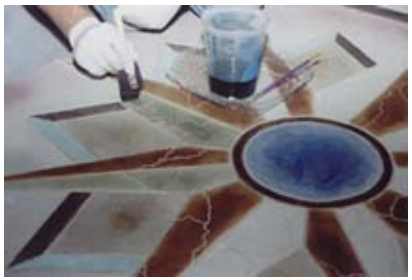
Shop Smart Guide to Buying Concrete Stains and Dyes

With its porous qualities and neutral tone, concrete is the perfect blank canvas for topically applied color. Stains and dyes have a particular affinity for concrete, and when used alone or in combination, they can produce spectacular effects not possible with other coloring mediums. *Continue >*

Barbara Sargent of Kemiko Concrete Stains rattles off a host of benefits of concrete floor stains: "Architects have always loved concrete stains. Stains enhance the integrity of their designs. Consumers love them because the floors are easy to maintain. Stains don't rule out any option, so if you want to sell your home and the next homeowner wants to change their style to include carpet or hardwood, they are still just dealing with the slab of their home and can cover the stained floor. Stains are also great any place you deal with the elements, such as sand or snow. Stained floors are beautiful, and they are wonderful for people with allergies who don't want carpet.“



Decorative Concrete Institute

For many years, decorative concrete contractors have been using acid-based chemical stains to achieve rich, earth-toned color schemes resembling natural stone, marble, wood, or even leather. But today, contractors are no longer limited to earthy shades. Newer products on the market—such as water-based penetrating stains and water- and solvent-based dyes—are greatly expanding the artist’s palette with colors ranging from soft pastels to vivid reds, oranges, yellows, and purples. And in some cases, these newer products are easier and safer to apply.

Ready to take advantage of this color explosion? Here’s an overview of the various types of concrete stains and dyes on the market, followed by important questions to ask before choosing a product for your next project. Keep in mind that once you apply stains and dyes, the color is permanent. So whatever product you choose, be sure to test it in an inconspicuous area on the surface to be treated to ensure the color and aesthetics are exactly what you’re aiming for. Some manufacturers sell small sample sizes of their products or test kits with samples of every color in their line.

Acid-based stains produce natural color variations in the concrete. Kemiko Concrete Products in Leonard, TX.

Brickform Rafco Products

Acid-Based Stains

Most acid stains are a mixture of water, hydrochloric acid, and acid-soluble metallic salts. They work by penetrating the surface and reacting chemically with the hydrated lime (calcium hydroxide) in the concrete. The acid in the stain lightly etches the surface, allowing the metallic salts to penetrate more easily. Once the stain reacts, it becomes a permanent part of the concrete and won't fade, chip off, or peel away.

Like stains for wood, acid-based stains are translucent and the color they produce will vary depending on the color and condition of the substrate they are applied to. Each concrete slab will accept the stain in varying degrees of intensity, creating natural color variations that bring character and distinction to each project. What acid stains don't offer is a broad color selection. You'll mostly find them in a limited array of subtle earth tones, such as tans, browns, terra cottas, and soft blue-greens.

Water-Based Penetrating Stains

If you want to go beyond the subtle drama and subdued color palette of acid staining, consider using nonacidic water-based stains, which come in a full spectrum of hues. Most manufacturers offer dozens of standard colors, including black and white and even metallic tints. And in many cases, the different colors can be mixed, like water-based paints, to broaden your options.

Like acid stains, these new-generation stains (typically a blend of acrylic polymers and pigments) penetrate the concrete to produce permanent color, ranging from translucent to opaque depending on the product. The key difference is that no chemical reaction occurs, so the color is more consistent. Most of these products are also low in VOCs (volatile organic compounds) and safer to apply because they are free of solvents and acids.

Water- and Solvent-Based Dyes

Concrete dyes can further enhance your concrete staining projects and open up a whole new set of design options, according to Bob Harris, president of The Decorative Concrete Institute and author of *Bob Harris' Guide to Stained Concrete Interior Floors*. "Dyes are often used in conjunction with acid stains to produce a variegated look and, in most cases, complement the already stained floor," he says.

Smith Paint Products

Dyes can be used as a stand-alone color application, as a base coat prior to acid staining, or to enhance stained surfaces in areas where the stain is not taking and the color needs to be intensified. Unlike acid stains, dyes are not chemically reactive with concrete; instead, they contain very fine color particles that penetrate the concrete surface.

"Dye is very predictable because it does not depend on a chemical reaction," says Les Davis, president of American Decorative Concrete Supply Co." However, the applicator can still achieve a mottled look, if desired."

Davis says that dyes come in a vast array of colors that aren't available with staining. And the colors can easily be mixed at the jobsite or diluted to obtain other shades.

Both water- and solvent-based dyes are available, with each type having unique qualities. Water-based dyes generally produce soft pastel tones. Bolder hues, including red, blue, yellow, green, purple, and orange, are possible with solvent-based products.

American Decorative Concrete Supply Co

Gels and Thickeners Give You More Control

Stains are often used in conjunction with stencils to produce intricate patterns, custom graphics, and logos. But because stains tend to be thin solutions to ensure good penetration, it can be a challenge to prevent them from bleeding under the stencil or to keep the application within defined pattern lines. An easy way to conquer this problem is to use a special thickening agent or gel that improves application control and permits freehand artistry.

Two examples of thickening agents include Stain Mule from Surface Gel Tek and Modello Gel-lo from Modello Concrete. Both products are designed to be mixed on the jobsite with acid or water-based stains to eliminate color bleeding or wicking. They also help to prevent dripping of stain on vertical surfaces.

Another product, Smith's Color Floor Gel from Smith Paints, is a viscose water based gel stain developed for extra control when creating intricate patterns and crisp edges or lines. It dries to a natural, variegated finish and can be applied with a sea sponge or bristle brush.

Questions to Ask Before You Buy

What color effects do you want to achieve?

Of course, this will be your most important consideration, equal in priority to the decision a painter makes when choosing between water colors, acrylics, or oil-based paints, knowing that each will impart color to the bare canvas but with strikingly different results.

Before making this decision, it's wise to experiment with stain and dyes and the various application methods so you know what effects are possible with each medium. Decorative concrete training classes on applying topical color are a great way to learn what you can do with stains and dyes and give you the opportunity to experiment with combining or layering different mediums to achieve special effects. (Visit ConcreteProductsWeb.com to locate decorative concrete training classes in your area.)

Decorative Concrete Institute

When weighing your options, here are some things to keep in mind:

- With acid-based chemical stains, wide color variations are normal. Surfaces will have a mottled, variegated appearance, and the variations will be emphasized when a clear sealer is applied.
- Some acid stain colors are deceiving in liquid form. For example, a stain may look dark green in its container but will take on its actual color (such as a reddish brown) after it has reacted with the concrete surface. The stain may not reveal its true color until it has been allowed to remain on the concrete for several hours or longer.
- Although acid stains are available in limited color selections, you can mix two or more stain colors before application to achieve a different shade or apply one color over another. You can also produce deeper color effects with a stain by making two applications.
- Water-based stains can also be mixed to achieve custom hues and often are used in conjunction with acid stains to add highlights or expand the color palette. But be sure to check with the manufacturer for compatibility.

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- Most dyes are packaged in concentrated form (either as a liquid or powder, depending on the product), allowing flexibility in the end color. They can be used full strength to attain greater depth of color or diluted with water or solvents to produce paler shades or simply a light wash of color. You can also blend different colors of dye to produce custom hues.
- If you'd rather not experiment with mixing different colors of stains or dyes, many manufacturers will offer custom color matching for an additional fee.

What is the condition of the concrete?

Before you buy a topical coloring product, make sure the concrete you intend to put it on will be a suitable canvas. Most stains and dyes can be applied to new or old and plain or integrally colored concrete or cement-based overlays. But some concrete surfaces aren't good candidates for stains and dyes. And even for those that are, don't expect to achieve identical results on each project, since the characteristics of the concrete (such as age, cleanliness, the quantity of cement in the mix, porosity, and base color) can influence color penetration and, in the case of acid stains, the required chemical reaction.

Here's what to take into account when assessing your concrete substrate:

- Stains and dyes are intended to enhance rather than disguise the surface. They will not hide cracks, blemishes, or other flaws. Nor will they completely mask an underlying color or conceal the texture of the surface. palette.
- Color effects will generally be more intense on new concrete than on older or weathered concrete.
- Dirt, grease, sealers, curing compounds, or other contaminants on the concrete surface can block or inhibit the penetration of stains or dyes, resulting in washed-out color. That's why manufacturers always stress the importance of proper surface preparation and cleaning to ensure successful application of their products. In general, if water beads up on the surface and can't penetrate, neither will a stain or dye.

- Different batches of concrete can vary slightly on the same job. These, as well as patched areas, may absorb stain or dye differently, resulting in noticeable color variations.
- Chemical stains may not work on concrete previously cleaned with muriatic acid or other acid washes, because the acid removes the free lime needed for stain reaction. For these surfaces, it's best to use a dye or water-based stain that doesn't rely on a chemical reaction for color development.

If the condition of your concrete is unfavorable for stains or dyes, one solution is to apply an overlay or skim coat to the concrete surface to correct the problem. Harris says that concrete slabs heavily soiled with rust or oil contaminants or with major patching work are examples of where an overlay or skim coat should be used to create a new canvas to work on.

Can the product be used for both interior and exterior applications?

Because they penetrate the concrete surface, most acid- and water-based stains have excellent UV stability and wear resistance, permitting you to use them on both interior and exterior concrete slabs. However, makers of some dyes do not recommend their products for exterior use because the color can fade when exposed to direct sunlight. If you are considering using a dye for an outdoor project, be sure to check its suitability for exterior applications. Most manufacturers also recommend applying a clear sealer to newly stained or dyed concrete for additional protection from abrasion, chemicals, and UV exposure.

How easy is the product to mix and apply?

Most stains and dyes are very user-friendly. Some products come ready for use (as is the case with most acid stains), others simply require combining two components, such as a pigment and base resin (as with many water-based stains). Dyes often come as a liquid concentrate or powder that you dilute with an appropriate solvent or water before application. Stains also may require dilution with water or muriatic acid if you want to lighten the tone instead of using the stain full strength. Whatever product you decide to use, the key is to thoroughly shake or stir it right before application to ensure even pigment distribution.

Are special application tools required?

Stains and dyes can be applied in a variety of ways, depending on the results you want to achieve and the size of the job. Most of the tools you'll need are readily available at hardware and home improvement retailers or even artist supply shops.

Photo courtesy of Larry Brazil Photography

Harris says that for most projects, the best way to apply a stain or dye is by using a pump-type airless sprayer or high-volume low-pressure (HVLP) sprayer. For detail work or small areas, you can also use a hand spray bottle, brushes in various sizes, sponges, and rags

If you plan to use a sprayer, Harris says that a conical tip—which sprays the liquid in a cone pattern as opposed to a fan spray—produces better results without leaving distinguishable spray patterns. With chemical stains, it's sometimes necessary to gently scrub or massage the stain into the surface using a bristle brush of medium stiffness immediately after spray application.

Manufacturers warn that when working with chemical stains, you should only use sprayers, application tools, and containers that resist hydrochloric acid and have no metal components. All sprayer parts should be made of acid-resistant plastic. Brushes should have uncolored, acid resistant nylon bristles (colored bristles can discolor the surface). And pails and containers for mixing or holding stain should be made of plastic.

You can find a complete list of basic application tools for stains and dyes in *Bob Harris' Guide to Stained Concrete Interior Floors*.

L.M. Scofield Company

What is the average coverage rate?

"Average" is the operative word when assessing the coverage rate of a stain or dye. Manufacturers will typically give you an average range (in number of square feet per gallon), but state that the rate can vary dramatically depending on such factors as the porosity of the concrete substrate, the color intensity you wish to achieve, and whether you plan to apply the product full strength or diluted. Still, this figure can be helpful when comparing the prices of different products and when estimating how much to buy.

Keep in mind that you may need to apply more than one coat of stain or dye, depending on the effects you want to achieve and whether you want to layer various colors. Consult with the supplier for further assistance in estimating coverage rates for a particular project.

Are safety precautions required during application?

Before purchasing or applying a stain or dye, always read the safety precautions provided by the manufacturer (often you can find these on the manufacturer's website). Chemical stains and solvent-based dyes will require greater cautionary measures than water-based products. That's because most chemical stains contain corrosive components (including hydrochloric acid and chlorides) that can cause severe eye, skin, and lung irritation. And solvent-based dyes can be highly flammable and produce vapors that are hazardous to breathe. When using these products, workers should wear impervious gloves and boots, splash-proof goggles, and facemasks or respirators to prevent inhalation of fumes. Products containing solvents must be kept away from combustible materials and heat sources and applied in rooms that are well ventilated.

For projects in occupied spaces or where ventilation is poor, water-based stains and dyes will be your best choice. These products typically have a low VOC content and are safe to apply indoors without concern for odors or toxic fumes.

How long is the drying time?
This could be a critical issue on fast-track projects where you need to open the surface to traffic as soon as possible.

Chemical stains require the longest drying times between coats (typically at least 5 hours) to give the stain time to react. Then the stain residue must be rinsed off and the surface permitted to dry before a sealer can be applied. Water-based stains offer the advantage of shorter drying times (about 2 hours) with no rinsing required.

Dyes generally dry very quickly, reducing the amount of time it takes to complete a job by as much as 60%, according to Davis. “Some solvent-based dyes dry in less than a minute. Plus, cleaning is minimal and does not require water,” he says.

How much cleanup is required?
One of the chief disadvantages of using chemical stains is the requisite cleanup work. After stain application, you must scrub the slab thoroughly to remove any stain residue and to neutralize the surface. Manufacturers recommend using a neutralizing solution of water combined with ammonia or baking soda followed by rinsing with clean water. You can also use an alkaline soap. Residue can be scrubbed off with a broom, mop, or floor scrubber and then picked up by a squeegee or acid-resistant wet vacuum. You must also take safety precautions when disposing of the residue and rinse water.

Water-based stains don’t require neutralization or rinsing, and application tools can usually be cleaned with mild soap and water. In most cases, there is no reason to clean the concrete slab after dye application because dye particles are very fine and absorbed into the surface. However, if too much dye is applied, you may need to remove the excess with a mop or wet vac.

Additional resources on ConcreteNetwork.com

The Art of Acid-Etch Staining

Concrete Dyes Expand the Color Palette of Concrete Stains

Creating Excitement With Color

Get the Most Out of Your Decorative Concrete Training

Sherpa info

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This document reached the summit (was created) on January 3, 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/staindye.

NAVIGATION & USER TIPS

You can move around this guide by using your mouse or keyboard arrows. Left mouse button goes to the next page, right mouse button goes to previous page. Click on the right arrow (→) for the next page and the left arrow (←) to go the previous page.

KEYBOARD SHORT CUTS	PC	MAC
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Zoom out	[Ctrl] [-]	[⌘] [-]
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ABOUT THE CONCRETE SHERPA

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.

Sherpa info

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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