GREEN UMBRELLA™

COLORPAC

INTEGRAL COLOR FOR CONCRETE

GU Integral ColorPac Colorants are iron oxide pigments that can be used for concrete that is consistent in color from top to bottom. ColorPac Integral Colorants are **Versatile** and may be used in ready mix, pre-cast, tilt-up, ornamental concrete, shot-crete, mortar, concrete masonry units, pavers, roof tiles, and retaining wall units. ColorPac may also be used to color stucco, plaster, cast stone, and many other cement-based construction materials. When coupled with GreenIce Cure they present an **Economical** concrete surface that as the finished floor creates a **Sustainable** project.

Materials: Green Umbrella Integral ColorPac colors do not contain fillers or extenders. All pigments are permanent, light-fast, inert and stable to atmospheric conditions. GU Integral ColorPac colors comply with ASTM C979, Pigments for Integrally Colored Concrete. Integral colors are *not* designed for dust-on application.
Packaging: GU Integral Color ColorPac are packaged in pre-measured per cubic yard disintegrating bags. ColorPac™ may be tossed into mixer without opening or pouring. The mixing action disintegrates the bag allowing the pigment to disperse throughout the mix. Select colors are available in standard 50 lb. paper bags 2000 lb. super sacs, and bulk tanker loads. Quality is assured by a batch label system that tracks the product through production to the warehouse and to your job site. Standard packaging is based on a 5 sack mix (3000psi) per cubic yard.

Mix Design: Make sure to use the same mix design and a consistent water to cement ratio throughout the job with a consistent slump between 3" to 5". Color variation may occur if batch proportion and slump are not maintained from load to load. Keep all raw materials (sand, cement, and aggregates especially) as consistent as possible throughout the entire project. Changes in raw materials (size, color, moisture content) affect the final color. Remember water has a vast effect on final color. Adding too much water will lighten the color of the project giving it a pale or washed out look. When better flowability is required, use a plasticizer or water reducing admixture. Calcium chloride or any chloride based accelerator should not be used. Chloride based additives will cause discoloration in the finished project.

Batch Plant - When mixing at batch plant, truck mixers should be thoroughly cleaned prior to use. For best results add two-thirds of the water and one-half of the aggregates to the drum. Add ColorPac to the drum.
Mix at full charging speed for three minutes or until bags break apart and pigment is dispersed evenly. Add balance of ingredients and mix at full charging speed for 10- 12 minutes (100-120 revolutions).

Job Site - GU Integral ColorPac Integral Color can also be added at the job site. Add bags to drum and mix for 12-15 minutes (120-150 revolutions). Order concrete at a workable slump (3-5") and always keep water addition to a minimum. Make every effort to maintain consistency with multiple loads. Water addition can lead to inconsistent color.

GreenUmbrella™ ColorPac

Integral Color for Concrete

Green Umbrella ColorPac Integral Color for concrete recommends following similar procedures for colored and uncolored concrete regarding base preparation, use of vapor barriers, form placement, reinforcement and joints. Integrally colored concrete should be installed the same way as high quality uncolored concrete. Listed are additional guidelines that should be observed for colored concrete. For more detailed information, please review our color guide.

- GU recommends GreenIce Cure integral curing product to control the moisture in the concrete. Since irregular moisture content and curing are the most serious issue regarding consistent color, this product controls the moisture and will provide consistent color.
- Avoid adding extra water at the job site. Do not wet finishing tools or add water to the surface of the colored concrete.
- The surface should not become wet as the moisture is controlled by the admix. Start finishing the concrete when hard enough to walk on without sinking in more than .". If power troweling you should use Green Ice Curing system with power trowels.
- Do not use wet coverings, plastic sheeting, water proof paper, or liquid membrane curing compounds.
- Even curing + even drying = even color.
- Pigment loading should never exceed 10% of the weight of the cement content.
- Consistency = Reliability.
- Do not sprinkle pigment onto the surface of the concrete.
- Complete the job by sealing your project with Green Umbrella Ice Cap or RTU Microfilm.

Efflorescence is a naturally occurring process. It is a white powdery substance that may occur on the surface of the concrete. This is a result of water evaporation and is more noticeable on colored concrete. Proper curing and protection from water penetration will help reduce the effects of efflorescence. If efflorescence occurs, care should be taken to clean the surface. Use approved products for cleaning colored concrete and be sure to seal with a GU recommended sealer. GU Green Ice System is designed to be applied to freshly placed concrete during the finishing process. This product seals and protects, assures proper curing and will help to prevent efflorescence. Please refer to GU Green Ice System tech data pages for proper application. Always follow manufacturer's recommendations carefully.

GreenUmbrella™

ColorPac

				
Fire 5# cubic yard	**Straw** 5# cubic yard	**Light Goldenrod** 5# cubic yard	**Prune** 10# cubic yard	**Tea Green** 5# cubic yard
				
Nutcracker 10# cubic yard	**Chino** 5# cubic yard	**SandShark** 10# cubic yard	**Warm Spice** 10# cubic yard	**Medium Goldenrod** 7.5# cubic yard
				
Vintage Green 10# cubic yard	**Flagstaff** 5# cubic yard	**Red Rocks** 10# cubic yard	**September Morn** 10# cubic yard	**Gray Mist** 10# cubic yard
				
Dark Goldenrod 15# cubic yard	**Salmon** 10# cubic yard	**Vintage Gold** 15# cubic yard	**Red Clay** 20# cubic yard	**Bordeaux** 20# cubic yard
				
Cabernet 25# cubic yard	**River Stone** 25# cubic yard	**Redwood** 25# cubic yard	**Sea Kelp** 20# cubic yard	**Slate Gray** 20# cubic yard
				
Terra Cotta 20# cubic yard	**Black Diamond** 30# cubic yard	**Muscade** 20# cubic yard	**Syrah** 20# cubic yard	**Cumin** 20# cubic yard
				
Warm Honey 25# cubic yard	**Chestnut Brown** 25# cubic yard	**Buckskin** 15# cubic yard	**Onyx** 35# cubic yard	**Hot Chocolate** 20# cubic yard

TECHNICAL DATA SHEET

INTEGRAL / ACRYLIC / DESIGNED FOR POLISHED CONCRETE

GREENUMBRELLA®

FiberLite Concrete Fiber STAGE II

TRANSPARENT & STRONGER FROM TOP TO BOTTOM

FEATURES & BENEFITS

ENHANCES PERFORMANCE & DURABILITY

PROVIDES SECONDARY REINFORCEMENT

ELIMINATES PLASTIC SHRINKAGE CRACKING UP TO 100%

ALKALI RESISTANT & NON CORROSIVE

INSOLUBLE IN WATER

NO FIBER PROTRUSION FOR EASY FINISHING

HIGH IMPACT RESISTANCE

EXCELLENT BOND WITH CONCRETE PASTE

Green Umbrella® FiberLite™ is a low dose, insoluble, transparent in the mix, uniquely designed, secondary reinforcement concrete fiber. Providing isotropic, fiber reinforcement that displaces evenly without clumping or unsightly protrusion from concrete commonly seen in other fibers. The even dispersion and transparency in the mix make it the best choice for exposed architectural concrete with integral or dyed floors and all exposed concrete finishes, vertical or horizontal. FiberLite™ provides the added protection from sudden temperature fluctuation and wind changes that cause unsightly plastic cracking providing an engineered dose that outworks conventional dosing with the lowest .66 pound dosage per c/y and the highest 600,000,000+ fibers per pound count - verses standard market fibers. Transparent in placement and finishing providing no burden to the pumping or finishing crews. Secondary reinforcement with equal strength to Welded Wire Fabric. FiberLite™ reinforces without the need for WWF mats, layout, installation, overlapping, tying/placing and potential vapor barrier damage due to puncture. Fiberlite's unique formulation forms an ionic bond within the fresh matrix attacking plastic shrinkage cracking and reducing it over 94%! Three-dimensional, next generation reinforcement from top to bottom.

BASIC USE

Green Umbrella Fiberlite is a uniquely designed concrete fiber that can be used as a powerful reinforcement. Fiberlite can be used as an alternative or combined with wire mesh to reduce cracking due to stress on the slab. When used in a polished concrete application, the fibers are transparent in the mix and can be dyed and polished.

VERSATILE ARCHITECTURAL APPLICATIONS

Green Umbrella FiberLite's characteristics lend itself to a variety of concrete applications including slab-on-grade, precast concrete, shot-crete, stucco, decorative and other specialty concrete applications.

MANUFACTURER

GREEN UMBRELLA

20 JETVIEW DRIVE

ROCHESTER, NY 14624

844.200.7336

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DIVISION/SECTION

SECTION 0324
FIBROUS REINFORCING

RELATED SECTIONS

SECTION0321
REINFORCING STEEL

SECTION03300
CAST-IN-PLACE CONCRETE

SECTION03370
SHOTCRETE

SECTION03500
CEMENTITIOUS DECKS
AND UNDERLAYMENT

GREENUMBRELLA®

ARCHITECTURAL APPLICATIONS FAQ

What other applications besides typical slabs on ground and precast can FiberLite be specified?

FiberLite can been utilized in a multitude of high performance applications such as: tunnels, saline environments, swamp areas, hurricane or seismic regions as well as less demanding applications: precast, shotcrete, thin-overlays (concrete less than 4 in. (100 mm) thick), whitetoppings, concrete curbs. For more details on each of these applications and more please contact your Green Umbrella Concrete Additives.

Can Green Umbrella fibers be used in precast products?

Yes. The definition of a precast concrete member is simply an item that is "cast before" — one that is cast and cured in a form other than its final position. This concrete product application might include a wide variety of items: patio stones, splash blocks, step units, septic tanks, architectural facade panels, median barriers, railroad ties, burial vaults, utility boxes, bridge beams, grade rings, pipes, hollow-core slabs, manholes, and fence posts, as well as hundreds of different decorative ornamental items. It is very important for the precast producer to find methods to increase the toughness and early strength of his concrete products to reduce waste, minimize callbacks and returns, and aid in the item's long-term durability. If precasters are able to strip the forms and move "green" products to a curing area without breakage, the fiber reinforcement is obviously fulfilling its initial performance obligation. In addition, precasters notice less breakage, chipping, and spalling during handling, delivery, and placement of their products due to the unique three-dimensional Green Umbrella fiber coverage. The use of higher dosages of macro fibers allows the precaster to replace a higher level of conventional steel — contact Green Umbrella for engineering assistance.

Can FiberLite be used in shotcrete applications?

Yes. The term 'shotcrete' is generally used to describe concrete or mortar that is placed or shot at a high velocity onto a given surface by means of compressed air. The reinforcement used in typical shotcrete applications is expected to provide resistance to shear, flexure, and bending loading that may result from soil or rock movement, or from local hydrostatic pressures. The placement of wire mesh on typical irregular shotcrete surfaces is both cumbersome and costly with regards to labor. Synthetic fibers may be used as alternate materials that offer the necessary toughness-index and residual strength levels required, without the hassle and labor costs associated with mesh.

Can Green Umbrella fibers be used in toppings or overlays?

Yes. An overlay is defined as a layer of concrete or mortar, seldom thinner than 1 inch (25 mm.), placed on, and usually bonded onto, the worn or cracked surface of a concrete slab. The overlay is usually designed to either restore or improve the function of the previous surface. Similarly, a topping is also defined as a layer of concrete or mortar placed to form a floor surface on a concrete base, yet is not necessarily bonded to the existing slab. Although deterioration of the old surface or severe cracking of the old slab is most often the reason for a topping course, other reasons might include a lack of floor levelness, improper elevation or plane, inadequate skid or slip resistance, or a lack of wear resistance. Regardless of the

WEBSITE & DOCUMENTS AVAILABLE AT:

GREENUMBRELLASYSTEMS.COM

CUTSHEET, APPLICATION SHEET, FEATURE BROCHURE, TECHNICAL DATA SHEET, SAFETY DATA SHEET

PRODUCT CONSULTING EMAIL:

INFO@GREENUMBRELLASYSTEMS.COM

reasons, slab toppings and overlays can provide a cost-effective method of restoring an existing slab into serviceable condition, without the expense of removal and replacement. In addition to the normal difficulties of placing mesh in flatwork applications, there are additional related complications when toppings and overlays are placed. Naturally, the steel wire mesh requires sufficient cover within the concrete (usually a minimum of 2" or 5 cm.) to prevent corrosion-related spalling and unsightly mesh lines. Obviously, this cover becomes impossible in thin concrete toppings. In unbonded overlay applications, the placement of wire mesh becomes equally difficult without disrupting or damaging the bond-breaking layer or sheeting. One of the most important negatives with regards to mesh is the lack of uniform reinforcement coverage. The mesh is obviously located in one plane only in these thin applications that demand reinforcement to counter problems caused by one-directional bleeding, differential shrinkage, and curling. The use of fiber alleviates these concerns.

ADDITIONAL BENEFITS

In addition to the post-first crack benefits, additional benefits in this application will include the plastic shrinkage cracking mechanism and the reduced volume change due to thermal and moisture variables. There are further quantifiable benefits that would be gained by using this 3-dimensional reinforcement system provided by the FiberLite micro fiber including enhanced surface abrasion resistance and impact resistance.

PHYSICAL PROPERTIES

Material	Modified Acrylic
Specific Gravity (g/m3)	117
Elastic Modulus (GPa)	>10.5
Tenacity (MPa)	>650
Decomposition Temperature	330˚C / 626˚F (Green Umbrella Fiberlite does not melt)
Acid & Alkali Resistance	Excellent
Color	White
Dispersity Rate	Excellent
Filament Diameter (μ)	1015
Fiber Count (fiber/kg) approx	794,000,000
Fiber Length (mm) (other lengths available)	6

PACKAGING

1 bag (.66lb)
1 Carton/32 Bags; 36 Cartons/Pallet
Truckloads are available. Bales are available upon request.

For general applications such as slab-on grade, a standard dosage of (1) bag/yd is recommended. Other fibers require higher dosage rates to achieve similar performance. For other applications, consult with your Green Umbrella™ representative for recommended dosages.

WHY DO FIBERS "BALL UP" IN CONCRETE MIXES?

ALL FIBER TYPES (STEEL, MICRO AND MACRO SYNTHETIC) HAVE THE POTENTIAL TO "BALL UP" IN CONCRETE. THIS PHENOMENON IS USUALLY CAUSED BY ADDITION OF FIBERS INTO CONCRETE MIXES THAT ARE TOO DRY (SLUMP DECREASES TO ZERO) OR INTO MIXTURES THAT DO NOT HAVE ENOUGH FINE PARTICLES (CEMENT, SAND, SUPPLEMENTAL MATERIALS, ETC.) TO COAT THE FIBER PARTICLES, WHICH IN TURN "PASTE STARVES" THE SYSTEM AND AGAIN CAUSES THE SLUMP TO DECREASE TO ZERO. LOOSE FIBERS IN AN EMPTY DRUM MAY CLUMP TOGETHER AND FIBER TYPES THAT ARE TOO LONG OR HAVE VARYING GEOMETRIES MAY ALSO CAUSE PROBLEMS. AS ALWAYS, A TEST TRIAL SHOULD BE PERFORMED TO ENSURE THAT THE MIXTURE WILL SUPPORT THE FIBER TYPE AND DOSAGE AND THAT THE BATCHING SEQUENCE WILL NOT CAUSE ANY PROBLEMS. IF NECESSARY, THE USE OF A WATER REDUCING ADMIXTURE MAY BE WARRANTED TO MAINTAIN THE DESIRED SLUMP FOR PLACEMENT.

SPECIFICATIONS

CUTSPEC

FiberLite™ by Green Umbrella® of Rochester, NY (844) 200-7336 is a low dose, insoluble, transparent in the mix, uniquely designed, secondary reinforcement concrete fiber. Providing isotropic fiber reinforcement that displaces evenly without clumping or unsightly protrusion from concrete commonly seen in other fibers. Place at mixing of *@EarlyAge* concrete at a DOSAGE RATE of .66 lb/cyd for general applications such as slab-on grade, a standard dosage of (1) bag/yd3 is recommended. Other fibers require higher dosage rates to achieve similar performance. For other applications, consult with your Green Umbrella® representative for recommended dosages.

TEST STANDARDS

ASTM C39	Concrete Cylinder Compression
ASTM C78-1	Standard Test Method for Flexural Strength of Concrete
ASTM C1018	Standard Test Method for Flexural Toughness and First-Crack Strength of Fiber-Reinforced Concrete
ASTM C666	Freeze Thaw Durability
ASTM C234	Bond Strength
ASTM C1116/ C1116 M-08a	Standard Specification for Fiber-reinforced Concrete
ICS ES AC 32	Section 3.1.1 3.1.2

SUMMARY

Flexural	4.38 MPa (635 psi) 110% of Control
Bond Strength	89.02 kN (20,012 psi) 111% of Control
Impact Resistance	7 Days 225% of Control
Impact Resistance	28 Days 193% of Control
Plastic Shrinkage Cracking Average Reduction	90.4%

CONCLUSION

Based on the test results, Green Umbrella® FiberLite™ used at a dosage rate of 0.66 lb/yd (0.39 kg/m) exceeded the test parameters required by ICCES AC32.

FIBERLITE FOR WWF REPLACEMENT

FiberLite meets the definition of a micro synthetic fiber. FiberLite at .66 lb/cyd. will meet the same engineering property requirements for the slab-on-ground on projects as 6x6-W1.4xW1.4 WWF.

PRODUCT MIXING AND PUMPING

No Mix Design Change Needed

When fibers are used at recommended dosage and application rates, no mix design changes are necessary. However, if fiber volume rates are dramatically increased, some alterations in the mix design may be required. Please contact us for assistance regarding mix design and fiber dosage rates.

Dosage Rate
Green Umbrella produces a range of synthetic fibers used at various dosages to meet the performance requirements of a project or owner. Green Umbrella recommends the following performance-based characteristics:

1. For plastic shrinkage crack-control during the early life of the concrete: 1 bag per yard of FiberLite;
2. For shrinkage and temperature-related crack-control as an alternate to light non-structural wire mesh in most applications: 1 bag per yard of FiberLite;

See your Green Umbrella representative for engineered dose per application.

Timing of Fiber Addition
Green Umbrella products should be added to the concrete mixing system at the batch plant for best distribution. Follow the normal mixer manufacturers' standard recommendations and ASTM C-94. Mixing time should be a minimum of four to five minutes per load at a normal mixing speed. The batch plant will be the most economical and safest place for addition of the fibers. Typically it is not recommended that fibers be introduced to the mixer as a first ingredient, but added with other ingredients or at the end of the addition sequence.

Job Site Addition
Fibers can be added to ready-mix trucks at the job site, though it is recommended they be added at the batch plant for optimum mixing and distribution. If fibers are added at the site, extra caution should be exercised to ensure sufficient mixing time. Allow at least 4 to 5 minutes of mixing time at drum mixing speed after the last product bag has been added. Fiberlite can be stored at the job site as long as it is properly covered to keep the packaging materials intact and dry.

Concrete Slump
Because of its isotropic three-dimensional cohesive nature, fiber-reinforced concrete has the appearance of being less workable than plain concrete. In actuality, the visual slump may be reduced slightly but the flowability remains nearly same. Caution; never allow water to be added at the job site to bring back slump loss. The use of a super plasticizer is recommended to increase slump if needed.

Compatibility with Liquid Admixtures
Synthetic fibers have no effect on air entrainment, super plasticizers, or water reducers. If possible, synthetic fibers should be added prior to any liquid admixtures to take full advantage of the mixing shear and friction of the mix to optimize the distribution.

Concrete Pumping
For normal weight concrete FiberLite does not increase the pressure needed to pump the concrete mix or cause any other issues. Fiber reinforcement has become a desirable construction practice for a wide range of concrete applications. The ease of addition and the uniform distribution have given fibers distinct job site advantages over non-structural wire mesh. These advantages are even more valuable on projects where the concrete is delivered by a pumping process. The use of integral fiber reinforcement eliminates the wire mesh hassle encountered by the pump-line labor force, and allows the nozzle-man an unencumbered field in which to operate. In lieu of hoisting rolls of mesh onto upper-level deck projects, Green Umbrella-reinforced concrete can simply be pumped into place, offering significant time and labor savings to the project. Though fibers tend to change the "visual appearance" of the concrete, the pump operators typically

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MADE IN THE U.S.A.

notice more consistent and slightly lower pump pressures are required for fiber concrete.

Concrete Finishing
Fiberlite will not interfere with a laser screed or power trowel finish. The vibration of the laser guided screed brings cement to the surface and covers almost all exposed fibers. Those not covered will be burned off with any power trowel finish. The possibility of replacing conventional steel mats with High Volume Synthetic Fibers allows for a much easier laser screed placement and finishing process.

Broom Finish
The use of a stiff bristled broom used in only one direction will help align surface fibers with the texture ridges, making them considerably less noticeable.
There is no surface protrusion when using FiberLite. FiberLite can be pumped or placed using conventional equipment and can be used with all finishing techniques including power and hand troweling, broom finished and colored concrete.

SURFACE APPEARANCE

There is no surface protrusion when using FiberLite. FiberLite can be pumped or placed using conventional equipment and can be used with all finishing techniques including power and hand troweling, broom finished and colored concrete.

NOTE: TIME, TEMP, AND HUMIDITY

Best Practice according to ACI Standards.

WARRANTY AND LIMITATIONS

It is the responsibility of the contractor to follow all directions and requirements as outlined in the Green Umbrella installation specifications. A completed Job Survey form must accompany this warranty request. Green Umbrella™ Companies (GU) solely and expressly warrants that its products shall be free from defects in materials. and workmanship for six months from the date of purchase. Unless authorized in writing by an officer of Green Umbrella, no other representations or statements made by Green Umbrella™ or its representatives, in writing or orally shall alter this warranty, GREEN UMBRELLA MAKES NO WARRANTIES, IMPLIED OR OTHERWISE, AS TO THE MERCHANTABILITY OR FITNESS FOR ORDINARY OR PARTICULAR PURPOSES OF ITS PRODUCTS AND EXCLUDES THE SAME. GREEN UMBRELLA APPLIED TO SUBSTANDARD CONCRETE IS EXCLUDED FROM ANY KIND OF WARRANTY. If any Green Umbrella™ product fails to conform to this warranty Green Umbrella™ will replace Green UmbrellaTM product at no cost to the Buyer. Replacement of any product shall be the sole and exclusive remedy available and the buyer shall have no claim for incidental or consequential damages. Any installation of Green Umbrella products that fails to conform to such installation information and instructions shall void this warranty. Product demonstrations, if any are done for illustrative purposes only and do not constitute a warranty or warranty alteration of any kind. Buyer shall be solely responsible for determining suitability of Green Umbrella products for the Buyers intended purposes.

TECHNICAL DATA SHEET

GREENUMBRELLA®

ICECAP

Capping The Concrete

Green Umbrella® IceCap™ is a durable sub-surface nano-finish for exposed architectural concrete floors. Protect *@EarlyAge* concrete placed with IceStart™ and IceStop™ with a penetrating, sub-topical, reactive, non-resinous polymer soon after placement - preserving, protecting and enhancing the finished surface. As the third and final piece of the GreenIce™ Cure & Cap system - concrete is sealed with a breathable, dense, and maintainable layer of protection that will not whiten, chip, flake or peel. An impregnating component providing resistance to harmful contaminants, IceCap™ doubles as both a stainguard and a wearguard via industry-leading technology and performance. IceCap™ enhances architectural gloss while extending the concrete floor's lifecycle, maintenance, and sustainability; promoting reflectivity, clarity, and cleanliness.

BASIC USE

Green Umbrella® IceCap™ is a Penetrating, Non-Resinous, Reactive, Interior-Exterior MicroFinish for Non-Profiled Surfaces. IceCap™ works as a guard against both stains and wear - it can be applied before trades are on the floor for protection during the construction phase. The nano-enhanced treatment increases surface abrasion as a wearguard and enhances impermeability as a stainguard while enhancing gloss and improving profile clarity. The hard bond to concrete produces a protective layer that prevents contaminants from penetrating, making floors more durable and easier to clean and maintain. Use in applications where hard troweled, exposed concrete is specified and where a water resistant, odorless, and high-performance concrete protectant is desired.

***@EarlyAge* Concrete:**

GreenIce Cure & Cap: IceStart, IceStop and IceCap is a comprehensive concrete cure system designed for Interior or Exterior concrete with a polished concrete sheen—by Green Umbrella® of Rochester, NY (844) 200-7336 R.T.U. (Ready to Use), S.O.L.O. (Spray-On, Leave-On).

Green Umbrella IceStart™ is a Surface Applied Supplementary Cementitious Material Admixture, the first treatment of a two-part Surface Applied Admixture Cure and Densification System, to be followed by IceStop™. Used only on *@EarlyAge* concrete, Cure & Cap is a chemical and mechanical process applied during concrete placement and power troweling and completed with IceCap™ as soon as 3 days after placement. For use as a sealer without the use of IceStart and IceStop, conventional 28 day wait period is recommended prior to installation.

Application of IceCap™ cannot begin until after the substrate has been auto-scrubbed and is clean of contaminants and debris.

1) Apply IceCap™ S.O.L.O. (spray-on, leave-on) @1,200 SF per gallon on a clean and dry substrate using a low-pressure, high-volume manual or battery-powered commercial sprayer. Apply only when temperatures are 40°F and rising, not exceeding 90°F.

2) Applicate for even coverage using a weighted T-bar and a clean applicator pad, changing and/or cleaning frequently during application. Avoid puddling, allow dwell time of 10 minutes for full reaction. Allow to air dry. Repeat, applying a second coat.

3) Following the second application of IceCap™ to the clean substrate, burnish using a concrete weighted, ultra high speed, propane powered burnisher equipped with a GreenGloss pad.

Note: Avoid application where there may be standing water within 48 hours after final burnish.

***@MatureAge* Concrete:**
Green Umbrella IceCap may be used as a stand-alone concrete sealer and surface protectant applied to concrete aged 28 days and beyond to prevent penetration of contaminants, enhance surface integrity and aesthetic. IceCap increases near-surface durability and chemical resistance improving wear, maintainability and enhancing gloss and appearance.

@Profile & Polishing:
For sealers better suited to concrete that has been abrasively polished use Green Umbrella Interior MicroFilm or ColorShield.

ARCHITECTURAL APPLICATIONS

Ideal for **Interior or Exterior** *use on exposed* horizontal architectural concrete surfaces. Superior performance in integral color applications. Demanding Applications, warehouse/distribution centers, food service, parking decks, garages, hospitals, or similar, retail spaces & showrooms, restaurants, business offices, lobby areas, museums, municipalities, airports, hotels, schools, fire-stations, almost all exposed concrete surfaces.

FEATURES & BENEFITS

Primary Features & Benefits of One of The Industry's Most Versatile Penetrating Wear Guards

- Design of Architectural Exposed Concrete Floors
- Enhanced reflectivity
- Repairable Gloss without Refinement
- Superior contaminant intrusion prevention
- Product Permanence - Insoluble - Will Not Wash Out
- Unique GUNanoInside Technology - Superior Performance
- Resists Penetration of Oils, Chemicals and Stain-Causing contaminants
- Does not support mildew, mold or fungi growth
- Partially Reactive - Not Just A "Shell Surface"
- 100% Absorption - Reducing Waste
- Low Nano-Solids Formulation, Deeper Penetration
- Reduces porosity, Resisting Damage From Freeze/Thaw - Increasing LifeCycle
- Enhances the natural beauty of concrete
- Efficacy & Performance Not Affected By UV Exposure
- Prevents Dangerous Off-Dusting - Safer for Building Occupants
- Improves Ease of Maintenance
- USDA/FDA approved for incidental food contact
- Requires no rinsing & disposal and will not gel on surface — can be allowed to air dry
- Decreases black tire marking from lift trucks and equipment — improving appearance
- Stands up to heavy abrasion and foot traffic while providing excellent slip resistance
- Does Not Contribute to ASR
- Creates A Breathable Surface - No Flake Or Peel
- Gloss Enhancing - Improving Natural Appearance
- Requires No Rinsing & Disposal - Cuts Environmental Impact
- Cuts Labor - Polish look finish
- Abrasion-Resistant To Foot & Wheeled Traffic - Increases Life Cycle
- S.O.L.O. Application & Brief Dwell Time - Cuts Downtime
- Non-Sodium - Does Not Contribute To Alkali-Silica Reaction
- No Efflorescence or Whitening Common With Conventional Hardeners - Cuts Downtime
- Low VOC - Environmentally Responsible
- Non-Resinous Polymer Formulation - Prevents Yellowing & Tire Marking
- R.T.U.** - Ready To Use - Reducing Labor

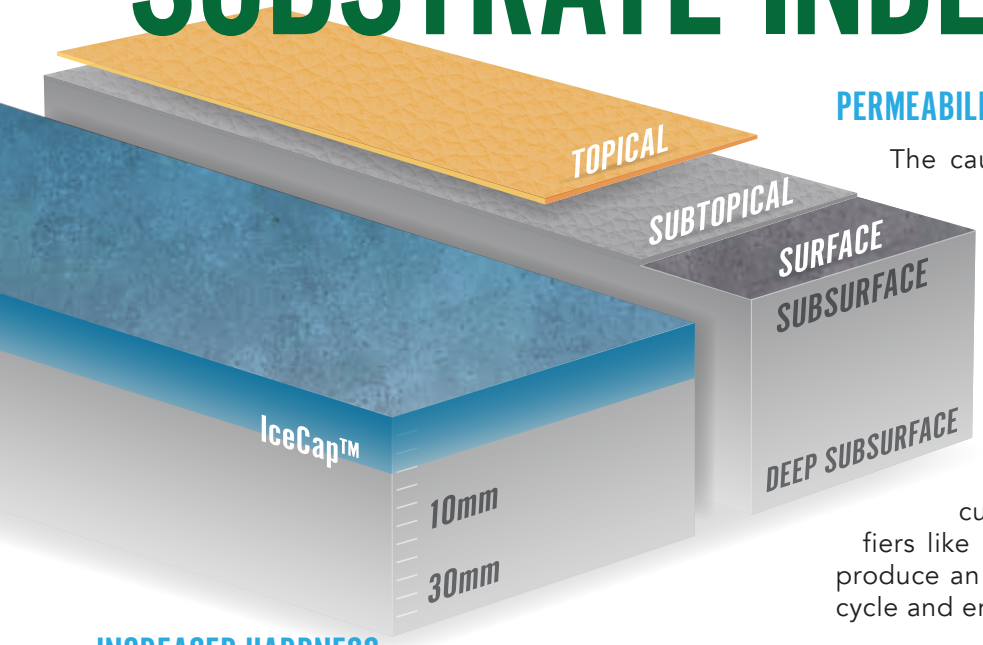
Additional Benefits

@EarlyAge™
- Designed for early sealing and concrete protection - No Slab Whitening
- Special Formulation - Concrete Color Enhancer and Gloss Enhancer
- No Concrete Sweating After Application - Reducing Downtime
- Deep Subsurface Penetration & Bond
- When combined with IceStart™ and IceStop™ industry leading *@EarlyAge* cure, contaminant protection, repellency and resistance

@MatureAge™
- Revitalize Damaged Floors
- Adds Exceptional Gloss

GREENUMBRELLA™

SUBSTRATE INDEX



INCREASED HARDNESS

A superior stand-alone sealer. In its natural state, the active ingredients in IceCap™ improve the clarity, enhance and outperform the contaminant resistance of conventional formulations without the need for harmful VOC's or the limitations of high solids, 'wax-like' sealant products. The surface, subsurface and deep subsurface will be more durable with IceCap™ due to its unique ability for "Capping the Concrete".

S.O.L.O. APPLICATION AND DWELL TIME

Green Umbrella IceCap™ is applied one coat at a time, with 2-3 applications used for maximum contaminant rejection. It does not require a lengthy 24-48 hour cure time after application, like many concrete sealers. A Spray-On Leave-On treatment, with only one surface application needed. There is no scrubbing, gelling, or re-wetting of the surface. The initial 10 minute dwell time is all that is required. Once dried, the reaction is permanent within the surface and should be burnished using a UHS propane burnisher and a Green Umbrella recommended pad before opening to all traffic.

PENETRATION

A modern nano formulation allows IceCap™ to penetrate and bond at both a subsurface and surface level, filling voids thanks to nano structure and low solids content. All concrete matrices are not the same - thus the depth of penetration will vary. Frequently, IceCap™ penetrates deeper than conventional 'sealant' products, penetrating and bonding below the surface. Penetration and strong bond create maximum protection against water or contaminant penetration, preserving the concrete wear surface and integral color.

PERMEABILITY: PROTECTION & PREVENTION

The causes of the surface weakening of concrete vary. Concrete permeability plays a large role in the integrity of concrete from surface to deep subsurface. The detrimental effects of chloride, salt and de-icers are well documented. Arguably, the primary reason concrete treatments are applied is in an attempt to increase impermeability and prevent freeze/thaw damage. Green Umbrella IceCap™ will work in harmony with integrally troweled cure - IceStart and IceStop or Crossover densifiers like DryShield to eliminate weak porosities and produce an umbrella of protection for an increased life cycle and environmental protection.

NOT A CANDY SHELL

Concrete treatments are designed for surface protection and lifecycle enhancement. IceCap™ delivers to all concrete projects maximum protection "Capping the Concrete", without negative side-effects common to conventional film-forming, high solids and/or high VOC content sealers. Many conventional sealers create a shallow, thin, "shell" of protection at the surface; once this "candy shell" is breached by abrasion and wear, the sealer begins to chip, flake or peel exposing the original surface, leading to failure or increased maintenance cost due to a lack of protection. Negative lifecycle impact may be exaggerated when using antiquated sealers. IceCap™ provides industry-leading surface and subsurface protection without washing out during routine maintenance or failing due to de-lamination or traffic patterns.

LIQUID RESISTANCE & BREATHABLE

IceCap™ is not a water-proofer but increases hydrophobicity. It is formulated to bond and fill concrete voids. The unique formulation is resistant to surface water and waterborne containments. After it has cured it is insoluble - completely reacted. IceCap™ shines as a clarity enhancer at the near surface and thanks to a penetrating, sub-surface bond, provides much needed protection in harsh environments. The unique breathability allows for the passage of moisture through the slab *@EarlyAge* when protection is critical early in construction or where there are moisture issues that necessitate a breathable surface. IceCap™ is an economical S.O.L.O. sealing treatment solution outperforming high VOC concrete sealing options while being better for the environment.

TECHNICAL INFORMATION

Formulation	Penetrating Reactive Interior Exterior Microfinish for Non-Profiled Surfaces
Chemical Family	Hybrid Colloidal
Substrate Location	Subsurface
Appearance	Milky White
Odor	None
Film Forming	Hybrid Partial
Active Ingredients	100%
Type	Wearguard
pH	11
Boiling Point	212F
Packaging	5-gal bucket, 55-gal drum, 275-gal tote
Shelf Life	2 Years
VOC	<50 g/L
Freezing Point	32F

Safety Data Sheets for all products are available at www.GreenUmbrellaSystems.com

MANUFACTURER & PRODUCT CONSULTING

Green Umbrella
20 Jetview Drive
Rochester, NY 14624
(844) 200-7336

Website & Documents Available At:
GreenUmbrellaSystems.com
CutSheet, Application Sheet, Feature Brochure, Technical Data Sheet, Safety Data Sheet
Product Consulting Email:
Info@GreenUmbrellaSystems.com

ESTIMATING

Container Size:
5 gallon (18.9L) - 43 lbs. (19.5 kgs)
55 gallon (208L) - 469.1 lb (212.8 kg)
275 gallons (1,041 L) - 2,345.6 lb (1,064 kg)
Each Green Umbrella IceCap™ container is properly labeled with information, including the product name, description, batch number, and application instructions.

Dilution: None. R.T.U. (Ready-To-Use).

Coverage Rates: Green Umbrella IceCap™ has an average coverage rate of 1,200 SF per gallon. First coat will be 800-1,2000 SF depending on initial concrete porosity and/or surface texture. Apply during @EarlyAge after integrally troweled cure. Typical installations include a minimum of two applications. Apply a third application within 24 hours after the first two applications for maximum protection. Coverage depends on the porosity of the concrete substrate, time, temperature, and humidity.

SPECIFICATIONS

GreenUmbrella® CUTSPEC™
Simplified Product Spec

EarlyAge Conventional Concrete(28 days or earlier):
GreenIce Cure & Cap: IceStart, IceStop and IceCap is a comprehensive concrete cure system designed for Interior or Exterior concrete with a polished concrete sheen—by Green Umbrella® of Rochester, NY (844) 200-7336 R.T.U. (Ready to Use), S.O.L.O. (Spray-On, Leave-On).
Green Umbrella IceStart™ is a Surface Applied Supplementary Cementitious Material Admixture, the first treatment of a two-part Surface Applied Admixture Cure and Densification System, to be followed by IceStop™. Used only on @EarlyAge concrete, Cure & Cap is a chemical and mechanical process applied during concrete placement and power troweling and completed with IceCap™ as soon as 3 days after placement. For use as a sealer without the use of IceStart and IceStop, conventional 28 day wait period is recommended prior to installation.

Application of IceCap™ cannot begin until after the

substrate has been autoscrubbed and is clean of contaminants and debris.

1) Apply IceCap™ S.O.L.O. (spray-on, leave-on) @1,200 SF per gallon on a clean and dry substrate using a low-pressure, high-volume manual or battery-powered commercial sprayer. Apply only when temperatures are 40°F and rising, not exceeding 90°F.
2) Applicate for even coverage using a weighted T-bar and a clean applicator pad, changing and/or cleaning frequently during application. Avoid puddling, allow dwell time of 10 minutes for full reaction. Allow to air dry. Repeat, applying a second coat.
3) Following the second application of IceCap™ to the clean substrate, burnish using a concrete weighted, ultra high speed, propane powered burnisher equipped with a GreenGloss pad.
Note: Avoid application where there may be standing water within 48 hours after final burnish.

@MatureAge Conventional Concrete that is not Abrasively Polished (28 days or later): Green Umbrella IceCap may be used as a stand-alone concrete sealer and surface protectant applied to concrete aged 28 days and beyond to prevent penetration of contaminants, enhance surface integrity and aesthetic. IceCap increases near-surface durability and chemical resistance improving wear, maintainability and enhancing gloss and appearance.

@MatureAge Conventional Concrete To Be Abrasively Polished: Not recommended.

For certified installers and comprehensive manufacturer instructions, visit www.GreenUmbrellaSystems.com

CSI SPECIFICATIONS

DIVISION 03 & 09
Section 03 35 09
Concrete Cure and Profile Finishing Systems
Systems@EarlyAge Concrete

Systems@MatureAge Concrete
Section 03 3543 & 03 3536
Products @EarlyAge & MatureAge Concrete
Coordinate with section:
Section 032400
Synthetic Fiber Reinforcement
Section 033119
Shrinkage Compensating Concrete
Section 033550
Integrally Colored Concrete
Section 033000
Cast in place concrete
Section 033500
Concrete Finishing
Section 033900
Concrete Curing
Section 079200
Joint Sealer
Section 096200
Specialty Flooring
Section 0962630
Decorative Concrete Toppings

For CSI Specifications Contact a Consultant:
info@greenumbrellasystems.com

Note to Specifier
Green Umbrella Concrete System treatments like Green Umbrella® IceCap™ form an integral part of a successfully specified concrete placement, environmentally installed with extended expected lifecycle and reduced maintenance.

The specifier must keep in mind several construction disciplines: the concrete mix design, concrete placement, concrete finishing and concrete maintenance program. We encourage you to carefully specify these elements, even if Green Umbrella products are not used. Each of these disciplines is critical for the overall success of this design element. Ways and means generally need to be specified. Green Umbrella Architectural Concrete System is an approach from design to completion, created to help the specifier succeed, covering stages from the concrete pour through to the floor's maintenance.

There are six major components to the Green Umbrella Architectural Concrete System: knowledgeable CONSULTANTS, the CANVAS, the PROCESS made up of 'ways and means,' high productivity EQUIPMENT, TREATMENTS and , qualified flatwork and polishing CRAFTSMEN.

All of its components follow the Nine Fundamentals of Green Polishing (www.theconcrete9.com) that educate a specifier on these principles. Consulting ACI Guide to Decorative Concrete (ACI 310R-19) can be helpful.

Green Umbrella Concrete System treatments like Green Umbrella® IceCap™ form an integral part of a successfully specified concrete placement, environmentally installed with extended lifecycle and reduced maintenance.
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There are six major components to the Green Umbrella Architectural Concrete System: knowledgeable CONSULTANTS, the CANVAS, the PROCESS made up of 'ways and means,' high productivity EQUIPMENT, TREATMENTS and finally, qualified flatwork and polishing CRAFTSMEN.

Designing the concrete slab:
Green Umbrella GreenCanvas™ shrinkage compensating concrete can be specified in the mix design (ACI 223R-10) to ensure that the surface is ideal for a jointless, non-curling floor when used in slab on grade or elevated deck applications. This is also a sustainable solution for tank farm, industrial and infrastructure projects, including roadways and bridges. For conventional concrete, consult American Concrete Institute Guide to Design of Slabs on Ground (ACI 302.1R-15) for joint spacing if shrinkage compensating concrete is not used. The specification should separate concrete slabs into 03 30 00 Cast-In-Place concrete for surfaces not designated for polished concrete. For abrasively processed architectural concrete floors, use SECTION 033509 – CONCRETE CURE AND PROFILE FINISHING SYSTEMS. Its components follow the Nine Fundamentals of Green Polishing (www.theconcrete9.com) that educate a specifier on these principles. In addition, consulting ACI Guide to Decorative Concrete (ACI 310R-19) can be helpful.

For Designing the concrete slab, consult American Concrete Institute Guides (www.concrete.org):
ACI PRC-302.1-15: Guide to Concrete Floor and Slab Construction
ACI 302.2R-06: Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials
ACI PRC-308-16: Guide to External Curing of Concrete
ACI PRC-310-19: Guide to Decorative Concrete
ACI PRC-360-10: Guide to Design of Slabs-on-Ground

For EarlyAge concrete to be Abrasively Polished: Considerations should be given to specifying the following products for an economical, sustainable and maintainable concrete floor 1) Green Umbrella IceStart™ (cure) & IceStop™ (fixative) during and immediately after concrete placement & finishing. 2) Green Umbrella FiberLite™ to reduce plastic cracking and for strength. 3) Green Umbrella GreenCut™ for the highest quality Ra (roughness average) profile. 4) Green Umbrella DryShield™ for the hardening of concrete and prevention of concrete off-dusting. 5) Green Umbrella Interior MicroFilm™ for chloride intrusion and oxidation of colorant prevention and protection.

Specify equipment: It is critical to use the appropriate head pressure and rpm for concrete profiling, honing, and polishing. Green Umbrella recommends using equipment with propane or alternative fuels to reduce environmental impact. Cordless PHP equipment may allow for early access to projects with limited 3-Phase electricity connections and eliminates the hazards common to dry grinding or attempting a wet process using electric equipment. Specify high-productivity machines with sufficient equipment on large projects to meet production goals and not adversely affect project timeline and/or other trades. Specify equipment that meets LEED Building Operations and Maintenance (LEED O+M) requirements. Green Umbrella grinders (Green Grinder, GreenXtreme or RTPMAX) and Green Umbrella Low Profile Edgers process the entire floor, with the same abrasive profile within 1⁄4 inch of walls or under shelving. Specify the same matrix of all cutting abrasives, eliminating the inconsistencies found on projects when a mix of manufacturer brands is used.

Hardeners & Densifiers: Research shows that these treatments are effective against concrete dusting and provide needed hardening of the surface, accepted as a standard. Green Umbrella concrete treatments are non-sodium and do not generate hazardous waste. The Green Umbrella line of densifiers are not water-soluble and do not contribute to alkali-silica reaction. A unique benefit of Interior MicroFilm™ is the moisture and chloride intrusion resistance properties.

Colorants: Green Umbrella treatments that are pH neutral will not resist color introduction or promote

"walk-off" common with many color and hardener combinations; this is why it is essential to match the family of treatments to the colorants. Otherwise, the specifier may unknowingly specify treatments that do not work well together. Green Umbrella colorants, dyes, and micro-pigments have superior color fastness compared to traditional stains and dyes. FROM DESIGN TO COMPLETION, YOU EXPERIENCE A COMPLETE SYSTEM.

Environmental Responsibility and LEED Considerations

A Green Umbrella Architectural Concrete Systems specified process is specially designed to require less labor and downtime while lowering environmental impact. Green Umbrella IceCap™ is easy and quick to apply, requiring less labor. IceCap™ has low VOC's with no impact on indoor air quality.

Human Health - Indoor Environmental Quality (IEQ)

- Architectural Concrete may be finished so as to dramatically reduce bacterial adhesion and the presence of biofilms, creating a healthier environment free of harmful bacteria and viruses.

Human Health - Indoor Air Quality (IAQ)

- Many studies indicate that indoor air quality is enhanced with properly maintained Architectural Concrete vs. carpet or other floor coverings
- Architectural concrete does not support combustion, nor does it produce smoke or toxic fumes (LEED v4.1 Operations and Maintenance, propane equipment)
- Architectural Concrete can eliminate moisture issues, shrinking possible growth of mold and fungus.

Optimize Energy Performance

- Polished concrete allows the advantage of utilizing the thermal mass of concrete in heating and cooling.
- Polished concrete increases light reflectivity, amplifying the benefit of ambient (natural) lighting, and reducing process loads from light fixtures.

Building Reuse/Construction Waste Management/Recycled Content

- Existing Buildings — Environmental stewardship through the reuse of the existing floor.
- New or Existing Buildings — Not wasting materials or energy required to produce a floor covering or topical coating.

VOC/IAQ/Long-term Maintenance

- Polished concrete has zero VOC content
- Many studies indicate that indoor air quality is enhanced with properly maintained hard surfaces vs. carpet
- Polished concrete does not support combustion, nor does it produce smoke or toxic fumes (LEED v4.1 Operations and Maintenance, propane equipment)
- Polished concrete has a lower maintenance cost and zero replacement cost compared to traditional floor coverings.

Life Cycle Cost

- Sources show polished concrete to be the lowest life-cost flooring option available

TESTING

For all independent lab testing contact us at Info@GreenUmbrellaSystems.com

For GreenIce Cure & Cap System

ASTM C494 / C494M - 19 Standard Specification for Chemical Admixtures for Concrete

Water Loss

ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials

ASTM C156 Water Loss [from a Mortar Specimen] Through Liquid Membrane- Forming Curing Compounds for Concrete

ASTM 309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete

Abrasion Resistance, Strength, Hardness

ASTM C779 / C779M 12 " Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces"

ASTM C944: "Abrasion Resistance of Concrete by Rotating-Cutter Method"

BS EN 13892-4: 2002 Standard Methods of test for screed materials. Determination of wear resistance "BCA"
ASTM C1583 Standard Test Method For Tensile Strength Of Concrete Surfaces And The Bond Strength Or Tensile Strength Of Concrete Repair And Overlay Materials By Direct Tension (Pull-Off Method)

Chemical Resistance Of Finishes

ASTM 1308 Standard Test Method For Effect Of Household Chemicals On Clear And Pigmented Organic Finishes (Aviation Fluid Resistance With Green Umbrella GreenIce Cure & Profile System)

Mohs Scale Of Mineral Hardness

ACI 302 Standard Guide For Concrete Floor And Slab Construction

FDA COMPLIANT

USDA regulations 9 CFR, Section 416.4 and the Food Safety Inspection Services, "Sanitation Performance Compliance Guide".

PROFILE, HONE & POLISHING EQUIPMENT

Green Umbrella propane equipment meets LEED v4.1 Operations and Maintenance Guidelines. Green Umbrella uses propane-fueled equipment to save the owner as much as 50 cents a square foot in electrical cost for three-phase and 220-volt equipment often used by PHP contractors. In itself, propane is not a direct greenhouse gas contributor and is one of the world's most widely used alternative fuels. Electric power adds 80% more CO2 into our atmosphere in comparison to propane. Propane can be a safe, clean, and efficient fuel.
All Green Umbrella propane equipment should have the following: CARB and EPA certified engines to meet their strict guidelines for low CO2 emissions.
ESDS (emissions shut down system) — machines are manufactured to incorporate a 3-way catalytic muffler to lower CO2 emissions and an ESDS that monitors the engine for irregularities and automatically shuts the machine down if emissions rise.

High Productivity Rider Grinder - processes larger areas in less time

GreenXtreme by Green Umbrella
• Heavy duty commercial floor grinder/polisher or equivalent
• Minimum 933 pounds head pressure
• 77-inch grinding width
• Minimum 8000 square feet per hour production rate.
• Wet abrasive compatible
Variable Abrasive Concrete Grinder — profiles, hones, and mechanically polishes floors

RTPMAX by Green Umbrella
• Heavy duty commercial concrete profile/hone/polish equipped Power Trowel
• Minimum 933 pounds head pressure
• 6'-10' feet (72" - 112" inches) profile width
• Double Pass 8,000 square feet per hour production rate.
• Wet abrasive compatible
• Passive or Active Planetary
• Reduced Operator Fatigue

Variable Abrasive Concrete Grinder — profiles, hones, and mechanically polishes floors

GreenGrinder/Polisher by Green Umbrella
• Propane-powered, heavy-duty commercial floor wet abrasive compatible
• Minimum 785 pounds head pressure
• CARB/EPA approved.
• 30-inch grinding width
• 12 abrasives, counter-clockwise planetary rotation
• Minimum 800 square feet per hour production rate.
• Provide a minimum of two units on site

Variable Abrasive Concrete Edge Grinder — processes floors within a 1⁄4 inch of wall

GreenEdger by Green Umbrella
• Propane-powered, heavy-duty commercial floor edge grinder/polisher
• Wet abrasive compatible
• Minimum 165 pounds head pressure
• CARB/EPA approved
• 1/4 inch cut to the wall
• Four or six abrasive head, 640 RPM abrasive rotation
• Provide a minimum of one unit on site

Weighted Concrete Burnisher — removes unreacted material, promotes cross-linking and enhances gloss.

GreenGloss - Concrete weighted UHS Burnisher, by Green Umbrella
• Propane-powered, UHS Burnisher CARB/EPA approved.
• 27 or 39-inch burnishing width
• Weighted Head
• Minimum 2000 RPM
• Provide a minimum of one unit on site

Walk Behind Slurry Recovery Machine — cleans

between abrasive steps to prevent contamination. Important: not all floor scrubbers are effective in slurry recovery.

- Green Umbrella recommended slurry recovery vacuum.
- **Auto scrubber** similar to Tomcat or Nilfisk-Advance with accessible concrete clean-out
- Minimum 500-pound head pressure
- Water application and minimum 30-gallon recovery tank

Abrasives for PHP Equipment — cut concrete substrate in a sequence of steps.

- Stock removal, profiling, honing and polishing abrasives, hybrid bond abrasives by Green Umbrella
- Match hardness of abrasives to the hardness of concrete

Prep Equipment

- Power Washer on low psi
- Industrial Waterbroom by WaterMiser or equivalent, up to 180 PSI of water

Application Equipment

Hand or Battery-powered Pump Sprayer Applicator — used to apply the product evenly and consistently

- By Green Umbrella, Patriot Sprayers, or equivalent (Non-Metal Canister)
- Maximum tip pressure 40 psi
- T-bar with blended applicator — evenly distributes product sprayed on concrete substrate

All products can be seen at GreenUmbrellaSystems.com

End Note to Specifier

Note to Applicator:

PRODUCT PLACEMENT

***@EarlyAge* Conventional Concrete (28 days or earlier):** Place IceCap™ on GreenIce Cure System (IceStart & IceStop) post concrete finishing after three days. Proper substrate cleaning and product application must be observed.

***@EarlyAge* GreenIce Cure System Concrete to be Abrasively Polished:** N/A

***@MatureAge* Conventional Concrete that is not Abrasively Polished (28 days or later):** Place IceCap™ on an adequately prepared substrate as noted above - 'Substrate Condition'.

***@MatureAge* Abrasively Profiled Concrete:** N/A

Note to Applicator & Specifier:

TIME, TEMPERATURE & HUMIDITY

For a chemical reaction to take place successfully, time must be allocated for the full reaction. Likewise, when applying Green Umbrella® IceCap™ to concrete, there must be an adequate amount of dwell time for the reaction to occur. Proper dwell time will help to achieve the best result. For IceCap™ to penetrate the substrate effectively, the temperature should be 40°F (4°C) and rising for several hours from application forward. If temperatures are lower than recommended, the chemistry may take much longer to react and penetrate the concrete substrate. If the temperature exceeds the recommended maximum of 95°F (35°C), or if conditions are windy, the chemistry could react and dry before penetrating the substrate.

Humidity also plays a role in dry time. The product applied to a dry slab of concrete in an arid climate will dry faster than in a humid environment. In dry climates with low humidity, it may be necessary to hydrate the slab to allow for proper dwell time. If several treatments are being applied, product staging should be planned to meet all treatment dwell times and dry times. It is recommended to use dew point data from a mobile hygrometer to determine the best staging of concrete treatments to eliminate needless downtime. The use of on-site hygrometers and thermometers can provide meaningful data to facilitate treatment application success.

Time to traffic: For best results - light foot traffic when dry, or after 1 hour. Wheeled traffic after 3 hours.

High Temperature or High Wind Application [(Above 95°F or 35°C) (Consult ACI 305R-20 for Wind Advisory)] @EarlyAge Next-day & @MatureAge Concrete Hot Slabs:

(Consult ACI 305R-20 for Wind Advisory)

Reduce slab temperature: Hydrate a hot slab to reduce the surface temperature, preventing flash drying of IceCap™. If exposed to high temperatures, apply IceCap™ when temperatures are at their most moderate.

Apply after Reduced Slab Temperature: Test before full application. Apply IceCap™ with a S.O.L.O. application at the rate of 1,200 SF per gallon, more if needed, and disperse using a GU recommended, dedicated and clean T-Bar. Unlike some other Green Umbrella surface treatments - **Do Not** mist with water or re-apply to a partially wet, treated surface.

Moisture/Precipitation Note: Do Not apply IceCap™ on an exposed concrete substrate when standing water may appear within 72 hours after application.

PRODUCT APPLICATION

Mock-up: *Perform a mock-up to identify variables or contaminants that may be incompatible with IceCap™. Manufacturer recommended dwell-time and dry-time must be adhered to for all applications for accurate performance testing.*

Two technicians are recommended for installation: Technician One - Apply using a GU recommended, non-metal sprayer - dedicated, clean, dry, with a conical tip. Introduce sufficient material to be worked evenly into and across the concrete surface. Technician Two - Use a clean T-bar to evenly applicate, working the material over the surface, moving excess material ahead, without producing puddling. Periodically check applicator head for cleanliness and change as necessary. Dirty applicator heads may be cleaned with water and immediately re-used.

Spray and apply, keeping a wet edge without walking or tracking over any completed areas, work toward the exit. Introduce and apply evenly to achieve proper dwell time and reactivity. Do not attempt to re-wet or re-apply treatment to quick dry areas.

Following the application of the first coat, ALWAYS apply a second coat. The second application will be 'thinner' but is not a 'spiff coat'. The second application will remain wet for 15-20 minutes before drying.

Following the second application, burnish using a propane powered UHS (ultra high speed) burnisher properly equipped with a GreenGloss thick black pad. Never use a 'diamond impregnated' pad. For best results, use a concrete weighted GreenGloss burnisher.

For maximum protection 24 hours after the second coat, apply a THIRD application of IceCap™. Follow the methodology of the second coat AND burnish using a propane powered, UHS, concrete-weighted burnisher.

Mixing: None. Packaged R.T.U. **Do not mix or dilute.**

Sprayer: Treatment-dedicated, clean, non-metal, with a conical, drip-free tip. Pump-up, back-pack, handheld, battery, or pneumatically powered. (See equipment section.)

Applicator: Treatment-dedicated, new or clean pad on a heavyweight GU T-bar. Use clean, dedicated applicator pads that are cleaned frequently throughout large square footage installations.

***@EarlyAge* Concrete:**
Use Green Umbrella IceStart™ cure and IceStop™ fixative during and immediately after concrete placement & finishing to cure the concrete.
Important: For high temperature or windy application, see Note to Applicator: Time, Temp. & Humidity.

1. Apply S.O.L.O. to a clean surface with a dedicated GU recommended (non-metal) sprayer evenly on the surface at a rate of 1,200 SF per gallon.
2. Distribute treatment with a new, clean, GU T-Bar to ensure uniform coverage. Keep substrate wet, allowing for a dwell time of 10 minutes for full reaction.
3. Allow product to air dry. If treatment is not drying within one or two hours, blowers or fans may reduce dry time.
4. After first coat has dried thoroughly apply a second application.
5. Spray and Distribute treatment with a clean, GU T-Bar to ensure uniform coverage. Keep substrate wet, allowing for a dwell time of 30 minutes for full reaction. Allow to dry.
6. Note: Secondary coats may dry as soon as 10-20 minutes but are NOT 'spiff coats'.
7. Allow product to air dry. If treatment is not drying, indirect blowers or fans may reduce dry time.
8. Once the first two applications of IceCap™ are completely dry - Burnish using a propane-powered, UHS (ultra-high speed) burnisher equipped with a GreenGloss™ burnishing pad. NEVER burnish using 'diamond impregnated' pads.
9. For maximum protection apply a THIRD coat 24 hours after the first two applications and burnish.

***@MatureAge* Conventional Concrete:**
Important: For high temperature or windy application,

see Note to Applicator: Time, Temp. & Humidity.

1. Apply S.O.L.O. to a clean surface with a dedicated GU recommended (non-metal) sprayer evenly on the surface at a rate of 1,200 SF per gallon.
2. Distribute treatment with a new, clean, GU T-Bar to ensure uniform coverage. Keep substrate wet, allowing for a dwell time of 10 minutes for full reaction.
3. Allow product to air dry. If treatment is not drying within one or two hours, blowers or fans may reduce dry time.
4. After first coat has dried thoroughly apply a second application.
5. Spray and Distribute treatment with a clean, GU T-Bar to ensure uniform coverage. Keep substrate wet, allowing for a dwell time of 30 minutes for full reaction. Allow to dry.
6. **Note:** Secondary coats may dry as soon as 10-20 minutes but are NOT 'spiff coats'.
7. Allow product to air dry. If treatment is not drying, indirect blowers or fans may reduce dry time.
8. Once the first two applications of IceCap™ are completely dry - Burnish using a propane-powered, UHS (ultra-high speed) burnisher equipped with a GreenGloss™ burnishing pad. NEVER burnish using 'diamond impregnated' pads.
9. For maximum protection apply a THIRD coat 24 hours after the first two applications and burnish.

***@MatureAge* Concrete To Be Abrasively Polished:**

For Green Umbrella® densifiers or sealers for concrete that will be abrasively profiled please visit: www.GreenUmbrellaSystems.com

Damaged and Weak Surface Floors

See Green Umbrella treatment(s): DryShield or PCR.

HEALTH & SAFETY

Clean Up And Disposal:

Clean sprayers and equipment with warm, soapy water and rinse thoroughly following use. Any product that cannot be saved for recovery or recycling should be disposed of according to local/state laws.

WARNING:

Keep out of reach of children. Read the label before use.

FIRST AID:

Contact a Poison Center or physician if the injured feels unwell. If swallowed: DO NOT induce vomiting. Rinse eyes with water. Remove the injured to fresh air and keep at rest in a position comfortable for breathing. Wash with plenty of soap and water. Remove contaminated clothing and wash before reuse.

For Detailed SDS consult company website www.GreenUmbrellaSystems.com

For Medical Emergency call INFOTRAC (24/7): 1-800-535-5053

Green Umbrella Headquarters (Normal Business Hours): (844) 200-7336

MAINTENANCE

IMPORTANT: Only use a Green Umbrella pH neutral cleaner - Green Umbrella GreenClean & Degreaser™, Green Umbrella DeepClean with Slip-Resist™ - or other cleaner recommended by Green Umbrella in writing. These products are pH neutral without additives that could harm the concrete and colorants in the concrete.

Conventional Concrete Floors

- Regularly sweep away debris
- Regularly use a water broom or auto-scrub to remove dirt buildup from treated concrete surfaces

Abrasively Polished (PHP) Concrete Floors

- Regularly sweep away debris
- Regularly auto-scrub or mop with water or with a Green Umbrella pH neutral cleaner
- Use Green Umbrella GreenClean and Degreaser™, as needed
- For PHP floors, periodically burnish with a weighted, high-speed propane burnisher using Green Umbrella GreenGloss™ pad to remove dirt buildup and restore gloss

Facility Maintenance Schedule and Training - Green Umbrella Health Sentinel
www.GreenUmbrellaSystems.com

WARRANTY & LIMITATIONS

For a period of ten (10) years beginning the date on

which the concrete surface described is treated with Green Umbrella® products, Green Umbrella Companies (GU) warrants to the owner that after the specified completed installation, the treated surface will remain water-resistant, dust-proof, hardened, and abrasion-resistant. In the event the surface fails to perform, GU will, at its own expense and its own discretion, supply either sufficient product(s) to repair any such failure or provide materials cost reimbursement. A GU manufacturer's representative must be on-site to supervise the installation.

It is the contractor's responsibility to follow all directions and requirements, as outlined in the Green Umbrella installation specifications. A completed Project Survey form or equivalent document outlining the steps and products used in the process must accompany this warranty request.

Green Umbrella Companies (GU) solely and expressly warrants that its products shall be free from defects in materials and workmanship for six months from the date of purchase. Unless authorized in writing by an officer of GU, no other representations or statements made by GU or its representatives, in writing or orally, shall alter this warranty. GU MAKES NO WARRANTIES, IMPLIED OR OTHERWISE, AS TO THE MERCHANTABILITY OR FITNESS FOR ORDINARY OR PARTICULAR PURPOSES OF ITS PRODUCTS AND EXCLUDES THE SAME. Green Umbrella PRODUCT APPLIED TO SUB-STANDARD CON- CRETE IS EXCLUDED FROM ANY KIND OF WARRANTY. If any Green Umbrella product fails to conform to this warranty, GU will replace Green Umbrella product at no cost to the Buyer. Replacement of any Green Umbrella product shall be the sole and exclusive remedy available, and the Buyer shall have no claim for incidental or consequential damages. Any installation of Green Umbrella products that fail to conform to such installation information and instructions shall void this warranty. If any, product demonstrations are done for illustrative purposes only and do not constitute a warranty or warranty alteration of any kind. The Buyer shall be responsible for determining Green Umbrella products' suitability for the Buyer's intended purposes.

FOR PROFESSIONAL USE ONLY

TECHNICAL DATA SHEET

GREENUMBRELLA®

ICESTART

Start High-Performance Concrete

Green Umbrella® IceStart™ is a unique curing agent used to ensure an adequately cured floor and is the first of a two-part treatment GreenIce Cure™ system. Using a treatment & trowel process to achieve high-performance floors. IceStart reduces subsurface lateral micro-cracks, mud & shrinkage cracks, cat faces and is formulated to ease finishing by reducing drag on concrete. IceStart provides increased finishability in hot weather without extending the set time in cold weather. IceStart minimizes false sets. Used on dry shake, it will finish as if conventional concrete. Control joints will have a sharper cut that will be shallower. From the Start, you will have the treatment for a high-performance architectural concrete floor.

BASIC USE

Green Umbrella IceStart is a *Surface Applied SCM (Supplementary Cementitious Material) Admixture* that is the first treatment of a *Two-part Surface Applied Admixture Cure and Densification System*, called GreenIce Cure System™ with GUnanoInside™ technology— that is designed for Interior or Exterior concrete. Used only *@EarlyAge* concrete staging, it is a chemical and mechanical process applied at time of concrete placement and power troweling. IceStart is a unique, non-film-forming, no VOC cure. Working as a finishing aid that provides initial cure protection that also ensures a final cured floor with many benefits conventionally seen only in polished concrete floors and the highest abrasion-resistant, high-performance concrete floors. It is additionally providing an unconventional advancement in concrete staging.

GREENUMBRELLA®

ICESTOP

Stop the Damage @EarlyAge

Green Umbrella® IceStop™ is applied on the surface as the second part of the GreenIce Cure™ system. Working as a fixative, IceStop is sprayed on concrete once power trowels are finished. It creates a protected slab while curing, extending protection during construction. With specially designed properties, this product will densify and add abrasion resistance while repelling water. IceStop increases the strength and longevity of any concrete surface whether covered or exposed in an Architectural Concrete setting. Gloss readings average in the 40s. Start with a high-performance floor and Stop the damage *@EarlyAge™*.

BASIC USE

Green Umbrella IceStop is a *Hydrophobic Fixative for Surface Applied Admixture Cure* that is the second treatment of a *Two-part Surface Applied Admixture Cure and Densification System*, GreenIce Cure™, with GUnanoInside™ technology— that is designed for Interior, or Exterior concrete—applied after the power trowel concrete finishing is complete. IceStop crosslinks to IceStart cure to form surface and deep subsurface benefits conventionally seen only in polished concrete floors, the highest abrasion-resistant, and high-performance concrete floors. Used *@EarlyAge* staging reduces mobilizations by removing the need for monitoring water cure, chemical cure applications, chemical cure removal, and the need for concrete densifiers and hardeners.

GREENUMBRELLA®

ICESTART

- Concrete Cure
- Advance The Construction Stage
- Finishing Aid
- Eliminate Bond Issues For Flooring
- Minimizes False Set
- Minimizes Crusting
- Closes Capillaries to Water & Vapor Transmission
- No Free Water Creating Denser Concrete
- Surface Applied Admixture
- Neutral pH Calm Surface Reaction
- Increase ACI 302 Window of Finishability
- Mechanical and Chemical Densification
- Compression Dewatering of Slab
- GreenIce Cure™ penetration >25mm (>0.98”).
- Moisture retention evaporation control
- Prevents Rapid Surface Moisture Loss
- Passes ASTM C156 And E96 Parameters For Curing
- Maximum Moisture Retention for Cement Hydration
- Extended Workability Of Slab Surface
- Provides The Ability To Correct Errors In Finishing
- Reduces Drag On Trowel Blades Decreasing Sub-Surface Parallel Micro-Fracturing
- Significantly Reduces Surface Crazing
- Can Be Used In Conjunction With Trap-Rock Or Dry-Shake Hardeners To Ease Their Application
- Densify at placement, no return, no remobilization
- Hard Troweled Surface, Without Over-Troweling
- Ease Of Finishing, Eliminates False Set
- Reduces Drag On The Concrete
- Reduces Subsurface Lateral Micro Cracking
- Removes Cat Faces
- Increases Window of finish-ability In Hot Weather
- Does Not Extend Set Times In Cold Weather
- No More Chasing A Slab That Is Quick Setting
- Collateral Best Practice provides Exceptional Finish And Strength With Superior Fl And Ff Results
- Reduces Plastic Shrinkage Cracks

GREENUMBRELLA®

ICESTOP

- Unlike a Densifier—it Crosslinks to IceStart Cure
- A Hardener Treatment
- Initial Cure protection for Inclimate Weather
- High Water Repellence
- Natural Look
- Eliminates Off-gassing
- Eliminates Concrete Off-Dusting
- Reduces Slab Curl
- Impermeable
- E-96 Perm Test Exceeds Flooring Requirements.
- Retains Water Inside The Slab For Prolonged, Slow Curing Of Concrete
- More effective than 309 cure
- Stripping Not Required Prior To Placement Of Coverings
- Applied @ Time of placement
- Does Not Contribute To ASR
- Almost No Moisture Loss
- Moisture Mitigated Floor
- Concrete densification
- Monogamous Ionic Connection
- Increases Surface Density And Reduces Permeability
- Create Denser Concrete For Enhanced Insulation Qualities And Improves Energy Performance
- Increase In Abrasion Resistance
- Abrasion Resistance To Wear Characteristics Compared To Trap Rock Or Dry-Shake Hardeners
- Reduces Dusting reduces Long-Term Maintenance Costs By Improving The Surface Cap
- Increased Life-Cycle
- Attain A Highly Refined Surface Finish
- Gloss Readings 40-60
- Increased Light Reflectivity (Ave. 45 On 4500 Psi Mix)
- Naturally Darkens Slab

TECHNICAL INFORMATION

GREENUMBRELLA®
ICESTART ▶

Appearance: Purple
Odor: Fragrant smell
pH Level: 6.5-8.5
VOC(grams/Liter): <50
Freezing Point: 32° F
Film Forming: Non
Active Ingredients: 100%
Shelf Life: 18 months
Evaporation Rate: >1.0
Packaging: 5 Gal Pail, 55 Gal Drum, 275 Gal Tote

GREENUMBRELLA®
ICESTOP ■

Appearance: Orange
Odor: Fragrant smell
pH Level: 11.6
Evaporation Rate: 1.0
Freezing Point: 32° F
Foot Traffic: 1 hour
Film Forming: Non
Active Ingredients: 100%
Shelf Life: 18 months
VOC(grams/Liter): <50
Wheeled Traffic: 6 hours
Packaging: 5 Gal Pail, 55 Gal Drum, 275 Gal Tote

Safety Data Sheets available at www.GreenIceCure.com

ARCHITECTURAL APPLICATIONS

Ideal for interior or exterior, horizontal Demanding Applications; warehouse/distribution centers, food service, parking decks, garages, hospitals, or similar & specifically for dye and pigment Decorative Color Applications; retail spaces & showrooms, restaurants, business offices, lobby areas, museums, municipalities, airports, hospitals, schools, fire-stations, or most concrete surfaces

MANUFACTURE & PRODUCT CONSULTING

Green Umbrella
20 Jetview Drive Rochester, NY 14624
(844) 200-7336

Website & Documents Available At:
GreenUmbrellaSystems.com
CutSheet, Application Sheet, Feature Brochure, Technical Data Sheet, Safety Data Sheet

Product Consulting Email:
Info@GreenUmbrellaSystems.com

ESTIMATING

Container Size:
IceStart or IceStop
5 gallon (18.9L) - 43 lbs. (19.5 kgs)
55 gallon (208L) - 469.1 lb (212.8 kg)
275 gallons (1,041 L) - 2,345.6 lb (1,064 kg)

Each Green Umbrella IceStart or IceStop container is properly labeled with information, including the product name, description, batch number, and application instructions.

DILUTION

IceStart & IceStop
None.
R.T.U. (Ready-To-Use)
S.O.L.O. (Spray-on-leave-on)

COVERAGE RATES

IceStart is applied 3x in the finishing process. It has a net application rate of 1200 SF per gallon and should not cover less than or more than this amount.

IceStop has an average coverage rate of 400 SF per gallon and should not cover less than this amount.

SPECIFICATIONS

GreenUmbrella® CUTSPEC™
Simplified Product Spec

EarlyAge Conventional Concrete:

GreenIce Cure: IceStart & IceStop is a concrete cure system designed for Interior or Exterior concrete with a polish concrete sheen—by Green Umbrella® of Rochester, NY (844) 200-7336 R.T.U. (Ready to Use), S.O.L.O. (Spray-On, Leave-On). Green Umbrella IceStart™ is a *Surface Applied Supplementary Cementitious Material Admixture, the first treatment of a two-part Surface Applied Admixture Cure and Densification System*. Used only on *@EarlyAge* concrete, IceStart™ is a chemical and mechanical process applied during concrete placement and power troweling. 1) Apply IceStart™ during screeding or bull-floating, prior to breaking open the substrate using pans, @1200 SF per gallon. 2) Next, spray IceStart™ onto the slab in two equal applications of 1200 SF per gallon, during initial panning and initial troweling for three total applications with a net coverage rate of 400 SF per gallon. Use a low-pressure, high-volume manual or battery-powered commercial sprayer. Alternatively, a screed mounted unit and the retardant tanks of ride-on power trowels may be used. Always apply sufficient material for total net coverage of 400 SF per gallon. 3) Work into the surface following second and third applications during power troweling. 4) After the final application of IceStart™, trowel burn as desired. When the concrete is hard enough for walking, apply Green Umbrella IceStop™, a *Hydrophobic Fixative for Surface Applied Admixture Cure, the second treatment of a two-part Surface Applied Admixture Cure* 5) A single S.O.L.O. application of 400 SF per gallon. Keep wet for a dwell time of 30 minutes. Allow to air dry. No cure & seal, concrete hardener, or wet cure is needed. Apply IceStart™ and IceStop™ only when temperatures are 40°F and rising, not exceeding 90°F.

For certified installers and comprehensive manufacturer instructions, visit www.GreenUmbrellaSystems.com

EarlyAge Concrete To Be Abrasively Trowel Polished:

GreenIce Cure & Profile is a complete *@EarlyAge* concrete cure and polish system designed for Interior concrete—by Green Umbrella® of Rochester, NY (844) 200-7336 R.T.U. (Ready to Use), S.O.L.O. (Spray-On, Leave-On). Green Umbrella IceStart™ is a *Surface Applied Supplementary Cementitious Material Admixture, the first treatment of a two-part Surface Applied Admixture Cure and Densification System*. Used only on *@EarlyAge* concrete, IceStart™ is a chemical and mechanical process applied during concrete placement and power troweling. 1) Apply IceStart™ during screeding or bull-floating, prior to breaking open the substrate using pans, @1200 SF per gallon. 2) Next, spray IceStart™ onto the slab in two equal applications of 1200 SF per gallon, during initial panning and initial troweling for three total applications with a net coverage rate of 400 SF per gallon. Use a low-pressure, high-volume manual or battery-powered commercial sprayer. Alternatively, a screed mounted unit and the retardant tanks of ride-on power trowels may be used. Always apply sufficient material for total net coverage of 400 SF per gallon. 3) Work into the surface following second and third applications during power troweling. 4) After the final application of IceStart™, trowel burn as desired. When the concrete is hard enough for walking, apply Green Umbrella IceStop™, a *Hydrophobic Fixative for Surface Applied Admixture Cure, the second treatment of a two-part Surface Applied Admixture Cure* 5) A single S.O.L.O. application of 400 SF per gallon. Keep wet for a dwell time of 30 minutes. Allow to air dry. No cure & seal, concrete hardener, or wet cure is needed. Apply IceStart™ and IceStop™ only when temperatures are 40°F and rising, not exceeding 90°F. Profile concrete 72 hours after placement and finishing using an RTPMAX or other rider trowel equipped for abrasive polishing or a propane-powered walk-behind grinder. 1) Apply GreenCut™ at 400 SF per gallon and wet profile with and/or BigStock, GC-X, GC-Fusion to the specified profile. 2) **[Optional]** Apply NanoDye™ for colorant. 3) Apply a S.O.L.O application of DryShield™, a sub-surface densifier, at 400-500 SF per gallon. Keep wet for a dwell time of 30 minutes. Allow to dry. 4) Wet hone using GC-Fusion or GC-Eraser. 5) Apply a S.O.L.O. application of Shield & Enhance™, a salt, and colorguard @ 600-800 SF per gallon. Allow 20 minutes of dwell time. Allow to dry. 6) Polish using PolishPlus™ abrasives. 7) Apply 2-3 applications of Interior MicroFilm™, a wearguard, at 1000-1200 SF per gallon. Allow to dry. 8) Burnish using a GreenGloss™ propane-powered UHS burnisher; concrete weighted and equipped with GreenGloss™ pads.

For certified installers and comprehensive manufacturer instructions, visit www.GreenUmbrellaSystems.com

CSI SPECIFICATIONS

DIVISION 03 & 09
Section 03 3536
EarlyAge Concrete
Mature Concrete or Retrofit
Section 03 3543 & 03 3536 Abrasive Polish
Coordinate with section:
Section 032400 - Synthetic Fiber Reinforcement Section 033119 - Shrinkage Compensating Concrete Section 033550 - Integrally Colored Concrete Section 033000 - Cast in place concrete
Section 033500 - Concrete Finishing
Section 033900 - Concrete Curing
Section 079200 - Joint Sealer

For CSI Specifications Contact a Consultant:
info@greenumbrellasystems.com

Note to Specifier
Green Umbrella Architectural Concrete System treatments like Green Umbrella® IceStart™ & Green Umbrella® IceStop™ are just part of a successfully specified concrete floor.
The specifier must keep in mind several construction disciplines: the concrete mix design, concrete placement, concrete finishing, and finally, the "polisher" or the PHP craftsman. We encourage you to carefully specify these elements, even if Green Umbrella products are not used. Each of these disciplines is critical for the overall success of this design element. Ways and means generally need to be specified. Green Umbrella Architectural Concrete System is an approach from design to completion, created to help the specifier succeed, covering stages from the concrete pour through to the floor's maintenance.

There are six major components to the Green Umbrella Architectural Concrete System: knowledgeable CONSULTANTS, the CANVAS, the PROCESS made up of 'ways and means,' high productivity EQUIPMENT, TREATMENTS and finally, qualified flatwork and polishing CRAFTSMEN.
All of its components follow the Nine Fundamentals of Green Polishing (www.theconcrete9.com) that educate a specifier on these principles. Consulting ACI Guide to Decorative Concrete (ACI 310R-19) can be helpful. The GUAC System is not simply opening the concrete substrate and applying a resinous polymer sealer. Specify an environmentally responsible mechanical process that involves processing the floor wet to avoid silicosis issues for the installers and the future occupants and @EarlyAge to improve construction downtime. The process uses a progression of abrasive grits with a wet cut agent Green Umbrella GreenCut™ on a machine built for a wet profile & hone process. The use of water enables a higher-quality cut to the floor. The wet profile system is well supported in the industry for the best clarity, quickest aggregate exposure, and time-savings, among other advantages.

Designing the canvas or concrete slab: Green Umbrella GreenCanvas™ shrinkage compensating concrete can be specified in the mix design (ACI 223R-10) to ensure that the surface is ideal for a jointless, non-curling floor. For conventional concrete, consult American Concrete Institute Guide to Design of Slabs on Ground (ACI 302.1R-15) for joint spacing if shrinkage compensating concrete is not used. The specification should separate concrete slabs into 03 30 00 Cast-In-Place concrete for surfaces not designated for polished concrete and SECTION 033509 – CONCRETE CURE AND PROFILE FINISHING SYSTEMS for surfaces selected for polished concrete
Concrete specification SECTION 03 35 43 - POLISHED CONCRETE FINISHING should be referenced. Mix design should not exceed 20% slag or fly ash content, if at all, for clarity of polishing and color application ease. Due to many factors, pre-qualification of contractors should be in place and required in submittals. Concrete specifications may require ACI flatwork certification. A quality control plan, pre-construction conference, and mock-up are all critical.

For EarlyAge concrete to be Abrasively Polished: Considerations should be given to specifying the following products for an economical & sustainable floor 1) Green Umbrella IceStart™ (cure) & IceStop™ (fixative) during and immediately after concrete placement & finishing. 2) Green Umbrella Fiberlite™ to reduce plastic cracking and for strength. 3) Green Umbrella Hydro-Shield for the hardening of concrete and prevention of concrete off-dusting.

Specify equipment: It is critical to use the appropriate head pressure and rpm for concrete profiling, honing, and polishing. Green Umbrella recommends using equipment with propane and alternative fuels to reduce environmental impact. Cordless PHP equipment may allow for early access to projects with limited 220 volt electricity and eliminates the hazards common to dry grinding or attempting wet cutting using electric equipment. Specify high-productivity machines with sufficient

equipment on large projects to meet production goals and not adversely affect project timeline and/or other trades. Specify equipent that meets LEED Building Operations and Maintenance (LEED O+M) requirements. Green Umbrella grinders (Green Grinder or GreenXtreme) and Green Umbrella Low Profile Edger process the entire floor, with the same abrasive profile within 1⁄4 inch of walls or under shelving. Specify the same matrix of all cutting abrasives, eliminating the inconsistencies found on projects when a mix of manufacturer brands is used.

Hardeners & Densifiers: Research shows that these treatments are effective against concrete dusting and harden- ing of the surface and are accepted as a standard. Green Umbrella concrete treatments are non-sodium and do not generate hazardous waste. The Green Umbrella line of densifiers are not water-soluble and do not contribute to alkali-silica reaction.

Colorants: Green Umbrella treatments that are pH neutral will not resist color introduction or promote "walk-off" common with many color and hardener combinations; this is why it is essential to match the family of treatments to the colorants. Otherwise, the specifier may unknowingly specify treatments that do not work well together. Green Umbrella colorants, dyes, and micro-pigments have superior color fastness compared to traditional stains and dyes. FROM DESIGN TO COMPLETION, YOU EXPERIENCE A COMPLETE SYSTEM.

Environmental Responsibility and LEED Considerations

A Green Umbrella Architectural Concrete Systems specified process is specially designed to require less labor and downtime while lowering environmental impact. Green Umbrella HydroShield is easy and quick to apply, requiring less labor. HydroShield has zero VOC's with no impact on indoor air quality.

Human Health - Indoor Environmental Quality (IEQ)

• Architectural Concrete may be finished so as to dramatically reduce bacterial adhesion and the presence of biofilms, creating a healthier environment free of harmful bacteria and viruses.

Human Health - Indoor Air Quality (IAQ)

• Many studies indicate that indoor air quality is enhanced with properly maintained Architectural Concrete vs. carpet or other floor coverings

• Architectural concrete does not support combustion, nor does it produce smoke or toxic fumes (LEED v4.1 Operations and Maintenance, propane equipment)

• Architectural Concrete can eliminate moisture issues, shrinking possible growth of mold and fungus.

Optimize Energy Performance

• Polished concrete allows the advantage of utilizing the thermal mass of concrete in heating and cooling.

• Polished concrete increases light reflectivity, amplifying the benefit of ambient (natural) lighting, and reducing process loads from light fixtures.

Building Reuse/Construction Waste Management/Recycled Content

• Existing Buildings — Environmental stewardship through the reuse of the existing floor.

• New or Existing Buildings — Not wasting materials or energy required to produce a floor covering or topical coating.

VOC/IAQ/Long-term Maintenance

• Polished concrete has zero VOC content

• Many studies indicate that indoor air quality is enhanced with properly maintained hard surfaces vs. carpet

• Polished concrete does not support combustion, nor does it produce smoke or toxic fumes (LEED v4.1 Operations and Maintenance, propane equipment)

• Polished concrete has a lower maintenance cost and zero replacement cost compared to traditional floor coverings.

Life Cycle Cost

• Sources show polished concrete to be the lowest life-cost flooring option available

TESTING

For all independent lab testing contact us at Info@GreenUmbrellaSystems.com

ASTM C494 / C494M - 19 Standard Specification for Chemical Admixtures for Concrete

Water Loss

ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials

ASTM C156 Water Loss [from a Mortar Specimen] Through Liquid Membrane- Forming Curing Compounds for Concrete

ASTM 309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete

Abrasion Resistance, Strength, Hardness

ASTM C779 / C779M 12 " Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces"

ASTM C944: "Abrasion Resistance of Concrete by Rotating-Cutter Method"

BS EN 13892-4: 2002 Standard Methods of test for screed materials. Determination of wear resistance "BCA"
ASTM C1583 Standard Test Method For Tensile Strength Of Concrete Surfaces And The Bond Strength Or Tensile Strength Of Concrete Repair And Overlay Materials By Direct Tension (Pull-Off Method)

Chemical Resistance Of Finishes

ASTM 1308 Standard Test Method For Effect Of Household Chemicals On Clear And Pigmented Organic Finishes (Aviation Fluid Resistance With Green Umbrella GreenIce Cure & Profile System)

Mohs Scale Of Mineral Hardness

ACI 302 Standard Guide For Concrete Floor And Slab Construction

USDA COMPLIANT

FDA COMPLIANT

Green Umbrella GreenIce Cure & Profile™ System with Shield & Enhance provides a greater Chemical resistance to JP-8+100 fuel - 0.1% weight gain Chemical resistance to 30 wt motor oil — 0.007% weight gain Chemical resistance to Skydrol 500 B-4 - 0.05% weight gain

PROFILE, HONE & POLISHING EQUIPMENT

Green Umbrella propane equipment meets LEED v4.1 Operations and Maintenance Guidelines. Green Umbrella uses propane-fueled equipment to save the owner as much as 50 cents a square foot in electrical cost for three-phase and 220-volt equipment often used by PHP contractors. In itself, propane is not a direct greenhouse gas contributor and is one of the world's most widely used alternative fuels. Electric power adds 80% more CO2 into our atmosphere than does propane. Propane can be a safe, clean, and efficient fuel.

All Green Umbrella propane equipment should have the following:

CARB and EPA certified engines to meet their strict guidelines for low CO2 emissions.
ESDS (emissions shut down system) — machines are manufactured to incorporate a 3-way catalytic muffler to lower CO2 emissions and an ESDS that monitors the engine for irregularities and automatically shuts the machine down if emissions rise.

High Productivity Rider Grinder - processes larger areas in less time
GreenXtreme by Green Umbrella
• Heavy duty commercial floor grinder/polisher or equivalent
• Minimum 933 pounds head pressure
• 77-inch grinding width
• Minimum 8000 square feet per hour production rate.
• Wet abrasive compatible
Variable Abrasive Concrete Grinder — profiles, hones, and mechanically polishes floors

GreenGrinder/Polisher by Green Umbrella
• Propane-powered, heavy-duty commercial floor wet abrasive compatible
• Minimum 785 pounds head pressure
• CARB/EPA approved.
• 30-inch grinding width
• 12 abrasives, counter-clockwise planetary rotation
• Minimum 800 square feet per hour production rate.
• Provide a minimum of two units on site
Variable Abrasive Concrete Edge Grinder — processes floors within a 1⁄4 inch of wall

GreenEdger by Green Umbrella
• Propane-powered, heavy-duty commercial floor edge grinder/polisher
• Wet abrasive compatible
• Minimum 165 pounds head pressure
• CARB/EPA approved
• 1/4 inch cut to the wall
• Four or six abrasive head, 640 RPM abrasive rotation
• Provide a minimum of one unit on site

Weighted Concrete Burnisher — removes unreacted

material, promotes cross-linking and enhances gloss.
GreenGloss by Green Umbrella
• Propane-powered, UHS Burnisher
• CARB/EPA approved.
• 27 or 39-inch burnishing width
• Weighted Head Minimum 2000 RPM
• Provide a min of two on site Walk Behind Slurry Recovery Machine — cleans between abrasive steps to prevent contamination. Important: not all floor scrubbers are effective in slurry recovery.
• Green Umbrella recommended slurry recovery vacuum.
• Auto scrubber similar to Tomcat or Nilfisk-Advance with accessible concrete clean-out
• Minimum 500-pound head pressure
• Water application and minimum 30-gallon recovery tank
Abrasives for PHP Equipment — cut concrete substrate in a sequence of steps.
• Stock removal, profiling, honing and polishing abrasives, hybrid bond abrasives by Green Umbrella
• Match hardness of abrasives to the hardness of concrete

Prep Equipment
• Power Washer on low psi
• Industrial WaterBroom by Water Miser or equivalent, up to 180 PSI of water
Application Equipment
• Hand-Pump Sprayer Applicator — used to apply the product evenly and consistently.
By Green Umbrella, Patriot Sprayers, or equivalent (A Non-Metal Canister)
Maximum tip pressure 40 psi
• T-bar with blended applicator — evenly distributes product sprayed on concrete substrate

All products can be seen at GreenUmbrellaSystems.com

End Note to Specifier

Note to Applicator:

TIME, TEMPERATURE & HUMIDITY

For a chemical reaction to take place successfully, time must be allocated for the full reaction. Likewise, when applying Green Umbrella IceStop to concrete, there must be an adequate amount of dwell time for the reaction to take place. Doing so will help to achieve the best result.

For IceStop to effectively penetrate the substrate, the temperature should not be less than 40°F (4°C) for several hours after application. If temperatures are lower than recommended, the chemistry may take much longer to react and penetrate the concrete substrate. If the temperature exceeds the recommended maximum of 95°F (35°C), or if conditions are windy, the chemistry could react and dry before penetrating the substrate. In such circumstances, keep floors hydrated with water for recommended dwell time.

Humidity also plays a role in the dry time. The product applied to a dry slab of concrete in an arid climate will dry faster than in a humid environment. In dry climates with low humidity, it may be necessary to hydrate the slab to allow for proper dwell time. If several treatments are being applied, product staging should be planned to meet all treatment **dwell times** and **dry times**. It is recommended to use **dew point** data from a mobile hygrometer to determine the best staging of concrete treatments to eliminate needless downtime. Please consult a GreenUmbrella consultant with any questions. The use of on-site hygrometers and thermometers can provide meaningful data to facilitate treatment application success.

IceStop Time to traffic: For best results, light foot traffic when dry or after 1 hour. Wheeled traffic and profiling after 3 hours.

High Temperature or Windy (Consult ACI 305R-20 for Wind Advisory) Application Over (95°F or 35°C) *@EarlyAge* Next-day & *@MatureAge* Concrete Hot Slabs:

(Consult ACI 305R-20 for Wind Advisory)

Reduce slab temperature: Hydrate a hot slab to reduce the surface temperature so flash drying of HydroShield does not occur. Hydrate for an hour in the most arid of conditions, disperse any puddles, then immediately proceed to high temperature and high wind instructions below.

Apply IceStop at 400 SF per gallon, more if needed. If necessary, mist the slab with sufficient water at 20 minutes to achieve the required 30 minutes of wet surface dwell time.

PRODUCT PLACEMENT

EarlyAge Concrete:

IceStart (cure) is placed on new concrete the same day of pour after concrete placement and during the finishing process, once the concrete is hard for walking, after joint cutting IceStop (fixative) is applied. This GreenIce-Cure system removes reason for other products & processes such as cure & seal and wet cure to be placed in construction stages.

MatureAge Concrete:

Not Applicable

APPLICATION

Concrete Placement

After the above placement of the pour it is recommend that within days to a week the Profile Hone and Polish process is done.

1. Proper form setup is essential and must be established from a single benchmark.
2. Ensure sub-grade is properly compacted before placing any concrete. A properly consolidated base will support redi-mix trucks without rutting.
3. Concrete Slump should be maintained +/- 1"
4. Concrete placement should be as uniform as possble in front of the screed to avoid uneven aggregate exposures issues. Placing the concrete too high and striking it off will cause stripes of aggregate when polished, lows will become stripes of cream without visible aggregate.
5. Laser Screed / Truss / Hand-held Vibra Screed acceptable (Vibration is required for proper consolidation) Turn off vibration when stopping screed to avoid creating a cream line with the screed.
6. If above 50 degrees apply the first application of Green Umbrella IceStart @ 400 sqft/gal. Spray system may be mounted to the laser screed for larger pours (If ambient concrete temperature is below 50 degrees, follow ACI Standard 306R-16 for Cold Weather Concreting. Thus waiting for first application until after first pan, applying two other applications during finishing.)
7. Roller Bug (May also be adapted to the Laser Screed) Roller Bug is used to ensure large aggregate is pushed down. Should be run in 1/2 overlapping passes
8. Channel Float/Bull Float "Mop" (8' to 10' preferred) to smooth the surface and locate high and low spots that need to be corrected. Any major re-straightening if required must be done during this phase.
9. Re-straighten edges, columns, wall lines, and around all protrusions w/ 4' Board and smoothed with a magnesium hand float. (These areas shouldn't have a steel trowel used on them until the body of the floor is being closed with steel trowel blades.) Do not premature close the slab

CONCRETE FINISHING

1. If it does exist, wait until bleed water sheen has dissipated, and a footprint leaves 1/4" or less indentation before breaking the surface the first time with pans or float blades. First break w/pans should follow a pattern 90° to screed direction. Back all edges with trowel to avoid stacking the aggregate at the edges.
2. Apply the second application of Green Umbrella IceStart @ 400 SF per gallon. This application may be applied via the sprayers on ride on trowels to avoid walking on the slab, making sure to apply at 400 SF per gallon.
3. If you need to walk on the slab for any reason kneeboards or finishing slicks must be utilized to maximize your floatation and minimize depressing the aggregate. (Failure to do so may result in visible footprints after polishing.)
4. After each pass re-straighten edges, columns, wall lines and around all protrusions w/ 4' board and smoothed with a magnesium float. (These areas shouldn't have a steel trowel used on them until the body of the floor is being closed with steel trowel blades.)
5. Second break w/pans should follow a pattern 90° to initial break direction. Apply the third and final application of Green Umbrella IceStart @ 400 SF per gallon. This application may be applied via the sprayers on the riders to avoid walking on the slab.

** Green Umbrella IceStart may still be utilized as a "Finishing Aid" to correct surface defects and "Cat-Faces" during this phase of floating and even in the early finishing.

6. Third break w/pans if needed however the finisher may use their judgement and experience to begin laying the floor down with combination blades.
7. Combination Blades should be used to close and finish the floor. Blades should be pitched as low as possible 5-8° maximum pitch to minimize edge pressure and ensure the aggregate matrix is consolidated as much as possible and to minimize rolling the aggregate and breaking the cementitious bond.
8. Use a rider trowel or walk behind for final finish. For best results, use a combo machine that has been kept clean for this purpose. At the time of final burnish its very important to make sure any small pieces of concrete that are on the surface are blown off the surface with a leaf blower. Do Not finish over these as

there may be noticeable defects. Use the edge of a finish trowel to cut any of these off the surface and then correct if possible with the trowel.
9. After the finishing has been completed and the trowels have moved off the area ensure you can walk on the surface without marring apply Green Umbrella IceStop @ 300-400 SF per gallon.

HEALTH & SAFETY

Clean Up And Disposal:
Clean sprayers and equipment with warm, soapy water and rinse thoroughly following use. Any product that cannot be saved for recovery or recycling should be disposed of according to local/state laws.

ICESTART

1	HEALTH
0	FIRE
0	REACTIVITY/INSTABILITY
C	PERSONAL PROTECTION
X	IRRITANT

IRRITANT

ICESTOP

1	HEALTH
0	FIRE
0	REACTIVITY/INSTABILITY
C	PERSONAL PROTECTION
X	IRRITANT

IRRITANT

WARNING:
Keep out of reach of children. Read the label before use.
FIRST AID:
Contact a Poison Center or physician if the injured feels unwell. If swallowed: DO NOT induce vomiting. Rinse eyes with water. Remove the injured to fresh air and keep at rest in a position comfortable for breathing. Wash with plenty of soap and water. Remove contaminated clothing and wash before reuse.

For Detailed SDS consult company website www.GreenUmbrellaSystems.com

For Medical Emergency call INFOTRAC (24/7): 1-800-535-5053

Green Umbrella Headquarters (Normal Business Hours): (844) 200-7336

WARRANTY & LIMITATIONS

For a period of ten (10) years beginning the date on which the concrete surface described is treated with Green Umbrella® products, Green Umbrella Companies (GU) warrants to the owner that after the specified completed installation, the treated surface will remain water-resistant, dust-proof, hardened, and abrasion-resistant. In the event the surface fails to perform, GU will, at its own expense and its own discretion, supply either sufficient product(s) to repair any such failure or provide materials cost reimbursement. A GU manufacturer's representative must be on-site to supervise the installation.

It is the contractor's responsibility to follow all directions and requirements, as outlined in the Green Umbrella installation specifications. A completed Project Survey form or equivalent document outlining the steps and products used in the process must accompany this warranty request.

Green Umbrella Companies (GU) solely and expressly warrants that its products shall be free from defects in materials and workmanship for six months from the date of purchase. Unless authorized in writing by an officer of GU, no other representations or statements made by GU or its representatives, in writing or orally, shall alter this warranty. GU MAKES NO WARRANTIES, IMPLIED OR OTHERWISE, AS TO THE MERCHANTABILITY OR FITNESS FOR ORDINARY OR PARTICULAR PURPOSES OF ITS PRODUCTS AND EXCLUDES THE SAME. Green Umbrella PRODUCT APPLIED TO SUB-STANDARD CONCRETE IS EXCLUDED FROM ANY KIND OF WARRANTY. If any Green Umbrella product fails to conform to this warranty, GU will replace Green Umbrella product at no cost to the Buyer. Replacement of any Green Umbrella product shall be the sole and exclusive remedy available, and the Buyer shall have no claim for incidental or consequential damages. Any installation of Green Umbrella products that fail to conform to such installation information and instructions shall void this warranty. If any, product demonstrations are done for illustrative purposes only and do not constitute a