



Troubleshooting Common Acid Stain Problems

Why They Occur and How to Fix Them

By Chris Sullivan, QC Construction Products



The practice of staining concrete comprises unequal parts of science, process engineering, and art, loosely tied together with a bit of the unknown. Throw in multiple environmental factors, and the common result becomes unpredictability and color variation! Not surprisingly, these two factors (unpredictability and color variation) are what create the stunning effects that have made, and continue to make, staining so popular. [*Continue >*](#)





Also, not a surprise, these same factors, along with the infinite combination of concrete surface conditions -- temperature, moisture, application methods, and sealer systems-- create more questions and problems than any other decorative concrete discipline.

Take heart! When you consider that problem projects make up far less than 1% of the millions of square feet of concrete stained each year, the good far outweighs the bad. Also, consider that the last five years have seen an unprecedented increase in quality literature -- books, web sites, videos, and material systems to help applicators, architects, and homeowners understand the process and products. For example, look at the resources ConcreteNetwork.com can offer both experienced and novice staining professionals. Unfortunately, even staining specialists with years of experience have problems from time to time. Avoiding problems or solving them quickly and with confidence is what this article is all about.

One of the most commonly neglected problems occurs *before* the job even takes place.

Stain related problems present themselves in many ways, and at any time. The following examples highlight the most common problems and fixes, since it would be virtually impossible to cover every issue concrete stain installers encounter. For better clarity I divide troubleshooting stained concrete into three simple categories: before, during, and after. The first of these common problems, and coincidentally the one most often neglected, takes place before the job begins or the contract is signed.





Before Staining

Since the process of staining results in such unpredictable and variegated tones and colors, not properly selling and preparing your clients is equivalent to project suicide. Providing in-depth information, insisting on signed contracts, and performing realistic jobsite samples (on every project) is cheap insurance in what can sometimes be a high stakes game of collecting your hard earned money. Special note: Since every piece of concrete is different, the only way to determine the true color and effect is by sampling on the floor to be stained. The response “I have been staining for years” or “I’ve never seen this before!” does not hold any water when a color problem arises that could have been avoided by a job site sample!

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The other part of troubleshooting “before staining” deals with surface effects. Also known as character marks, this is a catch all for a wide range of issues, man made and natural, that can play havoc with stained concrete. Some of these are virtually invisible on gray concrete, but once stained can stand out enough to ruin an otherwise beautiful stain job. Paint, cutting oil, chalk lines, curing compounds, sealers, tape residue, patching materials, burnished finish, and inconsistent cure to name a few, round out the most common surface issues that effect stain performance.





The good news is that many of the mentioned issues can be detected, prior to staining, with a simple water test. By applying water to the concrete surface you can learn a lot about how stain will take, and if any additional surface preparation is required. Stains are 95% water, so if water beads up on the surface, chances are stain will do the same. Water may also bring out hidden surface issues allowing for additional surface preparation before you waste a lot of your time, money and material.

If you identify that the concrete has surface issues, the next move is figuring out what they are, and what type of measures are needed to eliminate them. Depending on the extent of the problem and the desires and budget of the client, corrective measures can include concrete degreasers, strippers, cleaners, surface sanding, and thin section micro-topping overlays. As with any corrective measure, testing in an inconspicuous area is always recommended prior to doing large-scale work. If a “character mark” happens to sneak by the water test and becomes apparent once the stain is down, using tinted sealers is a proven method for hiding these blemishes. Gaye Goodman’s *Tips and Tricks* section of her guide to acid staining covers this type of troubleshooting and touch up work in detail.





During Staining

The most common problems and solutions during staining deal primarily with the applicator (both person and equipment) and application methods. Either too much or not enough stain applied to the concrete can produce variable and sometimes unattractive results. Too little stain can produce blotchy and streaky results, often exaggerated by the brushes used to work the stain into the concrete.

This effect is rather easily remedied by additional applications of stain, or targeting the correct coverage rate during initial applications. Just as not enough stain can cause problems, over application can also be problematic. Contrary to common perception, applying heavy coats of stain will not always provide better color development. Not only does this waste product and increase clean up, but it can retard the ability of the stain to penetrate and react. We see this more often with the darker colors of stain, as well as some stains that are marketed as concentrates.





The problems of over application can also be magnified if the concrete in question is very dense and tightly finished. But surface density and color development shouldn't be an issue, because the water test and sampling process identified that before you even started, right? Unfortunately for many stain applicators, they realize they have an over application or density issue when most or all the color comes off in the neutralizing and cleaning process. At this time, the fix is obvious, and costly. Go back, properly prepare the surface and/or apply the stain in accordance with proper coverage rates.

If at any time you have doubts about how the stain looks during or after the application, DON'T seal the surface.

Types of tools used to apply stain are the last of the common “during application” problems. Mops, rollers and squeegees are never a good method of stain application. The high concentration of stain coming off the ends of these types of applicators tend to leave “roller marks” or “rows” of color. Depending on the intensity of the “color rows”, proven fixes for these types of issues include dry sanding, acid washing or additional stain applications - sometimes with a slightly darker color of stain.

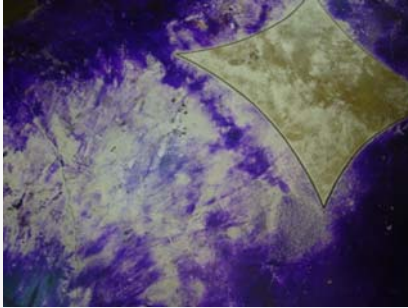
I want to stress the point that if at any time you have doubts about how the stain looks during or after application, DON'T seal the surface. It is far easier to troubleshoot and repair stained concrete surfaces before they are sealed rather than afterwards.





After Staining

Most issues with stained concrete that occur after application revolve around sealer failure or lack of sealer maintenance. Too much stain residue remaining on the surface when sealing is the most common cause of sealer failure on stained concrete floors. These residues are highly acidic, which can chemically alter the sealer film as well as act as a bond breaker by clogging the pores of the concrete. This is why neutralization and removal of stain residue from the concrete surface is such an important step in staining. If significant amounts of color can be seen on pieces of the failing sealer, chances are that excess residue is the cause of the failure. Stripping the sealer, neutralizing and cleaning the floor, (sometimes re staining) and then re-sealing are the common fixes for this avoidable, but all too common problem.



Traffic pattern sealer failure caused by lack of maintenance.

The other common post application problem with stained concrete is lack of maintenance. An otherwise beautifully stained floor with noticeable traffic patterns from lack of maintenance is the leading cause of perceived stain failure. I know of some respected applicators that will no longer apply stain to high traffic floors (bars, restaurants, office buildings) because lack of maintenance gives their work a bad name.



Not every concrete floor is a good candidate for stain. We as an industry have to start doing a better job of managing client's expectations regarding sealer maintenance. In particular, start offering maintenance programs, or at a minimum informing clients of what to expect weeks, months and years down the road. Stained concrete is not maintenance free! Be wary of those stain systems that recommend a few coats of cure and seal as the long-term sealer system. I encourage you to use those that include sacrificial maintenance top coatings and long-term maintenance programs as part of the overall program. ***Educating owners, architects, and designers should become an integral part of everyone's staining process.*** On a positive note, even some badly worn stained floors can be brought back to life with the application of maintenance coatings. Many times it is not too late to begin a maintenance program. This speaks volumes to the strength and permanent nature of acid stains on concrete.

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I encourage everyone staining concrete for a living to become an expert! Utilize the wide range of resources, reputable schools and good training aids available to today's staining professional. Educate yourself and your clients on what to expect before, during, and after stain is applied. Developing your own troubleshooting techniques in conjunction with these proven solutions will help minimize future staining headaches.





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SUMMIT DATE

This document reached the summit (was created) on May 31, 2005 and is based on the best information available to the Sherpa at that time. To check for updates please click here <http://www.ConcreteSherpa.com/troubleshooting>.

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	PC	MAC
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Zoom out	[Ctrl] [-]	[⌘] [-]
Full screen/normal screen view	[Ctrl] [L]	[⌘] [L]

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The Concrete Sherpa is a team of people that represent the experience, teaching and learning of our team members and other industry leaders *on a mission to make life better for the concrete contractor*. We are an idea center striving to deliver thought provoking ideas based on “Concrete Advice for Business and Life” to stimulate you to reach new heights. As a user, you should remember to consider all information you receive, here at the Concrete Sherpa or elsewhere, not as a *cast in concrete* recommendation, but rather as an idea for you to consider and ponder.

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THE JOURNEY LEADING TO THE CONCRETE SHERPA PROJECT

The Concrete Sherpa Project (A [Sherpa](#) is a “guide”) was born at The Concrete Network in mid 2004. Here is how it happened:

The biggest surprise, or gift, since starting The Concrete Network in 1999 has been the concrete contractor friends from around the country we’ve made and witnessing the passion they have for what they do. These people include Dave Pettigrew, up in the San Francisco Bay Area, or the Verlennich brothers in Minnesota, or Bob Harris in Georgia, the list goes on and on. It’s quite inspiring.

We were once asked, “How are you so excited every day about concrete?” Well the answer is simple, it is impossible to not be excited about concrete when you have the job we do—interacting with hundreds of concrete contractors from every state in the country.

The thing we’ve learned about concrete contractors is that most are passionate *craftsmen*—they are often less passionate and experienced in the “office stuff”. Human nature channels us to do what we are most comfortable with; learning how to use a new saw-cutting tool is comfortable; learning and implementing a new estimating strategy, or job management tool, is not so comfortable.

Sherpa info

THE JOURNEY CONTINUES...

So Sherpa was born to provide FREE and easy to use information on topics many contractors are not too comfortable with.

- Concrete Sherpa is here to provide help to contractors who are often ‘Lone Rangers’ and don’t have anyone to get solid business advice from.
- Concrete Sherpa is here to provide help for contractors who have to work too hard and too many hours in their business, and one day realize they need to work *on their business, not in their business.*
- Have fun with Concrete Sherpa and go faster towards reaching success than you might have on your own.
- To skeptics who think something free can’t be valuable, or there must be a trick- visit Concrete Sherpa and decide for yourself.

We hope you make great use of the Concrete Sherpa and it helps you to become an awesome success for yourself, your family, your church, and your community.

VISIT THE CONCRETE SHERPA

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