



BETTER PRODUCTS THROUGH BETTER CHEMISTRY

Acid Stain Guide

Please read all this information before attempting to stain the first time. This will take a few minutes BUT it will save you money as well as hours of work and frustration!

EZChem acid stains can be applied to any concrete, overlay and self-leveling product that has a Portland cement base, as well as concrete countertops, and on vertical applications.

A smooth, hard troweled, concrete surface will produce richer, more vibrant colors than an old rough one, but rougher (older) floors can use their cracks and imperfections to produce a very unique and beautiful tapestry.

We urge you to use our family of products as we have a great deal of experience with them and they have been specifically formulated to be compatible and work together. Due to the complexities of today's products, and if you start mixing different companies products, and something does not go correctly, unfortunately we are not always able to assist you in uncovering the problem.

The staining process is a very simple procedure involving 6 basic steps. However, each of the steps outlined is very critical to the successful completion of a beautifully stained floor that can be enjoyed for years. Please do not attempt to cut corners or omit steps. It will not be worth it.

- 1.) Preparation:** Clean the floor of any dirt, oil, etc. that would prevent the stain from fully reacting with the concrete. Test the floor for any sealers or coatings that may have been applied and remove any residue if detected. Tape up plastic to protect all walls, molding, etc.
- 2.) Testing:** Test the stain in an inconspicuous area to see if it the right color.
- 3.) Applying the stain:** Apply the stain with all plastic tools in the same manner as the test area.
- 4.) Neutralizing/Rinsing:** Scrub and neutralize the floor, and rinse the floor thoroughly with clean water to remove all residue.
- 5.) Applying the sealer:** After floor has dried completely, apply sealer.
- 6.) Applying the floor polish** (for interior applications only): Apply multiple coats of floor polish to protect the floor. Apply a minimum of 2 coats and up to 5 coats in high traffic areas.

1.) Preparation:

DO NOT acid wash the surface to be stained with muriatic/hydrochloric acid! This process will eliminate the necessary component (free lime) that is the essential to the reaction and therefore you will not be able to stain the floor.



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Check the surface of the floor to see if there are any sealers or contaminants that would prevent the absorption of the stain. Apply a small amount of water on the concrete in several locations. Approximately 6-8 ounces is usually sufficient. If it is absorbed quickly into the concrete, it should be acceptable. If it beads up, there may be some contaminant/barrier that needs to be removed. If it is determined that there is an acrylic sealer or coating on the floor, it can be removed through the use of **EZChem Citra-Peel**. This is a citrus based product that will remove acrylic based sealers in one or sometimes two applications. Rinse the floor thoroughly, ensure that there is no standing water and the floor is ready to stain. Please see the technical data sheet for the proper application methods and techniques for this product.

Protect all areas *NOT* to be stained. Cover and mask all adjacent surfaces with painter's tape and plastic or paper. You can use Plexiglas or a coated cardboard as a handheld spray shield while applying the stain. If the floor has a hard trowel finish, we recommend that you treat the entire concrete slab with **EZChem Super Blue**. Many times, when staining a hard troweled slab, there will be multiple areas of the slab that will not take or absorb the stain, for whatever reason. This product conditions the concrete and helps to increase the probability that the entire slab will stain more consistently. For best results, the floor should be damp when using. Please see the technical data sheet for the proper application methods and techniques for this product.

2.) Testing:

Be very safety conscious when using this type of product. When working with any acid stain, you should wear safety glasses and latex/rubber gloves and if using in an enclosed environment, breathing protection.

Always test the acid stain in a small area before using it on a large scale. All concrete is different and therefore the chemical reaction will vary, this can and does lead to variations in the final color that can result. You should allow the stain to stand at least 4 hrs. Clean and rinse the area to see if you achieved the look you want. If necessary, a second application may be applied then, followed by a second cleaning and washing. Test in an inconspicuous area. This could be in a utility closet, or where the cabinets will be installed in the kitchen, or in an area where you will have another floor covering. This could be tile, carpet, or a wood floor.

When testing, you must apply the stain in the same manner you intend to you when doing the entire floor. When the sample is wet, after cleaning, this wet look duplicates the look of the stain after it has a sealer applied to it. If your sample is not dark, rich enough, apply a second application. Understand that the way you apply the stain influences the subtleties of the color(s) you choose.



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You can apply multiple colors of stains together. This is accomplished through the use of successive applications of the different shades of stains. Always start with the lightest color first, as a base coat and then add the darker color(s).

You can lighten/dilute the stain with up to 50% potable water. This depends on the color that is desired. You **MUST TEST** in order to determine this. Diluted coverage is @ 250-300 sq. ft. per gallon. However, you can use the stain full strength, but always test it to be sure of the final color.

The color of the liquid reactive acid stains does not correspond to the color of the final product. The color in the bottle is from a coloring agent and the final color of the stain on your floor, is from the chemical reaction of the metallic salt(s) with the free lime of the cement. Example: You may have a green color in the bottle that will give you a brown stain on the floor.

New Concrete

We recommend that the concrete should be at least 28 days old before it should be stained. If you must stain earlier than 28 days, you must dilute the stain more than usual with water to prevent burning the concrete. This dilution can range from 5-15 parts water to 1 part stain. Again, you must test first to determine the amount of dilution necessary to meet your expectations.

New Construction

Request that the building's framers use blue or white chalk to snap out guidelines for the location of future walls on the surface of the new slab. They don't like to use these colors because they do not last as well as red chalk, especially in inclement weather. The trouble is that their red chalk contains iron particles which react with the concrete to stain it. Red chalk lines can be difficult to remove and it used to require a lot of time and effort to do so. Most of these lines will not show, because the walls are built on top of them. However, they will show up across every doorway or opening in the house. Now however, these red chalk lines can be removed with the application of a diluted mixture of **EZChem Super Blue**. Please see the technical data sheet for the proper application methods and techniques for this product. The best time to stain in a new construction is when it is the most convenient and when they are able to cover and protect the stained floor afterwards. Protecting your new floor during the construction process will make the job of cleaning prior to acid staining that much easier. All workers should be advised that the slab would be a finished floor. Any paint, drywall mud, will usually be removed through the use of water and a 60 grit sand screen. For the detail work along the walls, etc. use the scrappers.

Old Concrete



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A thorough cleaning of the concrete may be necessary. All dirt, grease, paint, sealer or curing agents will prevent the acid stain from reacting with the concrete. They **MUST** be removed and we recommend **EZChem Citra-Pro**. This is a very effective citrus based cleaner/degreaser that is environmentally safe.

On some older slabs, parts of the smooth surface of the concrete may have spalled or popped out. If these areas are deeper than 1/4" they can be successfully filled with a concrete repair material. Be aware that the repaired areas will not stain the same as the rest of the slab. It will take some extra work to make them match. If there are very small holes, less than 1/4" in depth, they may look better if you do not fill them. They will become "character marks" on the floor.

If the concrete is more than 1 year old, and it is clean, it may be advisable to soak the concrete with water the day before you apply the stain. If the concrete is very dry, your floor can act as a sponge and soak up all the water from the stain and consequently minimize the stain reaction and color. As a result of this, it will require more stain to achieve the final color that you desire. If the absorption of the water into the slab is minimized, this will allow a better and more complete reaction of the stain and the more vibrant your color will be.

Renovation Applications: Exterior Application

Your color selection may be limited when staining outside. We advise against using any blue or green reactive acid stain colors outside where standing water or vapor transmission is an issue. If water stands against the side of the slab or otherwise percolates through it and upward into the stain, odd black marks can appear over the blues and greens. This color change is permanent.

However, you can use the blue or green **Enviro water based stains** with none of these problems.

Pool decks present special problems because of the chemicals used to treat pool water. Since the sealers may be permeable, the chlorine used in swimming pools can go completely through the sealer and bleach out the stain underneath. This can lead to white spots and a weakened sealer film. We do not advise acid staining for pool decks unless specific measures are taken to use a sealer that is very resistant to these types of chemicals. **EZChem Klear koat WB** was formulated specifically for these types of applications.

If you are staining a slab, you may want to cut/move away the grass built up along the edges of the slab or move gravel and plants aside, so that you have access to the edges of the concrete. This allows you to stain the edges of the concrete as well as the top. This extra step helps to give the impression that the color runs through the entire slab, which adds to the illusion that it is stone and not concrete. You should not use any floor polish over your sealer outdoors. Acrylic floor polish will not hold up under standing water and extremes of temperature.



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Staining Vertical Surfaces

Concrete lawn furniture, columns, and stair risers can be stained to match surrounding floors, but extra care must be taken when staining them.

- Use a bristle paintbrush, or foam paintbrush and brush from the bottom of the area towards the top, using horizontal strokes.
- Do this multiple times, since the stain takes more lightly on vertical surfaces.
- If you are using any kind of patterning such as rags, veins, or plastic, it is a good idea to lay it into the wet stain. Plastic is especially effective at clinging to the vertical surface, obscuring drips, and as a result helping the stain to penetrate into the slab.

3.) Applying the acid stain

You can apply the stain with a hand sprayer, brush, sponge or mop. We recommend that you use an ALL plastic sprayer. Before using it with the stain, test the sprayer with water for a moderate spray pattern before using in work area. You do not want to use a fan tip when applying the stain. Use a tip that has a conical spray pattern. Normally, two coats of stain are required. You need to leave the stain on for a minimum of 4 hours for the best results.

- Use proper safety equipment. This includes hand and eye protection. Always provide adequate ventilation with the use of doors and windows or through the use of ventilation fans.
- 1st application
- Work from closed end corner of work area to point you can step away from stained area without stepping on or in the stained area. *Do Not* walk on stained areas that are still wet or damp. If you must walk in the stain, use acid resistant spike sandals. If you walk in the stain you will leave prints that will be very difficult to remove, if at all.
- Hold sprayer about 12-24 inches above concrete.
- Rotate the sprayer tip in a circular motion. Do not use a back and forth motion. This will leave a pattern that will be noticeable, only after the sealer is applied.
- You can work stain into concrete with a plastic bristle brush (chemical resistant, medium stiffness) or with a rag. This will depend on what type of texture you desire in the stain. The rag will help to blend in the stain and will not leave any brush marks that the brush is liable to. The use of the brush or rag helps to produce more vibrant and richer colors.
- When working across a floor that does not have convenient saw-cut lines or other stopping points, you should put a wet edge (a partial brush full of water) on the edge of each stain area. It is



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advisable not work in neat squares or rectangles. Try to maintain a soft sweeping arc, like a big S. This will help you in keeping a random and natural variation to the floor. You are trying to mimic a natural look and want to avoid a manufactured feel.

Apply the 2nd application in same manner as the 1st application. You do not need to rinse the entire floor after the first coat before you apply the second coat. You may want to rinse off a small section (3' x 3') to verify that the color ('s) are consistent with your test section. Wait 2- 4 hours after the second application before you begin the neutralizing process.

4.) Neutralizing:

Neutralizer Mix Ratio. ½ pound baking soda in 2 gallons of water or ½ cup of TSP, trisodium phosphate, can also be used.

Interior Application

- Sweep up as much as possible, any excess residue on the surface.
- Brush neutralizing solution vigorously into concrete, wet vacuum up residue.
- Thoroughly rinse with clean water– wet vacuum up.
- When wet, the color will duplicate the look of a gloss sealer and will appear close to the finished product.
- Dispose of the residue. Collect rinse water, residue and runoff into a plastic container, and neutralize acidic pH with sodium bicarbonate, (baking soda) or TSP (trisodium phosphate). Check pH with Litmus paper or pH pencil. Litmus paper is available at any pool supply store. Let the residue stand for 1-2 hours, until the sediment has fallen out of solution. The solution then may be poured out for disposal. In most cases, the neutralized solution may be disposed of through a treated sewer line or the hardened sediment may be disposed of in normal refuse receptacles.
- Let dry completely
- Apply sealer
- Apply floor polish

Exterior Application

- Sweep up as much as possible, any excess residue on the surface.
- Brush neutralizing solution vigorously into concrete, rinse off residue. Be careful where you runoff drains. If it is allowed to drain onto concrete or a cultured stone type of product, it may stain it. Thoroughly dilute the runoff and rinse heavily with water.
- Rinse thoroughly with water.
- When wet, the color will duplicate the look of a gloss sealer and will appear close to the finished product.



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- Dispose of the residue. Collect rinse water, residue and runoff into a plastic container, and neutralize acidic pH with sodium bicarbonate, (baking soda) or TSP (trisodium phosphate). Check pH with Litmus paper or pH pencil. Litmus paper is available at any pool supply store. Let the residue stand for 1-2 hours, until the sediment has fallen out of solution. The solution then may be poured out for disposal. In most cases, the neutralized solution may be disposed of through a treated sewer line or the hardened sediment may be disposed of in normal refuse receptacles.
- Let dry completely
- Apply sealer

Important. Let the stained area stand dry completely before applying sealer. If you apply the sealer too soon and there is any moisture near the surface, a white cloudy film may develop under the sealer.

5.) Applying the Sealer

Acrylic sealers are available in two major types, solvent based and water based. They can be purchased in a medium or high gloss.

Solvent-based sealers are a good and durable choice for exterior applications. They have a very strong odor to them and extreme caution and safeguards need to be employed before they are interiors. They are also flammable and should not be exposed to open flames.

Water based sealers are your best and safest option for interior use, and areas exposed to chemicals (example-pool chemicals) or gasoline (garages).

Solvent-based sealers are clear in color, very durable, long lasting, but are very aromatic. If used on interior floors, precautions **MUST** be taken to protect the applicator and to ventilate the area with fans. The applicator also should use an approved respirator. During the curing process, the solvent in the sealer is airborne and potentially explosive.

NO SMOKING. If using for interiors, open windows and exterior doors. Extinguish pilot lights, any open flames, and any other source of ignition. Provide adequate ventilation. Acrylic sealers require an ambient temperature of 50 degrees F and rising and slab temperature of at least 40 degrees F. They will look normal on a too-cold slab until it has dried, at which point it will turn to a streaky or cloudy white film. This is most likely caused by moisture under the sealer. If the slab feels very cold to your hand, seal a sample of two or three square feet. Choose a spot near an exterior wall or a doorway rather than the warmest part of the floor. Let the sample dry to the touch, from one half hour to 3 hours. Clean the area, and melt (re-emulsify) the sealer by rubbing a rag with xylene / toluene on it. This will soften the sealer



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and allow the moisture to evaporate before it hardens. Be very safety conscious and use eye protection and rubber gloves when using any of these products.

Water based acrylic sealers are one of your alternative for an interior application. The ones that dry to a gloss finish do the best job of showing off the depth of the vibrant colors of the acid stains. These sealers, do not have a strong smell associated with them, and therefore work very well in interior residential applications. We recommend our **Klear Koat WB** or the **Enviro Seal**. Please see the technical data sheet for the proper application methods and techniques for this product.

Exterior:

First recommendation for the application of sealers is with an airless/power sprayer.

Apply two thin coats. Let the first coat dry thoroughly before applying second coat. The time may vary according to the temperature and humidity. Wait until it is tack free and then wait an additional 15 minutes.

Apply second coat at right angle to first coat.

Second recommended type of application for sealer, is with a short (1/4") nap roller.

Before first application, saturate the short nap roller with sealer to reduce possible air bubbles. If air bubbles do appear, back roll the sealer to eliminate them. Apply sealer in THIN coats using short (1/4" or less) nap roller. Apply second coat after the first has thoroughly dried, and at a right angle to first coat.

Allow 1-3 hours drying time between applications, depending on local conditions.

Re-seal the sealer container tightly, to preserve for future applications.

Allow at least 24 hours before allowing foot traffic

Allow at least 48-72 hours before allowing vehicular traffic.

For exterior applications, re-apply **Klear Koat Sealer** periodically, as needed, to protect the surface and maintain the look. Typical range of re-applications varies from 2-5 years. This depends upon the concentration (% solids) of the sealer, the type of sealer used (solvent or water based), type of exposure and amount of traffic it is exposed to.

Interior:

For interior applications, we strongly recommend a liquid floor finish product that can be applied to protect the surface from the wear and tear of traffic. It is easier to re-apply a coat of liquid floor finish to maintain the surface than to re-apply a coat of sealer. We recommend that **EZChem EZ Glow** (for residential/light traffic use) or **EZChem EZ Glow Plus** (for commercial/heavy traffic/buffable applications). Never apply these with a damp applicator. These products are very sensitive to water and



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can fail in white streaks just as though the slab were too cold. They have the same minimum temperature requirements as sealers, 50 degrees F.

If you choose NOT to apply a floor polish to interior surfaces, and do not maintain the sealer, you will eventually wear through the sealer into the acid stain.

Please see separate sheet on floor maintenance of acid stained floors.

Limitations: Acid Stains will not hide cracks, blemishes and or other construction errors. The color produced by acid stains will vary from surface to surface, and it is dependant on, concrete mix, water/cement ratio, weather, application method, experience of applicator, number of coats applied and general condition of the concrete itself, such as porosity, smoothness and cleanliness. There are some concrete surfaces that will not accept acid stain, always test surface prior to application. These instructions are only a general guideline to use acid stains and do not replace field experience or established industry standards. **TEST BEFORE USE.**



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