

# CSI Color Hardener

Technical Data Sheet 1.0509DS



*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 Color Hardener is a specialty formulated, dry-shake, colored surface hardener. It is used for coloring, hardening and conditioning freshly placed concrete flatwork. CSI Color Hardener is the premium method for coloring and hardening concrete for stamped or imprinted concrete applications.

## Product Benefits

- CSI Color Hardener increases abrasion resistance and surface density and reduces porosity. Proper use of CSI Color Hardener can increase surface strength.
- Used in conjunction with CSI Release Powder\*, CSI Color Hardener is the preferred product for creating vibrant colors for imprinted/textured concrete.
- CSI Color Hardener is an excellent choice for the following types of projects:
  - Colored, imprinted concrete flatwork and a variety of architectural concrete treatments that would benefit from improved pattern transfer and increased abrasion resistance.
  - Surfaces which require increased abrasion and impact resistance, such as street paving, warehouses, shipping/receiving areas and distribution centers.
  - Interior and exterior surfaces exposed to heavy daily wear and high-impact use.
  - When concrete has been properly air-entrained, surfaces in cold, harsh climates exposed to freeze-thaw cycles.
- With its blend of select and gradated aggregates, architectural cements, and plasticizers, CSI Color Hardener creates surfaces that are substantially harder and more wear-resistant than concrete not treated with color hardener.
- CSI Color Hardener is available in many standard colors.
- CSI Color Hardener is an excellent choice for coloring concrete in order to achieve lighter colors and/or more brilliant colors.
- Light-reflective surfaces can be achieved through the use of a selection of white or light CSI Color Hardeners.
- To produce enhanced and richer effects, white-based CSI Color Hardener can be excellent base choices for the application of CSI stains and dyes.
- Due to extensive quality control measures in product manufacturing, CSI Color Hardener is designed to produce uniformity of color without color drifts. In addition, use of color hardener does not risk day-to-day variances experienced in ready mixed integral coloring.

## Pre-Application

1. Good subgrade preparation is essential. Subgrade must be well drained. To create uniform load-bearing characteristics and to reduce cracking, subgrade should be graded to a uniform thickness. Subgrade should be moist, completely consolidated, and free of frost. The subgrade should be dampened with water in advance of concreting. Concrete should not be placed over freestanding water or over areas that are muddy, frozen or soft.
2. Good concrete mix design is essential. Concrete should contain a minimum of 5 sacks (3000 psi) of cement per cubic yard of concrete. All aggregate must be non-reactive. Water content should be at minimum, and the slump should not exceed four inches. A normal or retarded-set, water-reducing admixture may be used. An air-entraining admixture complying with ASTM C260 is

recommended in all concrete flatwork that will be subject to freeze-thaw cycles. The concrete mix must not contain any admixture or additive that contains calcium chloride. During cold weather, a nonchloride accelerator may be used. No high-range water-reducing admixtures (superplasticizers) should be added unless ChemSystems, Inc. is consulted. Mixes containing fly ash will result in reduced bleed water, and can be more difficult to finish.

3. Good concrete pouring practices are essential. Weather conditions should be considered during application. Follow ACI standards for installation, especially in extremely hot or cold weather conditions. Concrete mix should be controlled to provide good batch-to-batch uniformity. Concrete should be placed and spread so that it completely fills space inside the forms. Concrete should be consolidated by vibrating to create a suitable surface for finishing. If tamping is done, it should be kept to a minimum and concrete closest to the forms should be spaded. Before the appearance of bleed water, the surface should be screeded and wood-floated to the finished grade.
4. Before applying CSI Color Hardener, a job site sample—using the specified mix design, tools and construction techniques—is recommended. If in doubt about application methods, consult ChemSystems, Inc.
5. It is recommended that a pre-site meeting take place to include the proper authorities and to ensure site conditions are met.

## Application

1. Once concrete reaches the point when no bleed water remains on the surface, CSI Color Hardener should be evenly hand-broadcast or mechanically applied on the surface.
2. CSI Color Hardener is usually provided in two shakes, with two-thirds of the product being applied in the first shake and one-third of the product being applied in the second shake (while also holding back a small amount for touch-up work).
3. After the first shake has been uniformly applied and has absorbed water from the slab, the surface is floated. Wood floats are recommended during this first application.
4. Apply the second shake perpendicular to the first application in a uniform manner. Magnesium or fiberglass floats may be used after the second application, providing all bleed water has left the surface.
5. Saw cuts should be made as soon as possible without disturbing the joint edges.
6. Care should be taken to prevent hard-steel trowel burns, especially at tooled joints and edges.
7. In dry, hot or windy conditions, the use of an evaporation retardant/finishing aid may be used.

## Application to Vertical Surfaces

1. CSI Color Hardener may be used to finish vertical surfaces such as curbs or the faces of step risers, but the product is not designed for use on large areas of vertical surfaces.
2. A “plaster mix” of CSI Color Hardener may be used when doing steps or other vertical surfaces. To create this mix during the final set stage of the concrete, add only enough water, or a 1:1 mix of water and CSI Concrete Bonder, to CSI Color Hardener to achieve a workable consistency. Then apply the “plaster mix” to the vertical surface while the concrete is fresh and finish as normal.

## **Curing Color Hardened Concrete**

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Choose from a variety of CSI cures appropriate to the project requirements. It is recommended to use a clear or colored curing compound that meets ASTM C309 or ASTM 1315 when curing CSI Color Hardened concrete.

## **Surface Protection and Maintenance**

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- 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. These systems consist of two coats with a durable base coat sealer, followed by three coats of a special high-solids top coat high performance solvent or water-based maintenance sealer.
- Allow CSI Color Hardener to fully cure before sealing, 28 days per ASTM.
- 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, UV light exposure, geographical location and weather conditions. Resealing will be required periodically, depending on the amount of foot traffic. As with any 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**

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- Inconsistencies in job site conditions, finishing practices and curing methods may produce variations in the color of the finished product.
- All aggregates in the concrete substrate must be non-reactive.
- When using CSI Color Hardener on air entrained concrete, air content should not exceed 4%.

## **Shelf Life and Storage**

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CSI Color Hardener has a 2 year shelf life if stored inside, in a dry and temperature controlled environment, in an unopened original container.

## **Coverage Rate and Drying Times**

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Coverage rates may vary depending on color choice, application method, and other local conditions.

- *Minimum Coverage for Dark and Medium Colors* – 60-80 pounds/100 sq. ft.
- *Minimum Coverage for Medium and Light Colors* – 80-100 pounds/100 sq. ft.
- *Minimum Coverage for Light Colors* – 90-120 pounds/100 sq. ft.
- *Minimum Coverage for White CSI Color Hardener Colors* – 120-150 pounds/100 sq. ft.

## **Package Sizes**

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CSI Color Hardener is available in 60-pound plastic-lined bags. Also available in 60-pound pails, at an additional charge.

## **Applicable Standards**

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- Contributes toward Leeds Qualification depending on color – SS Credit 7.1: Heat Island Effect: Non-Roof
- The synthetic iron oxide pigments used in CSI Color Hardener meet or exceed ATSM C979 and produce brilliant, streak-free, non-fading surfaces.

## **Technical Data**

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

## **Product Handling**

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

## **Specifications**

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For specification assistance for CSI Color Hardener and other CSI products, please contact ChemSystems, Inc.

## **Warranty**

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CSI Color Hardener 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.



\*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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