all, but eventually signs appear that suggest the body is becoming more susceptible to that chemical – perhaps the most common sign with epoxies is a skin rash.

Everyone reacts differently to certain chemicals. Some become sensitized with very little exposure, others can be exposed their entire life and never experience any adverse effects. One thing is for sure, contact with chemicals should be minimized regardless of whether you're breaking out in a full body rash or not.

Here is what I have learned about avoiding sensitization...

- 1. Treat every chemical as though it will cause sensitization and keep it off your skin. Wear long sleeve shirts and pants. If you get product on you then remove the item of clothing and wash the affected area with soap and water. If you wear short sleeve shirts then use barrier cream on your arms and hands.

- 2. Start wearing gloves. Many applicators shy away from using disposable latex gloves because they can be hard to change when hands become sweaty. An effective way around this is to put on a thin pair of cotton gloves beneath the latex gloves as the cotton absorbs the sweat and makes it easy to change. Double gloving is also an easy way to keep clean – if the top glove gets dirty then just rip it off and keep going. While on the topic of latex gloves, buy powder-free gloves as users can actually develop sensitization to the powder/sweat combination.



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Epoxy Sensitization and How to Avoid It

- 3. Work clean and wipe dirty items on rags, not shirts or pants.

- 4. Some chemicals will cause sensitization much quicker than others. Generally it is not the epoxy resin (Part A) that causes the problem but more so the curing agent. Some curing agents are more reactive than others. Hence a small exposure can have the same effect as a larger exposure of a less aggressive chemical.

- 5. There are certain parts of your body that are more sensitive and react more than others. The underside of your forearms is a common point of exposure and often the first area to show up a rash. It goes without saying that you must wash your hands before eating or using the bathroom as these regions are very sensitive.

Final tip – the one that you must take away from this if nothing else – whatever you do...do not use a solvent to remove epoxy from your skin. The solvent breaks down the epoxy, correct, but in breaking down the epoxy you are making it easier to penetrate through the skin. You should also keep in mind that if you are using a solvent borne epoxy then it already has solvent in the resin and hence it can enter the skin much easier than a solventless epoxy.

If you get sensitized to epoxies then you have a couple of scenarios -

- You could possibly only develop sensitivity to a particular raw material. Therefore, you could change raw materials, e.g. curing agents, and still be able to keep working as long as you work clean.

- If you want to work in the epoxy industry then develop the right habits from day one – work clean, clean up without solvents and read your material safety data sheets.



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Optimal Finish Trowelling

After the mix is spread evenly over the next area to cover, you need to trowel through it again to finish it. It's hard to type out on paper how to finish trowel, as experience will teach you better. I'll give a couple of pointers though.

1. Keep a halogen light with you as you trowel so you can put it right up next to the mix to eliminate shadows and see what areas need more work. Floors done this way always turn out better than floors done without a light. Even when you have good overhead light, you still can't see what needs fixing as well as with a halogen light sitting on the ground right up next to your floor.

2. Finish by passing the trowel in the same direction as much as possible. Changing directions turn up the stones and make your job harder. What I mean is if you trowel right to left, don't make a bunch of right to left passes than a left to right, or front to back. You'll have to vary the strokes some when you're correcting a spot, but try to limit using different direction strokes as much as possible.

Look for consistency in the aggregate spacing. You are looking for density. If you see an area where the marble chips are not tight together, add some more to the area. An area where the aggregate is loose and not dense will be unsightly when the floor cures. You sometimes have to remove some of the mix from the front edge and place them in areas that need more aggregate. After you spread the material, if you see that you have a thin area, you will need to correct this by picking up some mix and placing it where needed. You cannot "drag" it with the trowel as you would concrete.



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Optimal Mixing Times

Mixing will need to be adjusted throughout the day. As the atmosphere changes so does the resin viscosity. A good starting point is:

- Power Mixer: Blend the part A and part B resin for about 30 seconds, then add the aggregate and blend for another 3 minutes.

- ½ Horse Drill: Blend the part A and part B for about 30 seconds, then add the aggregate and blend for 1-2 minutes longer.

As you trowel the floor you will be adjusting the mix time. If the kits are thin or "light and airy" you will need to shorten the mixing time. If the kits are thick and hard to trowel, similar properties as when the mix begins to "kick-off", then you will need to lengthen the mixing time.



If the mix sits in the bucket for longer than a minute after mixing – or remains piled on the floor for a couple minutes while you are finishing another section, it will begin to cure and get hard to work with. It is best to pour out the entire bucket and spread it ALL out before starting to finish trowel it. This way the mix does not prematurely "kick-off" and you have to fight it. If the floor sits too long in the bucket or in a pile on the floor, you should mix it up before attempting to spread it, as the resins will begin to separate from the aggregate and try to come to the surface of your pile.

Usually you can use the same mixing bucket for about 5 kits before needing to replace your mixing bucket. If you use it too many times the remaining resin in the bottom of the bucket will start to cure and the new resin will "kick-off" too fast and you will be fighting the mix 'cause it will be hard to trowel – immediately even though it is a brand new mix. It will act like a mix that has sat for awhile.

Note: In cold weather the same bucket can be used for longer periods of time. In hot weather you will have to discard your mixing bucket more often. As a rule of thumb, each time you need a new mixing bucket, clean the mixing paddle and your tools too. This will keep you from having to "fight" your kits due to the curing resins kicking-off the new resins.



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Finishing When Resin Is Thin

When temperatures are hotter, your resin will have a lower viscosity causing it to be thinner. This makes finishing much more difficult because the mix will seem too wet.

What works best in this instance is to allow the kit to sit for a minute or two after spreading it on the floor. Allow the air bubbles to dissipate and/or the foam to rise to the surface. Then, in cases where there is foam or excess resin, skim it off with your finish trowel and scrape it into your waste bucket. Foam, and/or extra resin, is sometimes but not always an issue. But when the mix is thin, allowing it to sit some before finish trowelling helps. You can try shortening the mix time, as that is sometimes the issue. But in hot weather it will be thin regardless.

In cases where it is not hot but the mix was blended too long, allowing it to sit also helps. Just make sure to shorten the next kits mixing times





Note: Always spread out the kit right away; even when you are gonna allow it to sit. Never allow it to sit in the bucket or in a pile on the floor, as this will make your job much harder, as you risk losing the mix.

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See-Thru at Edges

When you are trowelling Everlast Industrial Floor, be sure that you get a consistent bed of aggregate right up to the edge next to the cove. If you do not, you will be able to see thru to the subfloor. Check for consistency each time you finish a kit. Add more aggregate to any thin areas and re-finish trowel it. Pay special attention to where the floor meets the cove base.





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Remodel – Renovation

Preparing and coating an old concrete slab is often different to preparing and coating a new one. But what do you do if you are coating both old and new slabs on the same job?

This situation is commonly known as the remodel (or "remod") job and often sees a brand new slab plonked down next to a not-so-new slab, with a few other bits and pieces tinkered with at the same time. This type of job can be a little daunting for some applicators, but it becomes much easier if you break it down into the different areas to be dealt with. So, the very short and quite predictable answer to that question above is to treat all the different areas separately and on their own merits.

"On their merits" means that the obvious differences between the old and new slab will require different approaches to prepare the surfaces effectively. For instance, contamination levels and deterioration/damage need to be addressed in the old slab, while moisture and laitance become pressing issues when tackling a new slab. If the areas are broken down piece-by-piece and treated individually, then the remod job boils down quite simply and shouldn't pose too many problems for the applicator that's prepared to spend a little time planning beforehand.

If remod jobs only consisted of a new slab being placed next to or around an old slab, then this wouldn't be much of a topic. Of bigger concern in these kinds of jobs is what I phrased the "other bits and pieces". What I'm referring to mainly here is when a new slab (or section of concrete at least) gets installed within an old slab – in other words, a trench. Unlike the separate slabs discussed above that can be handled quite easily, the trench represents a tricky coating challenge that can give the applicator long term headaches if not dealt with properly from the start.



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Remodel – Renovation

A trench is cut out of the existing concrete slab usually to allow new pipework or drains to be put into an existing/old slab before being coated. There are a few things that an applicator needs to consider to make sure the job is done right. These are ideal when forming a trench, the cut isn't made right through to the dirt underneath as this can compromise any waterproofing measures in place (membranes/sheeting etc.). For reasons of convenience and cost this is generally not the case and, as a result, many trenches can suffer from hydrostatic / rising damp problem later on if the waterproofing isn't fixed before the concrete is laid. The worst case scenario arising from this situation is the development of a large crack along the length of the trench where the hydrostatic pressure has blown through the slab and coating. As an applicator you should be aware of how the trench was formed and try to work with the builders to ensure that waterproofing is maintained or corrected before they "infill".





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Remodel – Renovation

- From a coating point of view, you'd like the concrete used in these sections to be of equivalent psi concrete strengths as the existing slab, however more often you'll find it isn't and this can lead to a few problems as well. Cheaper concrete mixes and different finishing techniques with lower compaction will lead to a surface that is softer and more porous. Not only does this raise queries about how well the trench will bond to the sides of the existing slab, but it also means you have to be very careful when you get to the point of coating it. You may want to suggest the use of a "bonding agent" to help establish a strong foundation for the trench and when it comes to coating, you may need to seal or double seal to ensure the finish applied over the top isn't affected by an overly porous surface underneath. Visible differences in color can result from applying over porous surfaces, which means the trench will still be visible and the client, more than likely, unsatisfied with the work.



- The final point is that the trench material will rarely be given the full 28 days to cure. Most jobs, regardless of what they are, don't have the luxury of shutting down for 4 weeks while something fully sets and you need to take this into account. Specifically, before you install Everlast Industrial Floor, you will need to treat it with something that can handle the moisture and alkalinity of "green" concrete.



If you keep the above points in mind, applying over a trench needn't be a major headache. Perhaps the most important tip is to communicate with the builder doing the job so that you remain on top of what the trench is all about and can therefore make informed decisions on how to go about your task. This, unfortunately, is sometimes easier said than done, especially if the builder isn't too keen on getting watched so closely.

Note: Remod jobs have different types of substrates with different levels of porosity. This will be noticeable through to the finished floor. Areas that are more porous than the overall substrate, such as many types of patches, should be primed as the new Everlast Industrial Floor will look like it has "dry spots" in it. Th is difficult to fix but easy to prevent with primer.

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Rough Cove Base

- It is best to go over the finished cove base with 60 grit sand paper before top-coating. If the cove needs to be smoother after top-coating, sand it again, and add some verti-fill (fumed silica) to the topcoat Add about 10% by volume of fumed silica to the topcoat. Mix thoroughly before applying.

- If the cove base is very porous initially, you can add this to the first topcoat as you do not need to wait till for a second time.

- A rub rock may be necessary to remove excess stones if the cove base was not troweled tightly.





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Don't Leave Your Floor Unprotected

- Flooring installers often have to make scheduling choices based on priority. It can be tempting to leave a floor without topcoating it and come back after finishing a different job.

- This is possible to do. If you leave the floor for a few days, sand it with 100 grit sandpaper and wipe it with denatured alcohol first, before topcoating.

You do, however, run the risk of having to clean all the other trades mess off the floor first. Paint, joint compound, dirt and other mess can be difficult to clean off an unglazed floor. Our recommendation is to never leave a floor unfinished. This way you won't have a need for cleaning it, as it will be finished.





Note: Ask that the floor be protected with brown construction paper during construction. Cove base should be protected as well. Do not use the red paper as it can bleed into the floor and stain it.

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Finish Floor Too Rough / Abrasive

This could be because of one of these possible problems, each requiring different solutions / preventions

1. The end customer expected a less abrasive finish. We recommend showing the customer a few different samples with varying grades of slip resistance. Explain that cleanability/slip resistance is a balancing act. Explain that you can provide anything from a glass-smooth finish to a rough sand paper like finish. If you explain the difference and allow the customer to "feel" a sample of your recommended finish, you can often-times avoid having to re-topcoat.

2. Sometimes when the sub-floor is very porous, the subfloor will absorb much of the resin leaving a "rough" surface that can require a second coat of topcoat. This is often the case with a wood subfloor. We recommend priming wood subfloors, prior to installing the flooring to help to strengthen the subfloor, as the primer will penetrate into the wood. When priming a wood subfloor, we recommend cutting the primer with 10% Xylene, this allows deeper penetration into the wood. This will also prevent the need for a second topcoat.

Note: Some concrete subfloors also need a primer. If the concrete is continually "dusty" even after it is swept, when it seems as you can't sweep it clean because your broom seems to create more dust, then a primer will be necessary. The primer will solidify the surface and prevent you from having to apply a second topcoat. It will also prevent you from having to breathe in concrete dust as you are inst the floor.



3. Sometimes, the floor will need a second coat of topcoat when you use aluminum oxide to correct inconsistent sheen. Excessive aluminum oxide will leave a rough surface.

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Finish Floor Too Rough / Abrasive

A “rough” finished floor can always be corrected with a second topcoat. Most times additional slip resistance will not be needed in the second coat, as there will be remaining texture coming through from the first coat. When in doubt, test a small section first.

Everlast Industrial Floor can be sanded to a smooth roughness. Anytime the floor is sanded it will require a topcoat to seal any exposed marble chips. We recommend a 17” buffer with a brown 100 grit sand paper. If aggressive sanding is necessary, you may be able to use 36 grit carbide sand papers. But test it first in an inconspicuous area as the red resin (commonly used to create carbide sandpaper) can possibly stain the floor.



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Volume, Not Weight

All measurements you find on Everlast Epoxy product labels and instructions are given in volume, not by weight.

This provides ease of use by the end user, as not everyone always carries a scale but more than not, have access to measuring containers that are readily available at hardware stores, Walmart, paint stores etc.

VOLUME





NOT WEIGHT



Note that if you measure by weight, using our measurements, it will be wrong. Volume and Weight come out to different quantities as some resins are heavier than others.

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Humidity

If you install Everlast Industrial Floor in humid conditions, the floor may still be tacky after it cures. This can be fixed with a topcoat, so long as you drop the moisture in the air before topcoating.

Relative humidity should be above 30% and below 75% for a minimum of 48 hours before, during, and after installation, or until cured.
Surface temperature must be 5°F above dew point.





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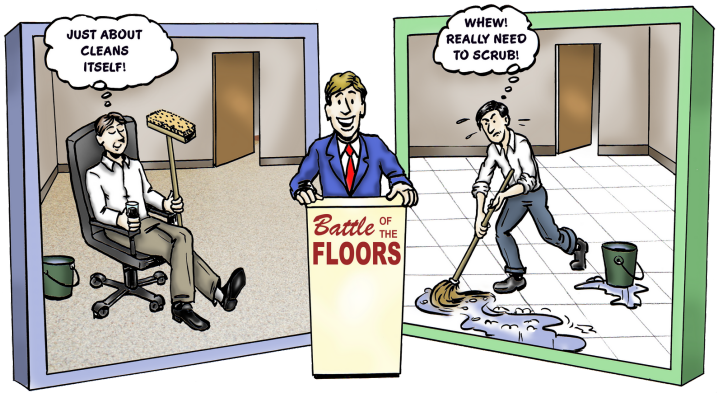
Cleanability

One of the best features of Everlast Industrial Floor is its cleanability. So, it is important to make sure every Everlast Industrial Floor is easy to clean. If the floor is not completely “saturated” in resin, it will not be as cleanable. When the subfloor is very porous, it soaks up much of the resin, leaving the floor porous as well, so the first coat of topcoat does not always completely fill the pores.

This is an easy fix...

- Give it another coat of topcoat. Make sure the aggregate in the floor is completely saturated with resin and the floor will be easy to clean.

- In some instances, such as in commercial kitchens, an aggressive slip resistant texture is required. These floors seem harder to clean, as well as tear up mops. These floors are not designed to be mopped. Please understand that by using an automated scrubber or a deckbrush and squeegee, together with our Everlast Floor Care Cleaner, your floor will be easy to clean as well.





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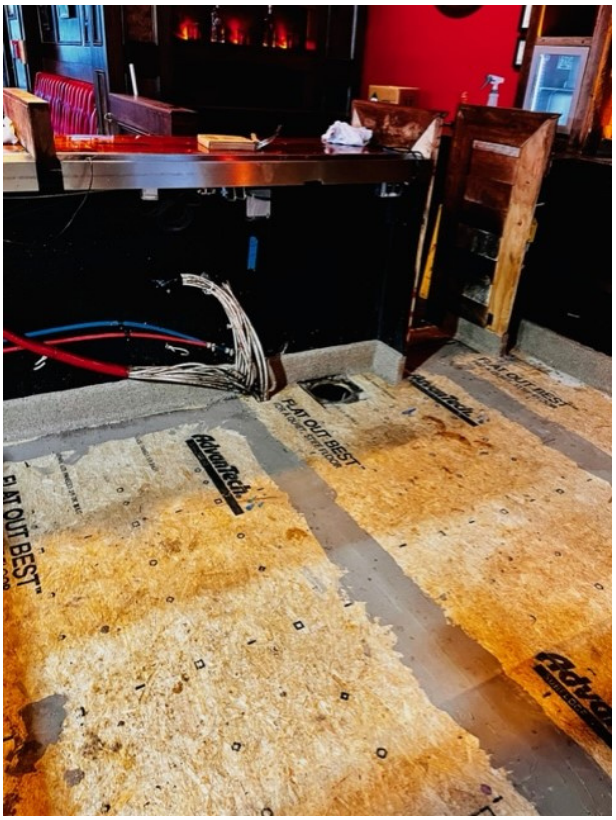
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Stress Marks

Stress marks show up in Everlast Industrial Flex Floor as white lines. This is similar to the white line you can make by bending a milk jug. It is caused by movement in the subfloor, such as an improperly filled control joint. Excessive concentrated weight can make these as well. Like a 2500 pound convention oven on welded wheels where all the weight is placed on the 1/8" protrusion where the wheel is welded.

- In the case of subfloor movement, proper floor prep will prevent this from happening. Honor all control joints. Do not just cover them up. Saw cut joints can be filled with a resin and fumed silica mix, but actual control joints need to be treated with a transition and proper control joint material.

- For plywood and concrete board, we recommend using fiber tape, together with a resin and fumed silica mix.





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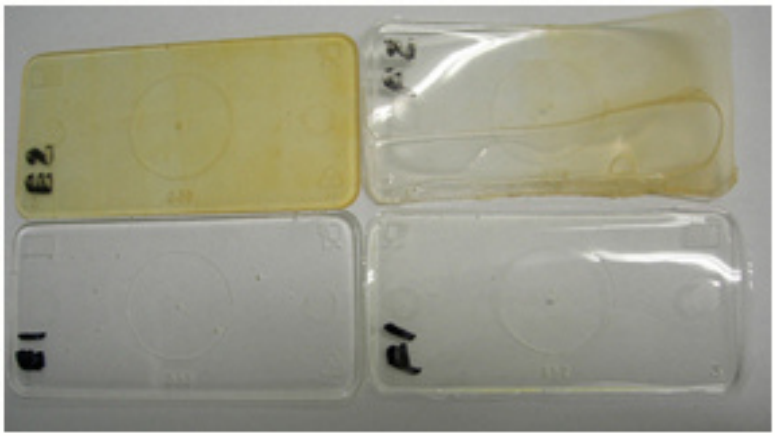
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Not For Exterior Use

We get this question a lot – can Everlast Industrial Floor be used outside? Is it UV resistant?

The answer – "No and No"

All epoxy resins break up in the sunlight and none are truly UV resistant. The epoxy resin itself (Part A) is an aromatic chemical structure, which in simple terms means the chemical bonds are susceptible to UV. Some will put UV stabilizers and/or absorbers into the resins to try to slow the yellowing, but these materials are themselves reactive compounds that have a finite lifespan. Once expired, the resins will yellow. I might add that the curing agent side can certainly be susceptible to UV, some worse than others. Because epoxy flooring uses an aliphatic curing agent, does not mean it will be a low yellowing or non yellowing hardener, as some would promote. Most of these aliphatic curing agents for solventless two pack epoxy curing agents are modified with benzyl alcohol, which is an aromatic compound that will break down with UV exposure



UV tests on a low-yellowing epoxy (left) and a PU show they both yellow.



The original samples are on the bottom, while the samples on top have been weathered for the equivalent of 2 years. Substantial yellowing can be seen in both!

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Not For Exterior Use

One of the brilliant ideas that many other epoxy flooring manufacturers had was to try to differentiate how yellow their epoxy looks compared to others. Hence new marketing terms like “low yellowing epoxies” or “non yellowing hardeners” have crept in as common product features and benefits.

Some manufacturers will be cringing as they read this manual, but I would rather tell it how it is than to deceive people and cause problems down the road.

If Everlast Industrial Floor is installed indoors and exposed to sunlight through a window, make sure that the window has a UV blocking tint.

If you or a customer of yours has a need for an exterior resinous flooring, my recommendation is not to use any form of epoxy, even if the manufacturer says it’s “lowyellowing” or “non-yellowing”. Some will take longer to yellow, but all will yellow and chalk and blush. If not tomorrow then someday. Don’t say we didn’t tell you so.





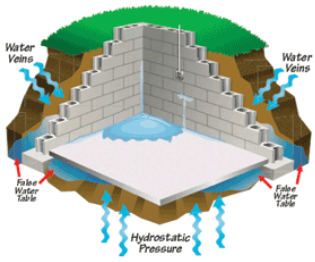
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Hydrostatic Pressure

Hydrostatic pressure is the result of water being forced through a concrete slab under pressure. For instance, the slab may not have a water proof membrane underneath it so if the water table rises it can force water through the pores of the concrete. Across a large area the pressure may be sufficient to blow a coating off the concrete or, at the very least, cause blisters or bubbles in a coating. If the water table remains high then there may be water under such blisters or, if the water table drops, the water may no longer be at the surface.

Moisture tolerance products used between the substrate and Everlast Industrial Floor can typically handle high moisture content in the slab, and it can handle high humidity or condensation on the surface during application, but that's as far as their problem solving goes. Hydrostatic pressure is a different thing altogether as it is a powerful, destructive force that acts on the coating once it is in place.



So how do you know you have a hydrostatic issue before you start?

If you are on the ground floor and start to grind the slab, a lot can be determined by what color it turns. If it remains light grey while you're grinding, then starts to darken after you've finished, this is a classic warning sign that hydrostatic forces are at play (the darkening is a result of water migrating through the slab). If you do happen to see this then you need to deal with the hydrostatic issue first before putting down a protective coating.

Make sure that the product you choose to control the moisture is also effective against hydrostatic pressure.



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Outgassing

This is not a common issue for Everlast Industrial Floor. Mainly because it is not installed outside, so the concrete does not have the sun baking it all day and have great differences in temperature. This is helpful information so I am including it in here. Note: the author is not affiliated with Everlast Epoxy Flooring.

Have you ever had bubbles that seem to appear out of nowhere in your solventless epoxy? Well, that's NOT outgassing!



Large bubbles can appear for a number of reasons, but not because of gas generation.

I don't doubt that the bubbles seemed to appear after you left the job; however the term outgassing has nothing to do with epoxy defects and those bubbles have nothing to do with gas being formed from the epoxy reaction. In fact, the standard epoxy-amine reaction doesn't produce any gas (unlike some other types of coatings, e.g. moisture cured polyurethanes producing carbon dioxide). It is true that the reaction is exothermic and can produce a significant amount of heat and therefore vapors from certain volatile components, however this is only if left in the container and not an issue when spread out into a thin film. It would appear that there is a lot of misunderstanding out there with regards to this topic, so let's start clearing up a few things...



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EVERLAST® EPOXY

Outgassing

- Firstly, outgassing is a term generally used to describe the process of volatiles gradually migrating out of a coating film and is therefore a key term in product safety rather than film defects. A very common example of outgassing is the “new car smell” that is actually a pretty nasty combination of formaldehyde and other volatiles. While this often pleasant Copyright©2011. All Rights Reserved. 47 www.everlastepoxy.com smell disappears over a few months, you can rest assured that the plastics and adhesives in your car are still releasing these chemicals for a long time yet.

- Thinking about an indoor epoxy film in the same way – we are going to have some slow migrating volatiles that will move through the film and be released into atmosphere, collectively contributing to what is known as Indoor Air Quality. Depending on what the volatiles are, they can be toxic or harmless; depending on how the epoxy is formulated, there might be lots of outgassing or very little outgassing; the outgassing might be concentrated in the first 12 months and then very little thereafter or it might be a gradual release over a 5-10 year period. There is tremendous variation in how things release volatile components, but the important thing to remember is that it happens gradually, not within the gel time of a product. If you can picture this then you can probably understand why I say that it is not likely the reason behind bubbles in your film.

- Back to the original problem then: why did the bubbles appear after I left the film to cure? Firstly, they may have been a collection of very small bubbles (introduced mechanically while mixing) that moved around, joining up with other small bubbles to eventually form a large bubble that rose to the surface. Alternatively, the bubble may have come through pores in the substrate, as can often be the case when concrete is heating up (and the reason why I say that applying in the cooling cycle of the afternoon is a good idea!).



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Outgassing

- Some people will say that they can use spiked rollers to remove these bubbles. Well from my experience I have found spiked rollers to be very effective with filled epoxy resins, e.g. a 2mm trowel down self-level floor. The spikes actually help dislodge the larger bubbles off the filler particles and release them to the surface. If the coating is clear though you will notice that there are lots of tiny bubbles that just get pushed around by the spiked roller but don't pop or move. In addition to that, spiked rollers can actually impair some of the decorative patterns that you want to create in your floor and therefore should be avoided.

- Other people will use blow torches to remove the bubbles – the blow torch applies sufficient heat to expand the air in the bubbles and hence force them to rise to the surface where they can pop. This is an effective treatment for small areas, however the practicality of doing it on a 200sqm (2000sqft) is very questionable. There is also an obvious reason why you might not want to use a blow torch (apart from flammability risks) and that is that you interfere with the curing cycle of the resins.

  As you know, heat will cause the resin to gel faster, so as you walk around blowing bubbles you can effectively end up with some areas leveling/flowing differently to others and this can show up in the finished product. Finally, there is a critical point you should know about blow torches – they blow carbon dioxide onto the film. If your resin is susceptible to amine blushing, then you can make the problem worse by using a blow torch.

So, what can we do to help minimize bubbles in the first place?

- - Firstly, the less bubbles you generate in the process the better. Using a good mixer that does not force/entrap air is a good idea, as is trying to stay away from the surface when mixing. Mix below the surface rather than beating the top.

- - Secondly, the less you work the resin on the floor, the less air you entrap in the resin. This often means the use of clever designs if it is a decorative floor.

- - Thirdly, the quicker you get off the floor and let the resin flow, the less bubbles and defects you will have.



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Pinholes

This is not a common issue for Everlast Industrial Floor, but it does occasionally come up. This information may help you to avoid or at least manage it, so I am including it in here. On the rare occasion that you find pinholes in Everlast Industrial Floor, sand it with a 17" buffer and 100 grit sandpaper before applying the topcoat. This will "pop" the remaining bubbles. On the larger pinholes, place some dry marble chips from the floor aggregate over the hole, and tap with a hammer. This will fill the holes with aggregate
(which will mix and cure with the topcoat) so they won't be noticeable after topcoating. We have had success with this solution.

Why do some floors get pinholes and others don't? I guess the answer to that is part education, part habit and perhaps even part naive luck! The education part comes from understanding what causes pinholes. I am specifically talking about pinholes in concrete coatings.

Granted there are different variations in concrete, some are porous and some appear to be dense. The reality is they are all porous in varying degrees.

With a porous substrate, the voids (or holes) are filled with air. As the voids are not closed cells, the air in the voids is subject to all the laws of physics. The fundamental law that applies in our case is that air expands when heated and contracts when cooled. Yes, the voids are small so the amount of air heating/cooling is small, but collectively it can have a big impact.

So, what has this got to do with pinholes?

When the air expands it pushes the air out of the slab through the path of least resistance. Often this is through the top of the surface, particularly if we have opened up the slab by removing the laitance.



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Pinholes

A side note, I have heard some applicators say that they do not want to open up a slab too much as it would use too much product. For those of you that may contemplate this concept, be aware. I would rather know that the coating is not going to delaminate, which could cost me $100's or $1000's to fix, rather than using up an extra litre or two of resin that might cost me $50.

So we know the air comes out of the slab, we know it happens when the air in the voids is heating, now imagine that we apply an impermeable coating over the top. Whilst it is wet, the air being pushed through will blow a bubble of heated air. It might be a tiny bubble, it might be a large bubble, that would depend on how much air is coming through and whether the coating in its liquid form will pop or not.

Here come the different variations of a pinhole; the bubble might not pop, so you are left with a resin bubble that has hardened; the bubble might be tiny and it pops after the resin has gelled, leaving a pinhole; it might be a larger bubble that pops after the resin has gelled, leaving a crater.

Whether it is a bubble, pinhole, blow hole or crater, for flooring coatings it is all bad. There is the education!

The habit part is that some applicators understand why the pinholes occur and they either only apply when on the cooling cycle (i.e. when the air is cooling, as that will tend to draw the resin into the voids, rather than blow out a bubble) or they seal the slab to try to block the voids. Note the air will still be expanding and contracting, but with a sealed top it will find the path of least resistance and exit that way.

Quick lesson on sealing a slab – sealing can be a good option, but be aware that while you might believe the slab is sealed by applying a thin coating across the whole floor, don't be fooled. When the sealer is applied, you will note that in some areas it looks dry and in others it looks less dry. The dry sections of the slab could still have an open void that can cause a pinhole. Some users might seal a slab twice until the whole slab looks even.

The naive luck part refers to the users that have no idea as to why the pinholes happen. They are applying the coatings at various parts of the day onto slabs with varying degrees of porosity. Some days they might get pinholes and other days they might not.

If you relied on luck in the past, I hope you now have the education and/or the habits to help you steer clear.



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Amine Blushing / Carbon Dioxide Exposure

Amine Blush shows up in epoxy coatings in many different forms. In Everlast Industrial Floor, the one way can show up as a white haze, which seems like it will never wash off. It does eventually go away but it takes a few months. The other way is shows up is whitening in the resin during the curing. You'll see it right away. This is irreparable as it is permanent. The good news is it is avoidable.

Amines (epoxy hardeners) + Carbon Dioxide (normally in air or from combustion process) + Water

= Amine Blush (ammonium carbamate)

Amine blushing is the result of the amine in the curing agent reacting with carbon dioxide and moisture. Therefore, a humid environment can be more prone to such problems, but it can also be quite inconsistent (happen one day and not the next) in hot, humid environments because the product cross links more quickly to begin with due to the higher ambient temperature. The other extreme, is cold and wet conditions. In this case there is moisture in the air and the resin is slow curing giving the (blushing) reaction plenty of time to take place.

One scenario that many users do not consider is when they are looking to heat a room in order to speed up the curing process. They forget that a gas fired heater will be blowing carbon dioxide into the room, increasing the concentration of the gas compared to normal conditions and increasing the chance of amine blushing occurring (after all it is a reaction based on moisture and CO_2).



Bottom Line – Be aware that carbon dioxide can and will cause this problem. We usually do it to ourselves with equipment and heaters, but sometimes our customer contributes to this problem too. Remember gas equipment blows carbon monoxide. So use a fan to blow it away if there is gas equipment running outside near your work area. If you're unsure, test. Carbon dioxide testers are inexpensive and readily available. When you test, test near the floor, as carbon dioxide is heavier than normal air and will float along the floor



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