DECORATIVE CONCRETE COUNCIL

Best Practices in
Decorative Concrete

SEALING STAMPED CONCRETE

Decorative concrete contractors seal stamped concrete to protect it from water intrusion, deicing chemicals, and staining, as well as to enhance its appearance. To properly achieve these goals, they can apply a penetrating sealer that forms a water-repellent surface within concrete pores, a topical sealer that forms a protective film and bonds to the surface of the concrete, or a hybrid-type sealer that both penetrates the pores and forms a protective film.

Sealer Types

Penetrating sealers

Penetrating water-repellent sealers are a great way of protecting concrete from water intrusion and staining, and they can be the preferred choice on commercial projects that are not expected to receive routine maintenance. In this case, the most important thing is long-term protection. Penetrating sealers generally require the concrete to be fully cured before application, and most of them do not enhance the color of the concrete surface.

Topical and hybrid sealers

Topical film-forming sealers are the most used option for stamped concrete projects due to their color-enhancing properties. However, excessive and/or premature applications can cause negative visual effects. Most film-forming sealers can also act as curing membranes, as they will minimize the rate of moisture evaporation.

Wet concrete surface with (left) and without (right) a penetrating sealer

Note: Refer to Decorative Concrete Council (DCC) Best Practices on "Curing Textured Stamped Concrete" for recommended products and methods of curing.

Surface Preparation/Pre-Application

Curing concrete

To properly seal stamped concrete, it needs to be cured prior to sealer application. The duration of curing varies with the curing method, ambient temperature, relative humidity, and mixture composition. Unless specified otherwise, ACI PRC-302.1-15: Guide to Concrete Floor and Slab Construction, Section 11.5, recommends curing conventional concrete for 7 days in temperatures above 40°F (5°C) and high-early-strength concrete for 3 days if temperatures are 73°F (23°C) or higher. The required curing time can also vary with the type of sealer, so it is important to check the manufacturer's recommendations.

Cleaning

Sealers may not bond or penetrate properly if the surface is not clean and completely dry. Again, it is important to follow all manufacturer guidelines. Using a power washer with a minimum pressure of 3500 psi (24 MPa) is the most effective and efficient cleaning method. If needed, a light phosphoric or muriatic acid wash may be used to remove excess release agents and open the pores of the concrete. The acid wash must be followed by a neutralizer/degreaser to restore the pH level of the concrete. After neutralizing, the surface should be rinsed immediately with clean water to completely remove all residue and loose particulates. Concrete imprinted with hydrophobic release powder will benefit from this process, as release powder left on the slab can lead to sealer failure. The use of a low-speed floor buffer machine and scrubbing pad/brush can also be helpful when removing excess powder release.

Immediately following the washing/cleaning process, a leaf blower should be used to remove all standing water from the slab as well as saw cuts. For best results, the slab should be allowed to dry for 12 to 24 hours before sealing. If excessive moisture in the concrete is suspected, the sealer manufacturer should be contacted for technical assistance before application.

(a)

(b)

Cleaning a stamped concrete surface prior to sealer application: (a) using a power washer; and (b) using a low-speed buffer with a scrubbing pad

A "spray and back roll" application of a sealer on a stamped concrete surface

Application

Application method

The preferred application method for most sealers is "spray-and-back roll." This is the most labor-efficient application method, and it is the most effective way of obtaining an even coating of sealer on textured stamped concrete. In contrast, "dip-and-roll" methods generally lead to uneven and excessive applications. Always follow the manufacturer's recommendations for spraying equipment and roller covers.

Application rate

The recommended coverage rate for sealers can vary from 200 to 350 ft^2/gal. (5 to 8.5 m^2/L). Applying sealer too thick or applying too many coats will affect breathability and bond, so it is important to follow the manufacturer's recommendations for the product to be used on a project.

Sealer Maintenance

Resealing is the most common form of maintenance on stamped concrete. Reseals should be performed on an "as needed" basis rather than at a set number of years. Loss of water/stain repellency and depth of color are the main reasons for re-application. Trying to maintain a high gloss on the surface by resealing every year can be problematic. Resealing stamped concrete more than necessary leads to buildup on the surface that can be time-consuming and expensive to remove. Treating the surface with solvents is a more efficient way of maintaining shine without applying additional sealer.

Proper cleaning and preparation are essential for long-term success when resealing stamped concrete. Loose, flaky, or discolored acrylic sealers should be removed using one of these methods: sand/soda blast, high-pressure washer, or chemical stripper, all followed by a thorough cleaning before sealers are applied. A power wash at a minimum of 3500 psi is recommended for cleaning, followed by 24 hours of drying time. If any solvent-based sealer remains on the surface from a prior application, care must be taken to ensure a compatible sealer is used. Matching the original sealer always yields the best results. If this is not possible, the manufacturer of the original sealer, as well as a local supplier, can help to find the most compatible sealer available. Small test area applications can be helpful when determining which sealer to use.

When resealing stamped concrete, it is important to avoid applying sealer in direct sunlight. Otherwise, bubbles may form and reduce the bond between the new sealer and the existing coating. It is also helpful to avoid direct sunlight for as long as possible after application. In general, it is best to apply the sealer at a time of day when the slab temperature will be falling for 3 to 4 hours after application—this may require that applications are limited to evening hours.

Members of DCC, a specialty council of the American Society of Concrete Contractors (ASCC), will work with owners and architects to develop specifications and establish methods for addressing technical requirements to meet the desired final appearance of their decorative concrete projects. For more information, visit **www.ascconline.org** or call the ASCC Decorative Concrete Hotline at +1.888.483.5288.

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