



Decorative Concrete Floors

With acid-based stains, you can add an attractive, low-maintenance finish to ordinary concrete floors

BY SHELLIE RIGSBY

When I started my business, decorative concrete floors were still a new trend. I'll never forget walking onto my first paying job carrying my tools tucked into a yellow mop bucket. A plumber sat in the garage fitting pipe and abruptly asked, "Are you the cleaning lady?" Rather than explain that I was there to stain the concrete floors, I replied, "I am today."

The truth is that cleaning the concrete is one of the most important and time-consuming aspects of staining a concrete floor, but the old plumber still made me wonder if I was crazy for deciding to get into

this business. That was almost a decade ago, and today, business is better than ever. As word spreads about the benefits of concrete floors, their popularity grows.

You can color concrete in a few different ways. Manufacturers tint ready-mixed concrete with integral pigments before it is poured, and still-wet concrete floors can be colored with powdered color hardeners. I prefer to use acid-based stains on cured concrete instead.

Staining concrete is inexpensive, and the results are a natural-looking stonelike floor. Acid-based stains create rich, variegated col-

FIRST, THE FLOOR GETS A GOOD CLEANING

To create color, acid-based stains penetrate the concrete and react with the lime. Any contaminants, like PVC glue or paint that dripped onto the floor, prevent the stain from penetrating and show in the finished floor. For this reason, the first and most important step is a thorough cleaning.



Acid-based stains change the color of the concrete, permanently

Unlike paint, acid-based stains do not create a film on concrete. And although they do penetrate like a wood stain, the color actually comes from a chemical reaction that takes place between the acid and the lime in the concrete. Acid-based stains are made from a mild hydrochloric-acid base and trace minerals (metal ions or metallic salts). These stains are limited to organic colors because they are produced from minerals such as copper, magnesium, phosphorous, and iron. When applied to concrete, acid-based stains permanently change its color. Therefore, the color doesn't chip, peel, or fade but wears as the concrete does.

SOURCES OF SUPPLY

Kemiko: www.kemiko.com

Superior Decorative:
www.superiorcolors.com

Sherwin-Williams:
www.hc-concrete.com



1. Although it may seem easier to hang the paper from the top down, apply tape to the lower edge of the wall first. Then use small pieces of tape every few feet along the top of the paper to hold it up.



2. Mix 1 tablespoon TSP with 1 gallon warm water, and wet the floor with the solution.

ors, and the effects can range from simple and understated to elaborate and artistic. Thanks to concrete floors' increasing popularity, the tools and materials you need to stain them are readily available.

Living with concrete floors

Although I've seen people cringe at their mention, stained-concrete floors feel surprisingly nice underfoot. The silky satin or gloss finish applied to the stained concrete has a smooth, supple glide. Homeowners in warmer climates benefit from the passive-cooling properties of concrete floors, and homeowners in colder climates appreciate their warmth when paired with a radiant-heat system.

Most of the cost of staining a concrete floor is labor. The materials add up to around 50¢

per sq. ft., which makes this a particularly inexpensive do-it-yourself project, though you will have to rent a rotary floor machine for a couple of days (about \$30 per day) and buy a good-quality garden sprayer (also about \$30). If you hire a professional, the cost of stained concrete is similar to installed carpet or inexpensive ceramic tile.

As long as they are protected by a coat of good-quality wax or sealer, stained-concrete floors are easy to maintain. Depending on the amount of traffic, rewaxing or resealing may need to be done only every two or three years. Sweeping and an occasional damp-mopping will keep the floor clean, and unlike carpet, concrete doesn't harbor allergens.

However, staining concrete is an unpredictable process. Because it involves a chemical reaction, guaranteeing the color or pattern is





3. Use a rotary floor machine with a stiff abrasive pad to clean the floor.



Troubleshooting
Wet concrete will show more contaminants. Hand-scrape anything stuck to the floor that the machine couldn't remove.

4. Vacuum the dirty solution from the floor, and neutralize the concrete with clean water. Vacuum again, and let the floor dry.



impossible. Some find the variation appealing; for others, it is a drawback. Another disadvantage is that like stone floors, concrete does not absorb sound. Most homeowners use rugs and furniture to balance noise in rooms with concrete floors.

Can I stain an old concrete floor?

Acid-based stains will work on any concrete that contains lime. Although the results are more predictable with new concrete, old concrete can be stained, too. If the concrete is cracked or looks worn, these imperfections likely will show through the finish. Slight or hairline cracks are common and often resemble veins in stone. I prefer to leave these cracks to add to the character of the finished floor. If the cracks bother you, consider another flooring option because chances

are that even if you fix the cracks now, new cracks eventually will appear.

A good scrubbing allows the stain to penetrate

If I'm staining the floors in a new house, I like to do the job as soon as the house is weatherproof but before the electrical rough in is done or the drywall is hung. This way, I don't have to worry too much about damaging adjacent surfaces with cleaning products or overspray. I still mask and paper all surfaces adjacent to concrete floors, including walls, built-ins, and other flooring.

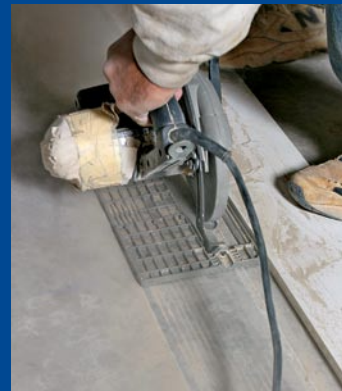
Thoroughly cleaning the concrete is one of the most important parts of this process. Drips of adhesive, drywall compound, paint, or plain old dirt will prevent stain from penetrating the concrete and reacting with the

MIMIC THE LOOK OF STONE WITH GROUT LINES

To make a stained-concrete floor look more like stone or tile, you can cut shallow grooves to resemble grouted joints. The most common scoring pattern is 36-in. squares laid diagonally across a room. Because most saws cannot cut all the way up to a wall, I usually cut a border around the room where the pattern ends.

The easiest way to score a concrete floor is with a circular saw and a masonry blade set to as shallow a cut as possible ($\frac{1}{8}$ in. to $\frac{1}{16}$ in.). I snap chalklines to show the pattern on the floor and use a straightedge to guide the saw.

Scoring is a dusty process. Score the concrete before cleaning the floor, and always wear a good respirator.



ONLINE EXTRA

Learn how to operate a rotary floor machine at www.finehomebuilding.com.

MIST THE STAIN OVER THE FLOOR IN A RANDOM PATTERN

Acid-based stains are easy to apply with a clean plastic garden sprayer. Test the sprayer and the color in an inconspicuous spot before starting. Be cautious; the stain can be harmful to bare skin. Wear gloves, a respirator, long sleeves, and safety glasses when staining.



1. Mix the stain and water in the sprayer according to the manufacturer's instructions.

2. Mist the floor with stain in a random pattern. After the first coat has dried and color appears, apply a light second coat.



lime. The results show up in the floor as uncolored spots.

I start by wetting the floor with a solution of trisodium phosphate (TSP) and warm water. A concentration of about 1 tablespoon TSP to 1 gallon water works well. Then I scrub the floor with a stiff-bristle pad on a rotary floor machine. I use a wet/dry vacuum to suck up the dirty water.

After the initial cleaning, I neutralize the concrete by mopping the floor with water. (Some stain manufacturers recommend neutralizing with a solution of water and baking soda.) As I mop, I look for irregularities. If you see areas that do not darken from the water or that show a noticeable pattern, check to make sure the concrete is clean.

You can use a razor scraper to remove stubborn contaminants. It doesn't happen often, but I also have resorted to using paint stripper and other solvent-based products like lacquer thinner to clean spots off concrete. No matter what, though, do not acid-wash the concrete;

it can inhibit the staining process. If you use a solvent-based cleaner at this point, you'll need to neutralize the floor again, vacuum the water, and let the floor dry.

Most floors take two coats of stain

Staining is easier than cleaning. I mix stain and water in a garden sprayer using the manufacturer's instructions and adjust the spray pattern for a light mist. This is a good time to check the color before you stain the entire floor. You often can do this in a different room where the concrete is going to be covered by carpet, tile, wood flooring, built-ins, or appliances. If not, closets are good test areas.

Spray the stain quickly in a random manner. Do not spray in a consistent pattern, because it will show in the final color and texture. First, I apply a light coat, just enough to wet the entire floor without applying so much stain that it runs or puddles, which also will show. The color appears slowly but should reach its peak two hours to four hours

after application, depending on the room temperature, the mix of the concrete, and the amount of stain applied to the floor.

A second coat is not always necessary but can increase depth of color or can even the color if there is a lot of variation. This time, be sure to cover areas that are too light or that didn't get enough stain with the first coat.

As the stain reacts, it produces a chalky, oily residue. Once the stain is dry (never walk on wet stain), you should remove the residue with a scrub brush or a stiff-bristle push broom and plenty of water. As you pour water onto the floor, scrub vigorously, then vacuum the residue before it settles back into the concrete. You may need to do this more than once to remove all the residue. Allow the floor to dry overnight before sealing or waxing.

A wear layer is protective and sometimes decorative

Concrete is porous, so you have to protect the floor from wear and discoloration. There are



Troubleshooting

If the color doesn't appear evenly, brush stain into the light areas on the second coat. Follow the brushing with one last mist of stain.

3. After the stain has reached the desired color, remove the residue with a stiff-bristle brush and plenty of water. Vacuum the water and residue from the floor.



a few options for protecting concrete that can be used alone or in combination. Paste wax can be used alone; sealers need a finish coat, typically a floor-wax product.

On this job, I used an oil-based sealer to darken, or saturate, the color along the border. I carefully applied the sealer with a roller only around the edges of the room. Then I applied about ¼ cup of paste wax at a time and spread it with a stiff natural-bristle brush on the rotary floor machine. Each application of wax covers about 6 sq. ft. After waxing the entire floor, I switched to a soft white pad and polished the floor to a glossy sheen.

I let the wax sit for 24 hours before walking on the floor. In heavy-traffic areas, the floor may need rewaxing in a year or two. In low-traffic areas, it will last even longer. □

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PROTECT AND POLISH THE STAINED FLOOR

Although the color is now permanent, the concrete still needs to be protected. Here, a sealer is used to darken the color around the border, and the entire floor is waxed for a protective wear layer.



1. Sealers can be used to protect an entire floor. Here, though, an oil-based sealer is rolled on only around the border for a decorative effect.

2. After the sealer has dried, apply a stand-alone paste wax with a rotary floor machine and a stiff natural-bristle brush. Finish by polishing the floor with a soft white polishing pad (photo p. 83).



Sealer vs. wax

All concrete floors need a protective finish. You can use a water- or oil-based sealer, a stand-alone paste wax, or both. Consult the stain manufacturer for sealer or wax product recommendations. Here are some pros and cons for each.

SEALERS

- Produce a high-gloss sheen.
- Have a good nonslip rating.
- Are chemical resistant.
- Are easy to apply with a roller or a sprayer.
- Can be used indoors or outdoors.
- Can be used to add color to the floor or to deepen stain colors.
- Should be waxed or will need regular reapplication.
- Can scratch.

PASTE WAX

- Can produce a satin or high-gloss finish.
- Penetrates into the surface and is scratch resistant.
- Is long lasting.
- Can be used to add color to the floor.
- Requires minimal maintenance.
- Can be used only indoors.
- Is not chemical resistant.
- Is labor-intensive to apply.