

GREENUMBRELLA

GREEN UMBRELLA RTU MICROFILM TECHNICAL DATA SHEET



Product Description

Green Umbrella™ RTU (Ready to Use) Microfilm is an environmentally friendly hybrid surface treatment that creates a durable micro-thin layer to seal already hardened or densified concrete floors. Green Umbrella™ RTU Micro-film forms a breathable, dense protective layer. It is highly resisting to aviation oils, stands up to chemical exposure, and is not prone to whitening, peeling or flaking—with a beautiful high-gloss finish. It enhances and protects colored concrete surfaces.

Basic Use

Green Umbrella™ RTU Microfilm is intended to be the last treatment on a concrete floor. It is an impregnating MICROFILM; not a coating. It offers a sacrificial layer between the surface and the concrete substrate that produces a nice gloss. However, it also penetrates in to the subsurface and forms a hard bond. This allows dwell time for contaminants so they can be cleaned off the surface before reaching the porosities of the the concrete.

It is intended to be the last treatment applied on a polished concrete floor. It is part of the GUEPC System and may be applied to ground, honed or polished concrete floors in manufacturing & light assembly plants, warehouse/distribution centers, food service operations, retail stores & showrooms, garages and any other areas where polished concrete surfaces are maintained. It is designed for indoor use. Green Umbrella™ RTU Microfilm can be used to repair damaged floors that were previously treated with Green Umbrella™ products. Also it can maintain resistance against chemical damage. It also enhances dyed or colored concrete. Green Umbrella™ RTU Microfilm is also one part of the Green Umbrella™ BASE DEFENSE and Green Umbrella™ MAX DEFENSE Systems, that consist of: Green Umbrella™ Dry Shield and Green Umbrella™ Shield & Enhance.

Features and Benefits

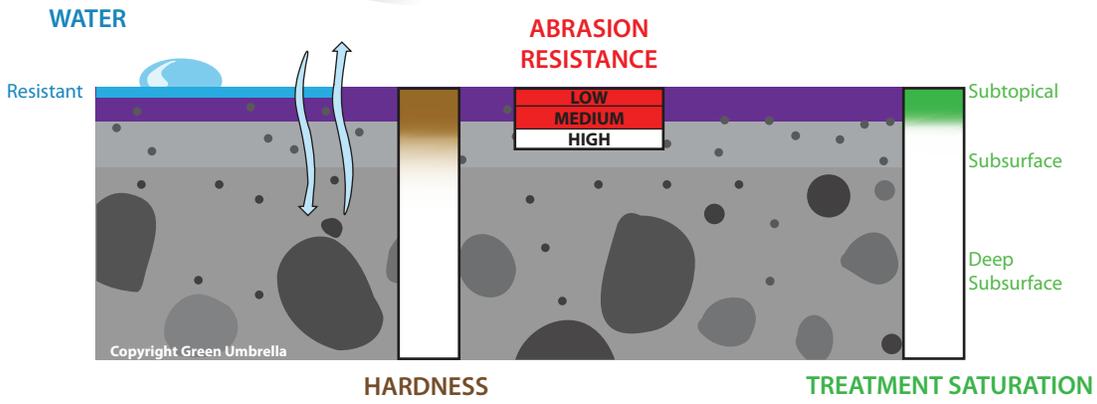
- Highly resistant to aviation oils for up to 48 hours
- Enhances and protects colored concrete surfaces
- Repairable
- Stands up to heavy abrasion and high foot traffic
- Does not support mildew or fungi growth
- Adds gloss
- Not prone to whitening; will not peel or flake
- USDA/FDA approved for incidental food contact
- Very low maintenance

Technical Information:

Chemical Family.....	Hybrid Colloidal
Substrate Location.....	Surface Treatment
Appearance.....	Milky Liquid
Odor.....	None
Film Forming.....	Partial
Active Ingredients.....	100%
Type.....	Partially ReactiveContiguous Impregnating Microfilm
pH.....	11.0
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



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™ RTU Microfilm 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™ RTU Microfilm 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

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 sheen.

Green Umbrella™ RTU Microfilm is applied as the final step in the GUEPC system to give added protection from oil, chemical and other fluids for up to 48 hours. The application of this odorless impregnating Green Umbrella™ RTU Microfilm provides a micro-thin layer of protection for ground, honed or polished concrete surfaces usually applied following the use of 800 GUR abrasives. Green Umbrella™ RTU Microfilm is a repairable product and a component of the GUEPC system and should only be installed by Certified Green Umbrella™ Craftsman. 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.

IMPORTANT: FOR A SUCCESSFULLY POLISHED CONCRETE FLOOR MORE IS NEEDED THAN SPECIFYING CHEMISTRY. WAYS AND MEANS MAY BE NECESSARY, PLEASE CONSIDER THE FOLLOWING: SPECIFYING GREEN UMBRELLA ENGINEERED POLISHED CONCRETE (GUEPC)

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Green chemistry; like Green Umbrella™ RTU Microfilm 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 shrink-age 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 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™ RTU Microfilm is easy to apply, and because the application is simple fewer laborers are required. Green Umbrella™ RTU Microfilm 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
 Green Umbrella™ MAX DEFENSE System with RTU Micro-film

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 302.1R-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, 10%
Creosote	Mineral oil Molasses	Sodium sulfite, 10%
Cresol	Mustard oil Nickel sulfate	Sodium thiosulfate
Distillers slop	Oleic acid, 100%	Soybean oil
Ethylene glycol	Olive oil	Sugar
Ferric chloride	Paraffin	Sulfite liquor
Ferric sulfate	Phenol, 25%	Tallow and tallow oil
Ferrous chloride	Phosphoric acid, 85%	Tannic acid
Ferrous sulfate	Pickling brine, 10%	Tanning liquor, 10%
Fish oil	Poppy seed oil	Tobacco
Fruit juices	Potassium aluminum sulfate, 10%	Walnut oil
Glucose	Potassium carbonate	Zinc chloride
Glycerin		Zinc sulfate
Hydrogen sulfide		Zinc nitrate
Iodine		
Lactic acid, 25%		

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 nondirect 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 fueled 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

Green Umbrella™ RTU Microfilm does not require any dilution and can be used neat.

(Due to the variety of substrates, environments, and variables in preparation and application methods, the customer should test the product in an inconspicuous area for compatibility prior to full-scale application.)

For deep even coverage, penetration and superior performance, Green Umbrella™ recommends Green Umbrella™ RTU Microfilm be applied to the substrate twice.

Important: For best results, Green Umbrella™ recommends that the substrate be processed through a 800 grit resin bond before application on a GHP floor. 200 grit resin on a Green Cut GHP floor. Green Umbrella™ RTU Microfilm is not recommended for outdoor applications or on very porous, unprocessed concrete. Green Umbrella™ RTU Microfilm is especially formulated for open, broom- finished and ground concrete.

Green Umbrella™ RTU Microfilm is a permanent application; make sure color and cut are to satisfaction before proceeding.

1. Process Ground Honed Polished floor to last resin cut.
2. thoroughly sweep all debris from floor. Then re-sweep with Auto-scrubber any leftover residue with Green Umbrella™ noncorrosive cleaning products. Sweep with a microfiber dust mop.
3. To prevent overspray, protect areas like aluminum surfaces, where product is not desired.
4. Apply first application with Green Umbrella™ sprayer and immediately spread with T-bar and woven Green Umbrella™ applicator. Under average temperature and humidity allow for several hours before the application of the second coat. Apply a second coat of Green Umbrella™ RTU Microfilm and allow a minimum of four hours dry time between the second and third coats. **Important: Frequently clean T-bar of debris, or periodically change applicators to avoid streaking in Green Umbrella™ RTU Microfilm.**
5. To increase the bond of Green Umbrella™ RTU Microfilm, burnish with a high-speed, head-pressured, propane Green Umbrella™ burnisher. It is important to use black pads with no resin-transfer.
6. No more than three coats are needed. For the best penetration and cure allow at least twelve hours dry time between second and third coats.
7. As a precaution. Do not let water stand in puddle for first 72 hours. This allows the film to bond properly.
8. Under extreme conditions reapplication may be necessary after 12-24 months. Product will not flake off or show wear patterns, but to maintain peak resistance, we recommend the application of one coat of Green Umbrella™ RTU Microfilm by a certified installer every 18 months.

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™ RTU Microfilm 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™ RTU Microfilm 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 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.

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For Best Results:

Light foot traffic Until dry or 1 hour

Wheeled traffic 3 hours

Clean up: When Green Umbrella™ RTU Microfilm is applied to a polished concrete floor after all polishing steps are complete. For ground or honed concrete floors use a high-speed propane burnisher and a Green Umbrella™ black pad.

Removal of Green Umbrella™ RTU Microfilm off substrate: If Green Umbrella™ RTU Microfilm has dried it is necessary to recut the floor a minimum of one or two resin cuts with a GHP machine, re-polish. Then reapply material.

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

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™ 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) 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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