

Concrete Discoloration

Discoloration of concrete can be the result of a number of factors, including calcium chloride admixtures, improper curing, cement alkalis, and organic staining. Many of these stains can be prevented by using good concrete practices. Techniques for removing existing stains vary by type.

The Portland Cement Association has an excellent publication that outlines remedies for a wide variety of common stains. Methods are categorized as dry methods, wet methods or a combination of the two. Dry methods include both the use of abrasives to remove the discolored area and flame cleaning. Wet

methods include the use of specific chemicals that would dissolve or bleach the stain. Chemicals are often applied as bandages or poultices. A poultice is a mixture of solvent and an inert material such as calcium carbonate. The best approach, if you lack experience with a stain, is to test in a small area first.

WARNING
 Most of the chemicals are toxic. They require careful handling and protection of surroundings to prevent 'collateral damage.' Read the MSDS!

The following is a summary of some common concrete stains and their remedies:

Stain Appearance	Possible Cause	Remedy
A white deposit	Aluminum	Treat with dilute hydrochloric acid, rinse well with clear water.
Bluish-green or brown stains	Copper and Bronze	Mix 1 part ammonium chloride with 4 parts fine talc, calcium carbonate or clay. Add household ammonia to make a poultice and leave it until it is dry. May need repeated treatments.
Yellowish to greenish-brown oily liquid	Creosote	Treat with poultice of calcium carbonate, hydrated lime and benzene (read MSDS). Scrub with scouring powder and water.
Various	Curing Compounds	For compounds with a sodium silicate base use a brush and scouring powder. For compounds based on wax, resin or chlorinated rubber, use a D-Limonene based stripper.

Try to learn the base of the curing compound before attempting to remove it

Stain Appearance	Possible Cause	Remedy
Dark and light areas	Chloride Admixtures	Flush with hot water if possible, dry overnight and repeat as necessary. If that does not give desired results, try using 1 to 2% hydrochloric acid.
Greenish-blue tint	Admixtures with Iron Sulfides	3% solution of hydrogen peroxide.
Dark oily grease	Grease	Scrape and scour with sodium triphosphate or detergent. Use mineral spirits for tough stains. Rinse with water.
Algae, lichen	Microorganisms	Sodium hypochlorite (bleach) solution. 3 to 5% aqueous copper sulfate may also work.
Moss	Moss	Ammonium sulfamate (garden supply store).

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Stain Appearance	Possible Cause	Remedy
Pink stain	Phenolic resins	Usually goes away, but can be removed with sodium or potassium hypochlorite bleach solution.
Rust	Steel or iron against concrete	Solution of 1 pound oxalic acid per gallon. Rinse after 2 to 3 hours.
Smoke		Difficult stain. Use a D-Limonene based stripper. Scrub, rinse and repeat as necessary.
Wood stains	Chocolate colored stain	Use a 5% sodium hypochlorite solution (household bleach).

Remember to read MSDS information for all chemicals used. These are toxic chemicals and must be used carefully!

Commercial cleaners are also available to address a number of stains listed. If you are not sure what caused the stain in the first place, there may

Starting with a small area and testing approaches is a good way to avoid big mistakes.

Normal dirt is probably best removed with a pressure washer. A hot water washer may be necessary to remove oil and grease.

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Most of this information has been distilled from "Removing Stains and Cleaning Concrete Surfaces," a publication from the PCA which can be obtained online for a small fee.

