

CSI Concrete Dye

Technical Data Sheet



Helix Color Systems is a premier line of specialty decorative concrete admixtures manufactured by ChemSystems Inc. Helix Color Systems is manufactured for the discriminating installer or designer who values service and quality. Specializing in custom colors, specialty products, and superior service, Helix Color Systems offers an innovative alternative in the decorative concrete industry.

Description

CSI Concrete Dye is a combination of specialty formulated dye/metal complexes concentrated in a water-based LOW VOC solution that can be diluted in water, alcohol, or acetone. Since CSI Concrete Dye is a concentrate solution, not a dispersion, it is ready for immediate use without any dwell or reaction time like dye powder concentrates. When applied to prepared concrete, polished concrete or overlays, CSI Concrete Dye will provide intense, translucent color effects, similar to stains, without creating a film or coating that can be worn away. CSI Concrete Dye is available in 16 standard colors.

Product Benefits

- **CSI Concrete Dye is for use in interior applications only.**
- CSI Concrete Dye deeply penetrates and resides in the microscopic voids and substrate structure of properly prepared concrete and overlay surfaces.
- CSI Concrete Dye is a viable alternative to traditional reactive stains, such as CSI ChromaStain*, when a larger color palette or ease of installation is required. CSI Concrete Dye is also ideal for polished concrete due to its depth of penetration.
- CSI Concrete Dye can be utilized in conjunction with all CSI Systems as a coloration tool in the production of concrete flooring and pre-cast elements provided that the installation will not be subject to UV Light exposure.
- CSI Concrete Dye is manufactured as a VOC compliant liquid concentrate. It is designed to be diluted with a non aromatic or aliphatic solvent like water, acetone, or isopropyl alcohol - or a combination of those to create a customized marbling effect.

Pre-Application

- ChemSystems, Inc. utilizes the International Concrete Repair Institute (ICRI) Concrete Surface Profile (CSP) standards for specifying finished surface roughness prior to applying CSI Concrete Dye. For proper adhesion, the concrete must be a minimum #1 according to the ICRI CSP chart. Contact the ICRI at www.ICRI.org or ChemSystems, Inc. for more information on these surface profiles.
- The following liquids are recommended to use for diluting CSI Concrete Dyes.
 - Acetone* - Short dwell time, with consistent color. Will penetrate fairly dense concrete surfaces.
 - Isopropyl Alcohol* - Medium dwell time, with consistent color.
 - Water* - Long dwell time, with increased marbling. Surface needs to be porous.
- Mix the entire contents of the 5 oz. dye concentrate with one (1) gallon of the desired liquid diluent. Mix the entire contents of the 25 oz. dye concentrate with 5 gallons of the desired liquid.
- For additional mottling and aid in penetration on dense surfaces, add the contents of one (1) CSI Concrete Dye Penetration Additive container to one gallon of diluted dye.

NOTE: When diluting CSI Concrete Dye with acetone, be aware that the fumes are extremely flammable. Assure that all pilot lights and ignition sources are extinguished. Provide proper ventilation as well as respiratory and safety equipment. Consult the acetone manufacturers MSDS for additional safety and handling information. Use caution when spraying in any enclosed space.

Application to Concrete and Polished Concrete

1. Always complete a jobsite sample.
2. A correct surface pH (7-9) is critical before applying CSI Concrete Dye or any other coloration product and sealer.
3. CSI Concrete Dye is best applied with an airless backpack pump-up sprayer or good quality solvent-resistant sprayer.
4. Apply CSI Concrete Dye in light spray applications. Do not use a roller or

other tool, such as a broom, to try and move or mottle the dye as this will leave permanent marks and streaks. Once the subsequent dye application has dried additional light applications of the same color or other colors can put down to build color depth or create marbling effects.

5. Protect all adjacent surfaces from overspray, as CSI Concrete Dye will discolor any porous substrate. **Note:** CSI Concrete Dye will bleed dramatically compared to other staining products. For example, the use of duct tape applied over blue tape may be required to minimize bleed. To achieve separation between colors at hard lines, the use of saw cuts or stencils will be required. This product will discolor any joint filler.
 6. The surface to be colored with CSI Concrete Dye must be clean and dry. Do not apply CSI Concrete Dye to damp surfaces, as penetration will be greatly reduced. Optimal results are achieved from a dry grinding and polishing process applied at the 400-grit level and up. For subsequent floor cleanings, an auto scrubber, rather than the use of a technique that will saturate the floor, should be used.
 7. Many factors influence the amount of color retention or loss. Generally, CSI Concrete Dye will be applied at the 400-grit level of polishing with subsequent polishing beginning again at the 800-grit level once product is dry. In some cases, the applicator may wish to use a light application of stain subsequent to the first application at the 800- or even 1500-grit level for maximum color intensity.
 8. If a uniform appearance is desired, multiple coats of CSI Concrete Dye diluted in water will provide the best results. If a more variegated or mottled appearance is desired, multiple coats of CSI Concrete Dye diluted in water will provide the best results.
 9. After CSI Concrete Dye application, subsequent polishing will typically remove any residue that may be reconstituted when applying a stain resist or finish sealer. If wet polishing as opposed to dry polishing greater color loss can be expected. If multiple, separated colors are being incorporated into a floor design, it will be necessary to lightly wash the surface of each color individually with a mop or scrub by hand with a soft to medium bristled broom, being sure to remove ALL residues so that no color contaminates adjacent areas.
 10. Once the concrete has dried completely, application of an appropriate stain resist is highly recommended.
- Note:** An appearance similar to polished and stained concrete (CSI ChromaStain*) can be achieved by utilizing CSI Concrete Dye over concrete ground to a "full sand cross section exposure," stopping at the 150-grit round segment metal bond level and then sealing with acetone-diluted CSI Solvent Seal 23 Gloss SPFD*. Unlike polished concrete, this application method will require subsequent floor finishes as part of regular surface maintenance, however, this product and application method is highly durable compared to traditional stained concrete that has not been ground.

Application to Overlays – CSI Microtopping, CSI Microtopping HD or CSI Stampable Overlay

1. Always complete a jobsite sample.
2. Protect all adjacent surfaces from overspray, as CSI Concrete Dye will discolor any porous substrate. For example, the use of duct tape applied over blue tape may be required to minimize bleed. To achieve separation between colors at hard lines, use of saw cuts or stencils will be required.
3. The surface to be colored with CSI Concrete Dye must be clean and dry. Do not apply CSI Concrete Dye to damp surfaces, as penetration will be greatly reduced.
 - For CSI Microtopping* or CSI Microtopping HD*, lightly sand the topping and tack wipe up the dust prior to application of CSI Concrete Dye.
4. Flooding a polymer-modified overlay with solvent-diluted CSI Concrete Dye can soften the overlay. Be sure to sample all applications before proceeding.
5. Apply CSI Dye in light spray applications. Do not use a roller or other tool,

such as a broom, to try and move or mottle the dye as this will leave permanent marks and streaks. Once the subsequent dye application has dried additional light applications of the same color or other colors can put down to build color depth or create marbling effects.

6. Correct application of CSI Concrete Dye will result in little to no residue, and the sealing application can begin once the stain is dry. A heavy application of CSI Concrete Dye may require a water wash. Rinse water will stain adjacent surfaces if allowed to dry. It is not necessary to neutralize CSI Concrete Dye during the washing process, as it does not leave a dramatically acidic residue.

7. Once the concrete has dried completely, proceed with an application of an appropriate CSI Sealer. **Note:** The above guidelines reference various dilutions—the appearance of a CSI Concrete Dye treated floor is highly dependent upon the application.

Surface Protection and Maintenance

ChemSystems, Inc. offers a full range of high-end sealer systems for colored and stained surfaces to ensure the long lasting protection and enhanced color of the final project. The interior system consists of two coats with a durable base coat sealer, followed by three coats of a special high-solids top coat maintenance sealer. The exterior system consists of two thin coats of a durable base coat sealer.

All decorative concrete installations should be maintained on a routine basis with the use of CSI maintenance products to ensure the preservation of a high-quality, long-lasting surface. Maintenance schedules will vary depending on a number of factors, including volume and intensity of traffic, ultraviolet light exposure, geographical location and weather conditions. Resealing will be required periodically, depending on the amount of foot traffic. As with any other surface treatment, the lifetime of this product is dependent on the care it is given. The use of a qualified flooring maintenance contractor is recommended for resealing, especially in commercial applications.

Limitations and Precautions

- CSI Concrete Dye is **not** for use in exterior applications where surface is subject to UV Light exposure. *Use only for interior applications.*
- Do not use acidic cleaners on treated surfaces.
- Oil, grease, dirt, efflorescence, curing compounds, sealer, coatings, etc., will inhibit penetration into the concrete micro-voids and capillaries.
- Once the substrate has stopped accepting the CSI Concrete Dye, no additional applications should be made. Dry, powdery pigment residue can begin to occur after over application.
- Do not allow CSI Concrete Dye to freeze; do not apply CSI Concrete Dye in freezing temperatures; and do not apply to surfaces with temperatures below 40 °F or when such temperatures can be expected within 4 hours following application.
- Protect surface against air movement or wind during initial application.
- Clean all tools with acetone immediately after use.
- CSI Concrete Dye will bleed dramatically compared to other staining products.

NOTE: *When diluting CSI Concrete Dye with acetone, be aware that the fumes are extremely flammable. Assure that all pilot lights and ignition sources are extinguished. Provide proper ventilation as well as respiratory and safety equipment. Consult the acetone manufacturers MSDS for additional safety and handling information. Use caution when spraying in any enclosed space.*

Shelf Life and Storage

CSI Concrete Dye has a shelf life of one year. Store product indoors, away from heat or direct sunlight. Do not allow product to freeze.

Coverage Rate and Drying Times

Coverage rates may vary greatly depending on substrate porosity, substrate color and dilution utilized to achieve desired final appearance.

- Material usage approximately 500 square feet per gallon.

Drying times can be dramatically affected by temperature and humidity if diluted with water rather than acetone. Temperature and humidity will dramatically affect the drying times of CSI Concrete Dye if diluted with water rather than acetone.

- Application must be made to concrete with a temperature higher than 50 °F and maintained at this temperature or above for a minimum of 4 hours after application.
- Typical dry time is 30 seconds to 30 minutes at 70 °F and 50% relative humidity.
- Dry times are also dependent upon the water or solvent carrier ratios.

Package Sizes

CSI Concrete Dye is available in 5 oz., 25 oz., and custom packaging sizes.

Applicable Standards

- LEED Qualified when diluted with water or alcohol.

Technical Data

Please refer to the corresponding MSDS for hazard-related information.

Physical Properties: Water-Based Formulations

Physical.....	Liquid
Odor.....	Little to none
Solids after application.....	100%
UV Stability.....	5-10%+ fading to be expected if exposed - consult ChemSystems, Inc. for details.

Product Handling

NOTE: *When diluting CSI Concrete Dye with acetone, be aware that the fumes are extremely flammable. Assure that all pilot lights and ignition sources are extinguished. Provide proper ventilation as well as respiratory and safety equipment. Consult the acetone manufacturers MSDS for additional safety and handling information. Use caution when spraying in any enclosed space.*

For complete instructions on handling and use, consult the corresponding Material Safety Data Sheet before using product.

Warranty

CSI Concrete Dye, a proprietary product, is warranted to be of uniform quality within manufacturing tolerances. Since control is not exercised over its use, no warranty, expressed or implied, is made as to the effects of such use. Seller's and manufacturer's obligation under this warranty shall be limited to refunding the purchase price of that portion of the material proven to be defective. The user assumes all other risks and liabilities resulting from use of this product. If you have any questions, please contact ChemSystems, Inc.



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*For complete information on all CSI products—including product information catalogs, product brochures, color charts, technical specifications, sales aids and more—contact ChemSystems, Inc.

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