

CSI Microtopping NT

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 Microtopping NT is an ultra-thin, architectural concrete topping and can transform structurally sound substrates into colorful surfaces that have great architectural impact, while delivering exceptional abrasion resistance. CSI Microtopping NT creates surfaces with solid color, subtle variegation, marbled hues and various textures.

A three-part cementitious system, CSI Microtopping NT tenaciously bonds to virtually any substrate, including concrete, wood, metal, plastic and sheet rock. CSI Microtopping NT is a combination of liquid polymer and specially formulated colored powder mixtures. CSI Microtopping NT is applied in layers—using trowels, brushes and squeegees, each producing a different finish texture—at a recommended thickness of 20 mils - 60 mils, the approximate thickness of a credit card.

CSI Microtopping NT Liquid is added to both CSI Microtopping NT Base Coat and CSI Microtopping NT Finish Coat to achieve the desired material consistency. CSI recommends two base coat applications and one finish coat application as a minimum coverage guideline.

Product Benefits

- CSI Microtopping NT is extremely versatile. This product can be feathered to a zero edge, used in interior applications and applied to vertical or horizontal surfaces.
 - CSI Microtopping NT features exceptional bond strength. This product adheres to most stable substrates, well bonded adhesives and coatings on stable substrates.
 - CSI Microtopping NT features excellent abrasion resistance and can achieve a compressive strength of 6,000 PSI when applied over a minimum 4000 PSI concrete substrate.
 - CSI Microtopping NT is a non-toxic design product and dries completely in 24 hours (70 °F/21 °C).
 - CSI Microtopping NT is available in unpigmented, white or gray powder.
 - The durable, high-strength CSI Microtopping NT colors can be chosen from the CSI Microtopping NT color chart/brochure.
 - Finish effects can include, but are not limited to, broom finished solid colors to knock down with subtle variegation to smooth marbled hues.
 - CSI Microtopping NT can significantly reduce construction costs when elaborate graphics or extensive color changes are needed, which would otherwise require multiple forming and pouring phases.
 - Because of the ultra-thin application, CSI Microtopping NT offers substantial savings over high-dosage cement coloring used in typical concrete construction.
 - One of the advantages of CSI Microtopping NT is that it can be used to color and/or recolor old concrete surfaces. This ultra-thin concrete topping can be installed over damaged but stable existing concrete (or other materials) to transform surfaces into a cementitious palette, without affecting surrounding materials or substantially increasing the elevation of the finished surface.
 - Some concrete surfaces possess flaws that make staining unpredictable, undesirable and often incompatible. CSI Microtopping NT delivers a fresh, durable palette, optimal for the application of CSI ChromaStain* or CSI Concrete Dye*.
 - Because of cost and time savings, CSI Microtopping NT may also be the ideal design alternative to the following projects that would otherwise require costly repairs or removal and replacement:
 - Slabs that have been badly scarred by heavy equipment or machinery.
 - Surfaces where carpet, laminate or tile has been removed.
 - Slabs where the removal of mastic and glues may not be economically feasible.
 - CSI Microtopping NT gives architects, designers and owners an expanded range of cementitious color selection that, in the past, was only available in less wear-resistant paint-type materials or multiple costly and time intensive colored concrete pours.
- The uses of CSI Microtopping NT include, but are not limited to, large-scale commercial flooring, graphic artwork, stenciling, monograms, logos, accenting or antiquing imprinted concrete, traversing vertical surfaces, countertops, residential flooring and artistic pallets for CSI ChromaStain* or CSI Concrete Dye*.

Pre-Application

1. Sweep or vacuum loose dirt from the surface. Use a floor scraper or grinder to remove bumps and surface build-up. For best results, surface should be as smooth and level as possible. Tools and equipment requirements are largely dependent on the project. Common to most projects are: mixing motor, mixing paddle, eye goggles, polyethylene sheeting (and/or rosin paper), duct or reinforced tape, graduated measuring containers, empty containers for mixing and cleanup, gloves and rags. Application tools depend on the project and include squeegees, hopper guns, trowels, drywall knives, brushes and rollers. Suggested prep, cleanup and trimming tools include: scrapers, drywall knives, hammers, chisels, brooms, dustpan and vacuum. Additional specialty tools may be necessary, depending on the type and extent of preparation required.
2. ChemSystems, Inc. utilizes the International Concrete Repair Institute (ICRI) Concrete

Surface Profile (CSP) standards for specifying finished surface roughness prior to applying CSI Microtopping NT. For proper adhesion, the concrete must be a minimum #2 according to the ICRI CSP chart. Contact the ICRI at www.ICRI.org or ChemSystems, Inc. for more information on these surface profiles.

3. If there are foreign materials (such as adhesives, paints or high-performance coatings) on the substrate, CSI Microtopping NT will bond tenaciously to those foreign materials. However, the ultimate test of the stability of the substrate depends on the integrity of the bond between the foreign material and the substrate (not between the foreign material and CSI Microtopping NT). If stable glossy coatings are to be covered, abrade with an 80-100 grit sanding screen.
4. Standing oil and grease should be wiped clean, scrubbed with an appropriate industrial detergent, rinsed with clean water and completely dried before application of CSI Microtopping NT. Any remaining oil or grease stains should not affect adhesion, but over time can produce shadowing or ghosting of the original stain.
5. CSI Microtopping NT will not adhere to wet or damp surfaces.
6. Holes and large chips should be filled and troweled flat using an appropriate structural-grade repair product prior to the base coat application.
7. Control joints and moving/working cracks in the existing concrete are expected to transfer through the surface of the topping and create potential cracking problems. To isolate moving cracks, use a semi-rigid crack repair material. Install according to kit instructions. In the case of existing joints or saw cuts, new joints or saw cuts must be placed in the CSI Microtopping NT directly over the existing joints or saw cuts. Any new joint or saw cut must penetrate entirely through the new layers of CSI Microtopping NT.
8. Mask off perimeter and vertical surfaces for protection. Remove masking as soon as possible after application.
9. If the concrete surface exhibits moisture issues, dusting or flaking, a concrete densifying sealer should be used to waterproof and densify problem areas prior to application of CSI Microtopping NT.

Application

1. CSI Microtopping NT should be applied at a minimum of two coats, two CSI Microtopping NT Base Coats, followed by one (optional) CSI Microtopping NT Finish Coat. (Additional coats of either base coat or finish coat may be applied depending on project specifications).
2. For best results, the use of a mechanical mixer with a multibladed mixing paddle is recommended.
Do not mix by hand.
3. Suggested Mix
 - Horizontal Surface – Approximately 2.5 gallons of liquid to one 56 lb. bag of base powder or one 40 lb bag of finish powder.
 - Vertical Surface – Approximately 2 gallons of liquid to one 56 lb. bag of base powder or one 40 lb. bag of finish powder.

Note: Mixing ratios can vary without affecting bond and material strength. CSI Microtopping NT can be mixed dry (paste consistency) or wet (paint consistency) depending on where and how it is being applied. However, it is critical to maintain the material's consistency for the entire area being treated. Change in mix ratio during a project could result in a color variation.

Mixing Preparation – Mixing should be done in a cool area in 5-gallon buckets or 15-gallon drums for larger jobs. Because material dries quickly when exposed to air, buckets and small mixing drums work best. Do not allow CSI Microtopping NT to air dry on tools or equipment. Wash mixing equipment immediately or place in water for later cleaning.

Mixing Instructions – The following instructions are for both CSI Microtopping NT Base Coat and CSI Microtopping NT Finish Coat.

 1. Mix only enough material for the immediate area to be covered. Use CSI Microtopping NT as soon as possible after mixing.
 2. If there is any unused material, it should be kept in a cool and covered place – do not leave exposed to sunlight. Pot life is approximately 2 hours at 70 °F. Pot life may be shortened considerably in hotter weather or extended in cooler weather. If the unused mixture begins to thicken, return it to original fluid consistency by remixing. If the mixture does not return to its original state, then discard.
 3. Place 3/4 of the CSI Microtopping NT Liquid needed in a clean mixing container.
 4. While mixer is running, slowly add 1/2 of the CSI Microtopping NT powder.
 5. Mix until lump free.
 6. Add remaining liquid and powder and mix until lump free.
 7. Add small quantities of liquid or powder to achieve the desired consistency depending on the type of area to be covered and application method.
 8. For horizontal surfaces, a more fluid mix is desired, while for vertical surfaces, a drier stickier mix is desired. Test areas are always recommended to ensure desired results.

Primer and Base Coat Application: 2 Coats Recommended

 1. Prime the surface. Spray a thin, even coat of CSI Microtopping NT Liquid to prime the surface. Agitate the primer into the substrate with a stiff bristle brush or low RPM rotary scrubber, making sure to eliminate any puddles.

- Apply the first base coat of CSI Microtopping NT while the primer is still wet or tacky. If the primer dries, reapply and agitate to achieve a wet or tacky surface. The primer is needed for the initial base coat application only. The initial application of CSI Microtopping NT Base Coat should be applied in a wet fluid state to ensure proper adhesion and surface penetration.
- Pour only enough material that can be laid down in a 5- to 10-minute time frame.
- Maintain a wet edge.
- Hot surfaces can accelerate the hydration rate, while cool temperatures will tend to slow the hydration rate. Moderate surface temperatures of 60 °F to 80 °F are recommended for best results.
- When working large areas, the base coat can be easily applied with a squeegee or roller. When working smaller areas or corners, trowels can be used to apply base coat.
- Spread thin even coats of base coat across the surface.
- At 70 °F, the base coat should dry in about 20 minutes. If high humidity exists, fans can be used to move across the surface to speed set time.
- Once the first base coat has dried, proceed with the second base coat application.
- On new concrete surfaces, typically two base coat applications are sufficient. On pitted, damaged or rough surfaces, additional coats may be required.
- Once each base coat application can be walked on without marring the surface, care should be taken to knock down any irregularities, lumps or squeegee marks with a trowel, scraper or drywall knife. If base coat material dries to a final hardness before the surface can be manually smoothed, a (80- to 120-grit) screen may be needed to smooth the surface.
- It is critical to achieve a uniform, smooth base coat prior to application of the finish coat. Any imperfections in the base coat will telegraph through the finish coat.

Finish Coat Application: Optional Number of Coats

- Finish Coats are optional and primarily done for desired aesthetic purposes.
- Finish Coats should be applied with a trowel or squeegee.
- Different colors of finish coat material can be blended to create marbled tones and effects.
- Pour only enough material that can be laid down in a 5- to 10-minute time frame.
- Maintain a wet edge.
- As the finish material begins to set, a "second pass" with a trowel may be necessary to minimize application marks, and create a smooth surface.
- A 150-grit sanding screen can be used on a rotary buffer to create an extra smooth surface.

CSI ChromStain and CSI Concrete Dye Application

- Once desired finish is achieved, material should be left to cure for 24 hours prior to staining.
- CSI Microtopping NT may not stain according to the CSI ChromaStain* Color Charts. The combination of polymers and cement in CSI Microtopping NT may cause stains to react differently.
- Always test or sample stains in an inconspicuous area to ensure desired color effects are achieved.
- Sanding the top finish coat with a 100- to 150-grit sanding screen, or the use of a good commercial pretreatment and cleaner may allow better adhesion of the sealer.
- For best results, stain CSI Microtopping NT within 72 hours of application. Waiting longer than 72 hours can result in the stain not penetrating fully.

Sealing

- IMPORTANT:** Use only premium CSI sealers and finish coatings. Recommended sealers include Solvent Seal 18, Solvent Seal 27, CemSeal*, Permaseal WB* or PolySeal, and recommended top coating Floor Finish Satin or Gloss*.
- Prior to sealing, the newly completed surface should be barricaded or blocked off to protect against foot traffic or contamination.
- Allow CSI Microtopping NT to fully cure (minimum 24 hours) before sealing. Sanding the top finish coat with a 100- to 150-grit screen may allow better adhesion of the sealer.
- Do not allow water on the surface until CSI Microtopping NT has completely cured. Excessive water before sufficient cure will affect bond and durability.
- After sufficient curing, if water gets on the surface before sealing, a white film can result. While this film won't affect bond or durability, the film should be cleaned off prior to sealing. Clean with a good commercial cleaner/degreaser and clear water rinse.
- Sealing should be done as soon as possible after the surface has completely dried.
- A minimum of two coats of sealer should be applied.
- On interior surfaces, a sacrificial top coating, such as a good commercial wax should be applied after the initial sealing has been completed to increase durability and provide a sacrificial wear surface.

Surface Protection and Maintenance

All 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 Microtopping NT will not properly bond to wet or damp concrete.
- CSI Microtopping NT will not adhere properly to salt-damaged concrete (i.e. salt-finished surfaces or de-icing salt-infested surfaces).
- CSI Microtopping NT will not adhere to standing oil or grease.
- Certain aggressive stains, such as hydraulic fluids, proteins and animal waste by-products, may appear through the topping as "shadowing" on the finished surface. Any of these materials found on the substrate should be cleaned with an appropriate cleaner and then sealed with a water-based epoxy.
- If heavy adhesive tapes (such as duct tape) are left on sealed CSI Microtopping NT over an extended period of time, a chemical "weld" will be created between the tape and the CSI Microtopping NT. If this happens, the CSI Microtopping NT may be subject to delamination.

Shelf Life and Storage

CSI Microtopping NT has a shelf life of approximately 18 months.

- Liquid: CSI Microtopping NT Liquid should be stored indoors and above freezing temperatures. If CSI Microtopping NT Liquid freezes, discard.
- Powder: CSI Microtopping NT powders should be stored indoors and away from moisture.

Coverage Rate and Package Sizes

Note: Coverage rates given below may vary slightly depending on surface profile and application method. Coverage may be significantly different on damaged, spalled or textured surfaces.

- CSI Microtopping NT 56-lb bags of Base Coat—Covers approximately 400 square feet**
CSI Microtopping NT Base Coat is available in 56-lb bags. Each bag will require 2 to 2.5 gallons of CSI Microtopping NT Liquid.
- CSI Microtopping NT 40 lb bag of Finish Coat—Covers approximately 600-1000 square feet**
CSI Microtopping NT Finish Coat is available in 40lb bags. Each bag will require 2 to 2.5 gallons of CSI Microtopping NT Liquid.
- CSI Microtopping NT Liquid is available in 1 and 5 gallon pails**

Technical Data

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

Bond Strength.....	Range: 414-466 PSI (ASTM D4541)
Compressive Strength.....	7-day cure: 6,225 PSI (ASTM C579) 28-day cure: 6,622 PSI
Abrasion Resistance.....	1,000 cycles, H-22 calibrade wheels – average depth of wear: 24 mils (roughly the equivalent to 5,000 PSI concrete in accordance with ASTM C501)
Weathering.....	After 31 cycles (5,208 hours), no sign of peeling, chalking, blistering, loss of adhesion, fading or algae growth (ASTM G43 — modified to include freeze-thaw cycle)
Smoke/Toxic Fume Emission.....	Negligible emission (British Standard 6853)
Skid Resistance.....	Dry: 65, Wet: 58 (British Pendulum Test)

Product Handling

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

Warranty

CSI Microtopping NT 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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