

CSI Integral Color

Technical Data Sheet 2.0509DS



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

Get value added results by using CSI Integral Color with ready mixed, precast concrete. Made with high quality synthetic iron oxide pigments, CSI Integral Color is the ideal, economical, integral coloring choice for flatwork and vertical applications.

Product Benefits

- CSI Integral Color pigments are available in a wide variety of standard colors. Custom colors and color matching are also available.
- CSI Integral Color is packaged in standard 50-lb paper bags, and available in disintegrating bags and special sized bags.

Pre-Application

1. CSI Integral Color color is designed for ready mixed, precast, curbing machines and mortar coloring use. CSI Integral Color should not be dusted or sprinkled onto the concrete surface.
2. Consistency of cement color, aggregates, slump, finishing techniques and curing methods are critical in achieving color uniformity.
3. Dosage Guidelines:
 - Disintegrating Bags** – Consult the CSI Integral Color Color Chart for color selections and pigment dose per 94-pound sack of cement.
 - Bulk** – Pre-weigh color for accuracy in dosing.
4. A jobsite sample, using the specified mix design and color, should be completed for customer approval. For an accurate color check on a jobsite sample or on any job, the recommended size of the job should be a minimum order of three yards. In order to get an accurate color check, view sample when it has fully cured.
5. Concrete should be batched, placed, cured and finished in accordance with ACI (American Concrete Institute) recommended standards.

Application

1. Ensure that slump does not exceed five inches. Slump should be consistent from pour to pour. Mix designs requiring higher slumps should be achieved by using water-reducing or plasticizing admixtures, not by adding water. Adding water will adversely affect the color.
2. **For Ready Mixed Application:**
 - The drum must be cleaned, and approximately two-thirds of the mix water and one-half of the aggregates needed should be added to the drum. The proper combination of disintegrating bags or preweighed bulk CSI Integral Color should be added to the drum and allowed to mix at a full charging speed for three to five minutes or until bags break apart and pigment is distributed evenly.
 - Add the balance of the ingredients (water, aggregates, cement and admixtures) and mix at a full charging speed for 8-10 minutes (80-100 revolutions). It is the ready mixed supplier's responsibility to make sure bags have fully disintegrated. Failure to follow instructions can result in bags not fully disintegrating.
3. **For Central or Premixed Batch Plants:**
 - After one-half of the total batch has been added to the ready mixed

drum, the proper combination of disintegrating bags or preweighed bulk CSI Integral Color should be added. Drum should be allowed to mix at a full charging speed for three to five minutes.

- Add the remainder of the batch to the drum and agitate at full charging speed until the CSI Integral Color color is completely dispersed throughout the mix—about 8-10 minutes (80-100 revolutions). It is the ready mixed supplier's responsibility to make sure bags have fully disintegrated. Failure to follow instructions can result in bags not fully disintegrating.

4. Jobsite Loading of Integral Colors:

- When applying CSI Integral Color at the jobsite, it is **highly recommended** to open the bag and pour pigment directly into the drum, then discard the bag. Failure to do so may result in improper dispersion which leads to inconsistent color.
- Once pigment has been added, **NO** additional water may be added.

5. Type of aggregate, mix design and water content may affect disintegration of bags. Mixing times and procedures are based on best practices. Mixing times and procedures may vary by region depending on factors mentioned previously (aggregate type, etc.). Before discharging the mix, ready mixed supplier should monitor mix inside the drum to determine that the bags have broken down completely.

6. **For Vertical Applications:** All forms should be cleaned thoroughly prior to use or reuse, and applied release agents should be nonstaining. For best results, forms should be free of cement latents from any prior concrete pour of a different color. For color uniformity, methods and material used in preparing the forms should be consistent through the completion of the job.

To achieve more uniform color, forms should be stripped when the concrete is the same age. Lightly sandblasting vertical surfaces is recommended to remove minor form marks and any cement latents resulting from water, cement and coloring agents bleeding toward the forms during concrete placement.

7. For fiber-reinforced concrete, fibers should be added after CSI Integral Color color has been dispersed.

8. For sand-blasted surfaces, exposed aggregate (3/8-inch size pea gravel) finishes, or typical 3/8-inch size pea gravel mixes, open CSI Integral Color bag and empty entire bag of color into drum to ensure proper dispersion.

9. Concrete should be cured in accordance with ACI standards.

Proper curing, along with maintaining a low slump and protecting the surface against water penetration, reduces the possibility of efflorescence. If efflorescence does occur, remove using a mild solution of muriatic acid followed by a light scrubbing or the use of a low r.p.m. rotary scrubbing machine. (**Important Note:** If considering acid-washing with this solution, it is advised to wait a minimum of 14 days following the initial installation of CSI Integral Color.) Properly curing along with protecting the surface against water penetration, reduces the possibility of efflorescence.

ChemSystems, Inc. offers a full range of sealers that enhance and finish CSI Integral Color.

Surface Protection and Maintenance

- Maintenance will vary depending on a number of factors, including volume and intensity of traffic, geographic location, ultraviolet light exposure and weather conditions.
- It is strongly recommended that a routine maintenance schedule for all colored concrete be followed so that surfaces maintain a high quality appearance. Every 18-36 months, or as required by volume and intensity of traffic, colored concrete installations should be inspected, cleaned and resealed.

Limitations and Precautions

ChemSystems, Inc. has found that certain iron oxide pigment colors can cause self-leveling overlays to cure improperly, or set prematurely. It is not perfectly clear why these issues occur, so ChemSystems, Inc. cannot guarantee the results or performance of self-leveling overlays using this product. Contact the manufacturer of the self-leveling material for coloring and dosage rate information. *Always create mock up samples and perform strength tests prior to project application.*

- Inconsistencies in jobsite conditions, finishing practices, concrete mix design and slump, and curing methods may produce variations in the color of the finished product.
- Integrally colored concrete tends to be limited to earth tone colors rather than lighter, more pastel colors and is not as brilliant as color-hardened surfaces.
- Carbon Black is not recommended for use in air-entrained concrete. Carbon Black is a high-strength tinting carbon black pigment that is subject to fading when exposed to weathering or repeated wetting and drying.
- As an alternative to Carbon Black, CSI black iron oxide pigments should be used in air-entrained concrete or in concrete exposed to repeated wetting and drying.
- Non-chloride accelerators may be used but not with concrete mixes containing calcium chloride.

Shelf Life and Storage

CSI Integral Color has a shelf life of two years. Store in dry conditions.

Package Sizes

- CSI Integral Color is available in standard 50-pound paper bags.
- **Custom Packaging** – CSI Integral Color can be packaged to customer specifications in either bulk bags or in disintegrating bags upon request.

Applicable Standards

1. Certain colors contribute toward light reflectance and heat island effect SS Credit 7.1: Heat Island Effect: Non-Roof
2. CSI Integral Color meets or exceeds the following ASTM standards:
 - CSI Integral Color pure pigments are fade resistant and conform to ASTM C 979 (except pigment HBS#1770 or HBS#1740, which is a high-tinting strength carbon black that requires special care—please refer to “Limitations” section in this bulletin).
3. CSI Integral Color meets the requirements of the Uniform Building Code and the Standard Building Code for use in reinforced and prestressed concrete.

ChemSystems, Inc. should be contacted about approvals in specific jurisdictions. Professional concreting standards and practices, including those published by the American Concrete Institute (ACI), the Portland Cement Association (PCA) and the National Ready Mixed Concrete Association (NRMCA), should be followed.

Product Handling

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

Specifications

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

Warranty

CSI Integral Color 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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