

GREEN UMBRELLA



GREEN UMBRELLA DRY SHIELD TECHNICAL DATA SHEET



GREEN UMBRELLA™ DRY SHIELD™

Product Description

Green Umbrella™ Dry Shield is an environmentally friendly concrete hardening densifier it deeply penetrates and chemically reacts with concrete to create a floor surface that is harder, denser and less porous, while allowing for maximum penetration of concrete dyes. A clear, odorless solution, Green Umbrella™ Dry Shield is specially designed for wet processing and does not require rinsing and removal, saving considerable time and money while eliminating hazardous waste disposal issues — significantly reducing your company's impact on the environment.

Basic Use

For Non GHP (Non Polished Concrete): Green Umbrella™ Dry Shield can be used as stand alone concrete hardener. After final troweling is finished on the substrate, Green Umbrella™ Dry Shield can be applied. Proceed with wet cure or ASTM C-309.

For Ground Honed Polished Floors (Polished Concrete): Green Umbrella™ Dry Shield can be applied as part of GUEPC system (described in section below). Dry Shield hardens the concrete for a longer shine. It is designed to be introduced into the substrate after grinding and honing steps as the foundation treatment for the floor. It has superior abrasion resistance and allows for a natural appearance to concrete.

Varied Locations: Green Umbrella™ Dry Shield specially formulated for use in manufacturing & light assembly plants, warehouse/distribution centers, food service operations, retail stores & showrooms, parking decks, garages, airports, hospitals and any other areas where concrete surfaces are maintained. It can be used for indoor or outdoor concrete.

Features and Benefits

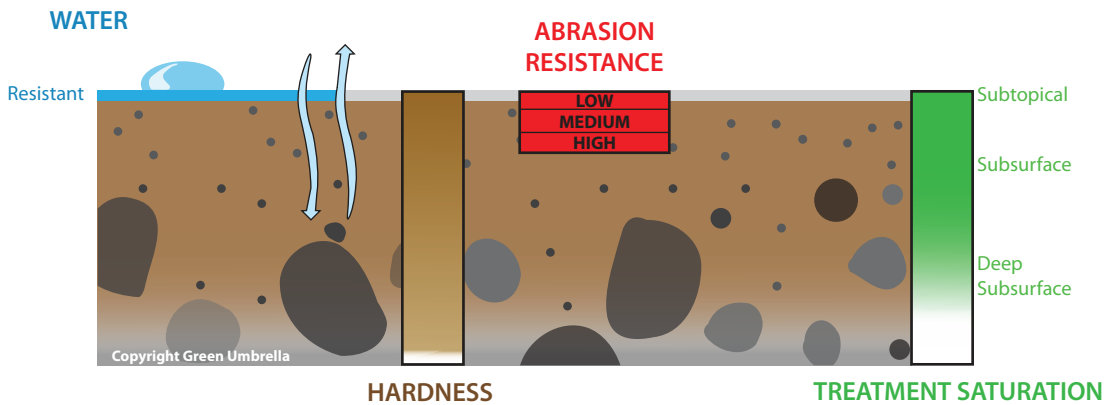
- Designed for use in an environmental, wet grinding process
- pH neutral & non-hazardous
- Superior stand alone concrete hardener
- Increases hardness below ¼ inch deep, while reducing porosity
- natural appearance will not yellow
- Requires no rinsing & disposal and will not gel on surface — can be allowed to air dry
- Decreases black tire marking from lift trucks, greatly improving appearance of floor
- Stands up to heavy abrasion and foot traffic while providing excellent slip resistance
- Water soluble
- No VOC's

Technical Information:

Chemical Family.....	Amorphous Silica
Substrate Location.....	Deep Subsurface
Appearance.....	Clear
Odor.....	None
Film Forming.....	No
Active Ingredients.....	100%
Type.....	Hardner/Densifier
pH.....	6.2
Boiling Point.....	212 F
Packaging.....	5-gal bucket, 55-gal barrel, 275-gal tote
Shelf Life.....	2 years
VOC (grams/liters).....	0
Freezing Point.....	32 F (Do Not Allow to Freeze)



MSDS sheets for all products are available at
www.GreenUmbrellaSystems.com



Websites & Consulting

Architects & General Contractors:
GreenUmbrellaSystems.com

Product Consulting:
Info@GreenUmbrellaSystems.com

Estimating

Container Sizes: Green Umbrella™ Dry Shield is available in containers holding 5, 55 and 275-gallons and only through Green Umbrella™. Each container is properly labeled with information including the product name, description, and condensed application instructions.

Dilution: No dilution.

Coverage Rates: When applied using a Green Umbrella™ sprayer, Green Umbrella™ Dry Shield has a coverage rate of up to 700 sq. ft. per gallon, but on average covers 400 sq. ft. per gallon. Only one coat is necessary. Coverage depends on the porosity of concrete substrate, time, temperature and humidity.

Specifications

For Long Specifications or CSI Specifications, go to www.GreenUmbrellaSystems.com

www.GreenUmbrellaSystems.com
Short Specification
DIVISION THREE
SECTION 03 3536

Non-Ground Honed & Polished (GHP)

Thoroughly clean surfaces and remove all curing agents and coatings. If surfaces are to be ground, process to the specified extent by means of a planetary grinding machine. Apply Green Umbrella™ Dry Shield, an amorphous silica solution, to chemically harden, seal, and densify concrete surfaces. Green Umbrella™ Dry Shield should only be installed by certified Green Umbrella™ Craftsmen.

Ground Honed & Polished (GHP)

A Green Umbrella Engineered Polished Concrete (GUEPC) floor requires that surfaces must be processed by means of a planetary grinding machine to mechanically remove existing coatings, surface imperfections and flatten concrete floors. To reach the desired surface cut and clarity of reflection additional abrasive steps may be required to grind, hone or polish floors to the specified extent. When a polished surface is desired, Green Umbrella™ Dry Shield is typically applied in one coat after floors have been cut using a 200 grit Green Umbrella™ resin (GUr) diamond abrasive. The application of this water based, odorless amorphous silica solution that chemically hardens, seals, and densifies ground, honed or polished concrete surfaces. Green Umbrella™ Dry Shield is a component of the GUEPC system and should only be installed by certified Green Umbrella™ Craftsmen. To find a certified contractor, call (844) 200-7336. A ten-year limited warranty will be issued to the owner upon receipt of a completed and signed job survey form, detailing the steps, cuts and products used in the processing of the floor.

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Green chemistry; like Green Umbrella™ Dry Shield is just one part of a successful specified concrete floor.

GUEPC-system is a complete concrete polishing system from design to completion, it uses our Green Umbrella™ chemistry in the polished concrete market. The GUEPC can be as extensive as from the concrete pour to the maintenance of the floor. It starts, if possible, by designing the canvas, or the slab. Green Umbrella™ Green Canvas shrinkage compensating concrete can be specified within the mix design (ACI 223R-10) to ensure that the surface is ideal for polishing. Moving beyond the canvas, there are four major components to the **GUEPCS: the Process, the Equipment, the Chemistry and the Craftsmen**. All of its components follow the GP Nine (Fundamentals of Green Polishing) GUEPC is not opening the concrete substrate and applying a polymer sealer. A green mechanical process involves processing the floor wet to avoid silicosis issues affecting either installers themselves or by endangering future inhabitants by contaminating air ducts in the building. The process uses a progression of diamond grits on a machine built for wet concrete processing. The use of water enables a higher quality cut to the floor. The wet grinding system has been well supported in the industry for the best approach to clarity and time savings for exposure of aggregate among other advantages.

GUEPC equipment carries the weight to see the concrete grinding, honing and polishing process through to completion, and can even expose aggregate if desired. GUEPC uses alternative fuels to leave a lesser impact on the environment. Meeting GS-24 and other sustainable requirements. Green Umbrella™ grinders (Green Grinder or Stone Extreme) and edger (Green Umbrella™ Low Profile Edger) process the entire floor, with the same profile within ¼ inch of walls or under shelving. Green Umbrella™ controls the diamond matrix of all our cutting abrasives, eliminating the inconsistencies often found in the industry and maintaining a consistent look through-out the entire floor.

Green Umbrella™ concrete treatments are nonsodium and do not generate hazardous waste. The Green Umbrella™ line of densifiers are not water soluble and do not contribute to alkali-silica reaction. Green Umbrella™ treatments that are pH neutral they will not resist color introduction or promote "walk off", which is common with many hardeners. Green Umbrella™ dyes are a standard in the industry. Green Umbrella™ colorants are micro-pigments (Color Polish or Color Shield), and have superior color fastness compared to traditional stains and dyes.

GUEPC floors include accountability through onsite management. Green Umbrella™ Craftsmen are experienced and have many certifications through indepth training. From design to completion, the GUEPC system covers all aspects of the GP Nine.

We simply offer the greenest options for grey concrete. FROM DESIGN TO COMPLETION, YOU EXPERIENCE A COMPLETE SYSTEM.

Environmental Responsibility and LEED Considerations

GUEPC specified process is specially designed to require less labor and downtime while lowering environmental impact. Green Umbrella™ Dry Shield is easy to apply, and because the application is simple fewer laborers are required. Green Umbrella™ Dry Shield has zero VOCs and has a minimal impact on indoor air quality.

Optimize Energy Performance

- Polished concrete allows the advantage of utilizing the thermal mass of concrete in heating and cooling.
- Polished concrete provides the ability to increase the benefit of ambient natural lighting and/or reduce the required lampage.

Building Reuse/Construction Waste Management/Recycled Content

- Existing Buildings — Environmental stewardship through the reuse of 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.

Life Cycle Cost

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

Potential LEED Credits

Polished Concrete is a sustainable floor. The intent of the following credits is to rate output efficiency. Polished concrete reduces energy and material waste, thus reducing environmental impact.

New Construction, Schools, Core and Shell, Commercial Interior.

Material and Resources - MR Credit 1 & 1.1 Building Reuse

Material and Resources - MR Credit 1.2 Building Reuse

Material and Resources - MR Credit 3 & 3.1 Material Reuse

Material and Resources - MR Credit 4 Recycled Content

Indoor Environmental Quality - IEQ Credit 4.3 Regional Materials

Testing

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

ASTM D1308

CHEMICAL RESISTANCE OF FINISHES.
 CTL DOUBLE BLIND TEST.

ASTM C779-05

STANDARD TEST METHOD FOR ABRASION RESISTANCE OF
 HORIZONTAL CONCRETE

Green Umbrella™ Max Defense System™ with Dry Shield

Tested to – ASTM D-1308

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

ACI Standard 302.IR-89 Chemical concrete hardners can be used to increase concrete resistance to chemicals including , but not limited to the following:

Aluminum sulfate	Lead refining solutions, 10%	Potassium persulfate
Ammonium chloride	Lignite oils	Potassium sulfate
Barium hydroxide	Machine oils	Rapeseed oil
Beef fat	Magnesium chloride	Sea water
Calcium hydroxide	Magnesium sulfate	Silage
Calcium nitrate	Manganese sulfate	Sodium bromide
Carbon dioxide	Manure	Sodium carbonate
Carbonic acid	Mash, fermenting	Sodium chloride
Castor oil	Mercuric chloride	Sodium dichromate
Coal-tar oils	Mercurous chloride	Sodium nitrite
Cottonseed oil	Mine water, waste	Sodium sulfate,
Creosote	Mineral oil Molasses	10%
Cresol	Mustard oil Nickel	Sodium sulfite,
Distillers sloop	sulfate Oleic acid,	10%
Ethylene glycol	100%Olive oil	Sodium thiosulfate
Ferric chloride	Paraffin	Soybean oil
Ferric sulfate	Phenol, 25%	Sugar
Ferrous chloride	Phosphoric acid,	Sulfite liquor
Ferrous sulfate	85%	Tallow and tallow oil
Fish oil	Pickling brine, 10%	Tannic acid
Fruit juices	Poppy seed oil	Tanning liquor,
Glucose	Potassium	10%
Glycerin	aluminum sulfate,	Tobacco
Hydrogen sulfide	10%	Walnut oil
Iodine	Potassium carbonate	Zinc chloride
Lactic acid, 25%		Zinc sulfate
		Zinc nitrate

Grind Hone & Polishing Equipment

Green Umbrella™ equipment meets GS-24 and LEED Maintenance Guidelines.

Green Umbrella™ Uses Propane fueled equipment which saves the owner as much as 50 cents a square foot in electrical bills due to the three phase and 220 volt equipment that is used by many GHP contractors. Propane in itself is a non direct greenhouse gas and is one of the world's most widely used alternative fuels. In fact, electric power adds 80% more CO2 into our atmosphere than does propane. Propane equipment can be safe, clean, and fuel efficient.

However, all Green Umbrella™ propane equipment should have the following to be used in the concrete polishing industry: CARB and EPA certification - the engines are certified annually and independently by CARB and EPA 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.

GHP Equipment:

- High Productivity Rider Grinder — processes larger areas in less time.
 - o Heavy duty commercial floor grinder/polisher by Green Umbrella™, Stonextreme or equivalent.
 - o Minimum 933 pounds head pressure.
 - o 77 inch grinding width.
 - o Minimum 8000 square feet per hour production rate.
- Grinder/Honer/Polisher — grinds, hones, and mechanically polishes floors.
 - o Propane powered, heavy duty commercial floor Green Grinder/Polisher by Green Umbrella™.
 - o Minimum 785 pounds head pressure.
 - o CARB/EPA approved.
 - o 30 inch grinding width.
 - o 12 diamond, counter clockwise rotation.
 - o Minimum 1200 square feet per hour production rate.
 - o Provide minimum of two units on site.
- Edger — processes floors within a ¼ inch of wall.
 - o Propane powered Green Edger by Green Umbrella™ or Productions Team
 - o Minimum 165 pounds head pressure.
 - o CARB/EPA approved.
 - o 1/4 inch cut to wall.
 - o Four diamond head, 640 RPM diamond rotation.
 - o Provide minimum of two units on site.
- Burnisher — removes un-reacted material and gives high gloss shine.
 - o Propane powered, high productivity Green Polisher by Green Umbrella™, Pioneer Eclipse or Eagle.
 - o CARB/EPA approved.
 - o 27 or 39 inch burnishing width.
 - o Head Pressured
 - o Minimum 2000 RPM.
- Auto Scrubber — cleans between abrasive steps to prevent contamination. *Important: not all floor scrubbers are effective in slurry recovery.*
 - o Auto scrubber by Tomcat, Pioneer Eclipse or Nilfisk-Advance.
 - o Minimum 500 pound head pressure.
 - o Water application and minimum 30 gallon recovery tank.

Abrasives for GHP Equipment

- Abrasives — diamond abrasives cut concrete substrate in a sequence of steps.
 - o Metal bond abrasives (GUm), resin bond abrasives (GUr), and coating removal metal bond abrasives (GUcr) by Green Umbrella™.
 - o Match hardness of abrasives to hardness of concrete.
 - o 10-segment diamond pad except for coating removal with GUm or GUr matrix.

Prep. Equipment

For non-GHP (Grind, Hone and Polish) or vertical concrete:

- Power Washer on low psi
- Industrial Water Broom — cleans and removes dirt buildup before product application.
 - o Heavy duty industrial water broom by WaterMiser Broom or equivalent.
 - o Up to 180 PSI of water.

Application Equipment

- Hand-Pump Sprayer Applicator — used to apply product evenly and consistently.
 - o Industrial CO2 driven hand-pump sprayer applicator by Green Umbrella™, Patriot Sprayers, or equivalent.
 - o Maximum tip pressure 40 psi.
 - o # 8 gray conical tip.
- T-bar with blended applicator — distributes product sprayed on concrete substrate.



All products can be seen at GreenUmbrellaSystems.com

Product Placement/Application

New Concrete: If specifying concrete, preference should be given to ACI 223, concrete using Green Umbrella™ Green Canvas. Before any concrete processing begins, new concrete should be fully cured for seven days and free of all potential contaminants. Green Umbrella™ Dry Shield is used neat and does not require any dilution or mixing.

Existing Concrete: Existing concrete should be thoroughly cleaned and swept of all debris and potential contaminants—including sealers, wax, coatings and oil or food spills—prior to concrete processing. Green Umbrella™ Dry Shield is used neat and does not require any dilution or mixing. GUEPC floors are only available through certified Green Umbrella™ Craftsmen. Green Umbrella™ Craftsmen are trained in chemical application, dye applications, concrete grinding and carry multiple certification.

At Time of Pour:

1. Finish Concrete Troweling
2. Check that the surface has no contaminants or release oils.
3. Spray Green Umbrella™ Dry Shield on surface.
4. Keep surface wet with product for 30 minutes.
5. Cure slab with wet cure or ASTM c-309

Non-GHP

1. Apply Green Umbrella™ Dry Shield with a Green Umbrella™ solution spreader or sprayer.
2. Distribute product with an exploded-tip bristle broom to ensure uniform coverage.
3. Allow product to air dry. Green Umbrella™ Dry Shield will not gel on surface and does not require rinsing.
4. Remove any un-reacted material with a broom after product has dried.

GHP Floor

1. It is best to densify with Green Umbrella™ Dry Shield after first resin cut. It is recommended to hone floors to a 200 grit GUr diamond abrasive. Clean floor of slurry and contaminants with auto-scrubber.
2. Remove standing water if necessary.
3. Green Umbrella™ Concrete Dye should be applied before proceeding to the next step, if dye is desired. Note: Because Green Umbrella™ Dry Shield is a water repellent it may reject the introduction of color dye.
4. Apply Green Umbrella™ Dry Shield with a Green Umbrella™ solution spreader or sprayer.
5. Distribute product with an exploded-tip bristle broom to ensure uniform coverage.
6. Allow product to air dry. Green Umbrella™ Dry Shield will not gel on surface and does not require rinsing.
7. Auto-scrub floor to remove any unreacted material after product has dried. Or sweep off unreacted material.
8. Proceed to next GUr diamond abrasive.

Note: Time, Temperature & Humidity:

For a chemical reaction to take place successfully, time must be allocated for reactants to fully react. Likewise, when applying Green Umbrella™ Dry Shield to concrete, there must be adequate amount of dwell time for the reaction to take place. Doing so will help to achieve the best result. For Green Umbrella™ Dry Shield to effectively penetrate the substrate, the temperature should not be less than 35° F. If temperatures are lower than is recommended, the chemistry may take much longer to react with and penetrate the concrete substrate. If the temperature exceeds 95° F or conditions are windy, the chemistry may 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. Product applied to a dry slab of concrete in an

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arid climate will dry faster than to a dry slab of concrete in a humid climate, due to the amount of humidity present in the air. In dry climates with low humidity it may be necessary to hydrate the slab in order to allow for proper dwell time. Please consult a Green Umbrella™ representative if you have any questions.

For Best Results:

Light foot traffic Until dry or 1 hour
Wheeled traffic 3 hours

Maintenance

IMPORTANT: Only use pH neutral cleaner.

Non-GHP Floors (GHP)

- Regularly sweep away debris
- Regularly use a water broom to remove dirt build up from treated concrete surfaces

GHP Floors

- Regularly sweep away debris
- Regularly auto-scrub or mop with water or Green Umbrella™ Green Clean
- Use Green Umbrella™ Degreaser as needed
- For GHP floors periodically burnish with a weighted, high speed propane burnisher using Green Umbrella™ black pad to remove dirt build up and restore gloss



Facility Maintenance Training:
www.GreenUmbrellaSystems.com

Warranty & Limitations

For a period often (10) years beginning the date on which the concrete surface described is treated with Green Umbrella™ products, Green Umbrella™ 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, Green Umbrella™ 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 manufacturer's representative must be on site to supervise installation.

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 Umbrella™ 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.

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