

FGS® HARDENER PLUS™

Concrete Densifier, Hardener, Sealer, and Waterproofing, for use on mechanically ground and polished concrete surfaces.

MANUFACTURER

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PRODUCT DESCRIPTION

FGS HARDENER PLUS is a proprietary, chemical hardening solution that is formulated to increase the wear resistance and surface strength of concrete floors that have been mechanically ground, smoothed, and polished. When used in conjunction with the patented **FGS PERMASHINE® FLOOR POLISHING PROCESS**, **FGS HARDENER PLUS** penetrates diamond ground and polished concrete wear surfaces to harden, seal, densify, and waterproof them. Polished concrete floors treated with **FGS HARDENER PLUS** last longer than conventional concrete floors, cost less to maintain, reflect light better, hold a shine longer, are safe to use, and are guaranteed to resist dusting for a minimum of ten years. **FGS HARDENER PLUS** is a water-based, VOC-compliant, odorless and environmentally safe component of this process.

The FGS PermaShine® System: **FGS PermaShine** renews existing concrete floors that are dusting, worn, pitted and otherwise suffering from years of use and abuse, restoring them to an attractive, light reflective, and durable polished finish.

New floors also benefit from the **FGS PermaShine** process when installed after the concrete has cured sufficiently to resist the aggressive steps of grinding and polishing. The **FGS PermaShine** process is installed only by factory trained and approved contractors, using approved equipment and only the best chemical treatments, in order to insure the highest possible quality and longest lasting finish.

The FGS PERMASHINE DRY CONCRETE POLISHING SYSTEM is patented and is available exclusively through L&M Construction Chemicals, Inc., and only through its dealers and its certified, trained and approved installers.

Following the sequential diamond grinding and polishing steps of the **FGS PermaShine** process, **FGS HARDENER PLUS** is applied as the last and final step to the finished concrete surface. This final step is important in order to

provide long-term dustproof protection to the floor, as well as to enhance and extend the visual impact of the resultant polished finish. **FGS HARDENER PLUS** has been formulated to restore surface strength after the aggressive microscopic destructive action of the abrasive diamond grinding and polishing steps. A two-coat application of **FGS HARDENER PLUS** is required to most effectively protect polished concrete floors.

The development of this product was based on L&M's considerable knowledge of concrete, gained over 40 years of manufacturing concrete specialty treatments. **FGS HARDENER PLUS** has been specifically formulated to meet the unique demands of a flat, ground and polished floor - better than any other L&M product, and better than any competing product.

Treatment of a ground and polished floor with **FGS HARDENER PLUS** will add years to a treated concrete floor's expected service life, as well as reduce the cost of regular maintenance of that same floor. The powerful densification of a concrete floor by **FGS HARDENER PLUS** increases its durability by chemically and permanently transforming the comparatively soft, exposed cement paste into a hard, wear-resistant surface. This chemical process also reduces micro-pitting.

Micro-pitting is the physical process by which the wear surface of a concrete floor microscopically deteriorates over time by abrasion. Exposed cement paste at the surface of a concrete floor is continually punished in high traffic areas and, if left untreated, will eventually wear away, letting loose of the aggregates that it is relied upon to bind. This process is frequently observed on both untreated and unprotected floors, and is identified by floor surface dusting. We know from our experience that floors treated with **FGS HARDENER PLUS** will resist micro-pitting. This single benefit adds many extra useful years to a floor surface.

FGS HARDENER PLUS develops internal bonds, over time, that effectively transform an **FGS PermaShine** concrete floor into a hardened, chemically strengthened wear surface that resists abrasion, oil contamination and water penetration. *Note: While this chemical reaction with the floor begins shortly after treatment, the full benefit is not realized until the process measurably advances during the initial six months following application, at which time the treatment becomes complete and permanent. A regular schedule of washing, utilizing our **FGS Concrete Conditioner**, will accelerate this protection during this period.*

FGS HARDENER PLUS is easy to use. Work area downtime is greatly minimized and its odorless formula allows its use in employee-occupied areas without



FGS HARDENER PLUS



concern. The deeply penetrating chemical action leaves no film to scratch, chip, peel, discolor or otherwise deteriorate, and its presence will not alter the natural non-slip texture of the concrete floor.

Highly polished treated floors continue to hold their luster through use and with a proper, regular cleaning program utilizing our special FGS Concrete Conditioner. By choosing a FGS PermaShine floor, substantial savings in annual maintenance costs will be quickly realized over conventional wax coatings, acrylic sealers and thin film coatings.

Basic Use: FGS HARDENER PLUS is required for use on floors that have been diamond ground and polished in accordance with the patented FGS PermaShine Process. Typical areas that would benefit from this process include floors subjected to medium or heavy fork lift and tow motor traffic: including those found in warehouses, distribution centers, automotive assembly plants, manufacturing plants, textile mills, coolers and freezers, food processing plants, canning factories, breweries, bakeries, meat and poultry processing plants, service garages, grocery stores, discount retail stores, hub transfer facilities, commercial buildings, and most concrete floors needing rehabilitation.

Other uses include concrete floors subjected to frequent or heavy pedestrian traffic, such as: civic centers, retail sales outlets, discount stores, restaurants, food preparation areas, sports arenas, stadiums, hospitals, airports, museums, schools and grocery stores.

ESTIMATING

Container Sizes: FGS HARDENER PLUS is readily available from L&M CONSTRUCTION CHEMICALS, INC. in factory-sealed 5-gallon (18.9 liter) and 55-gallon (208 liter) containers. Each container is properly identified with product name, batch number, and a unique sequential identification number.

Coverage Rates: Two coats required. First coat, 250 ft²/gallon; second coat, 350 ft²/gallon. Apply second coat after first coat has completely dried.

TECHNICAL DATA

Applicable Standards and Approvals:

Fed. Spec. CECS 03300 4-79
 VOC Compliant
 USDA-Authorized
 National Floor Safety Institute
 LEED-Green Building Rating System
 GreenSpec listed
 Canadian Food Inspection Agency
 OSHA & ADA non-slip requirements

Physical Properties:

Active Ingredients:..... 100%
 Type Proprietary Blend
 Flash Point, °F None
 Abrasion Resistance,
 ASTM C 779, .008 inch30 minutes
 Skid Resistance,
 NFSI - Standard 101.A High Traction
 Static Coefficient of Friction
 (SCOF) Wet or dry >0.6
 Odor:..... None
 Film forming None

Light Reflectivityup to 35%
 Moisture Absorption, Rilem Standard;
 % reduction in 24 hrs70%
 Surface Breathableyes
 UV StabilityExcellent
 ColorClear
 VOC (gms/Liter):0.0

INSTALLATION

Pre-installation meeting: An approved installer must inspect concrete floors that are candidates for FGS PermaShine rejuvenation. Our installers will review the condition of the floor and make proper recommendations regarding the steps and repairs necessary to rejuvenate the floor.

Floor preparation of existing, worn floors: All sealers, paints, wax, coatings, floor coverings and their mastics, as well as any surface contaminants such as oil or food spills must be removed. Non-moving cracks and saw cut, control joints are to be routed, and cleaned. They will be filled later with rapid curing L&M JOINT TITE products after the final steps of the process. Moving cracks must be addressed separately. Repair large or deep surface irregularities with a rapid setting L&M patching compound that meets the requirements of the project. Proceed with grinding and polishing steps as determined by the project requirements.

Floor preparation of new floors: New concrete floors must be properly cured before abrasive smoothing steps can begin --- a minimum of 28 days or once the concrete reaches 3500 psi. Remove all surface sealers and film forming curing compounds. Proceed with grinding and polishing steps as determined by the project requirements.

Application: FGS HARDENER PLUS is applied after all grinding and polishing steps of the FGS PermaShine process are completed. Installation requires the use of an automatic floor scrubber or other mechanical equipment utilizing soft scrubbing pads. Two coats are required for compliance with warranty. Floor may be placed into service immediately after installation of second coat and removal of the rinse residue. Rinse residue is non-hazardous and may be flushed into sanitary sewer.

Certified Installers: Installation by a certified, factory-trained FGS PermaShine approved installer/contractor is required. These companies have been company trained and will provide quality and proper installation. Contact L&M for a listing of companies.

Drying Time: Two to four hours. Floor may be put into use immediately after final rinse.

FOR BEST RESULTS:

- Good housekeeping practices, such as regular and frequent mechanical scrubbing, washing, wet mopping and sweeping, are to be followed in order to maximize densification and resultant life expectancy of the FGS HARDENER PLUS treated surfaces.
- Regularly scheduled cleaning of the treated floor with water and dilute FGS CONCRETE CONDITIONER is recommended to obtain the maximum benefit of the FGS PermaShine process. This conditioner contains fast acting cleaning and degreasing agents, as well as active hardening

ingredients, which continue to enhance the hardened and densified properties of the treated floor. Frequent and continued use of this treatment insures satisfactory, long term performance of a **FGS PermaShine Floor**.

- Do not freeze. Apply when temperatures are above 40° F (5°C).
- Not recommended for long term exposure to strong acid or severe chemical attack.
- Apply only to structurally sound concrete surfaces.
- Variations in concrete finishing and concrete mixes may cause variances in appearance of the FGS finish.
- For best results, wipe up oil spills immediately during first 6 months of use, as treatment permanently densifies the wear surface.
- Immediately wash off over-spray from glass, aluminum, or highly polished metal surfaces with water to avoid etching of the surfaces. Flush equipment with water to clean.
- Do not allow product to dry before flushing excess from surfaces.
- **Application Temperature Limitations:** 40° F to 100° F (5° C to 40° C).
- **FGS HARDENER PLUS** is a penetrating, non-film forming concrete treatment. Its use will not change the static coefficient of friction (SCOF) of a given concrete floor finish. However, any floor can be slippery when wet or contaminated with foreign material. Promptly clean up spills and foreign materials.

PRECAUTIONS

Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Do not take internally. Wear skin and eye protection. Please refer to product Material Safety Data Sheet (MSDS) before using. Dispose of diluted rinse water only into a sanitary sewer. Conform to local regulations for disposal.

STORAGE/SHELF LIFE

FGS HARDENER PLUS containers are to be stored in a clean, dry area between 40F and 100F (5-40C). Shelf life of **FGS HARDENER PLUS** in unopened containers is a minimum of two years if properly stored. Do not freeze.

WEBSITE

L&M's convenient internet website offers instant access to Tech Data Sheets, Material Safety Data Sheets, product updates, and other useful information. Visit www.lmcc.com and follow the easy steps. L&M is ready to respond to your concrete information needs - anytime - anywhere!

SPEC SECTION 033510 Concrete Finishes, or 030130 Concrete Rehabilitation. For complete guide specifications see the Master-Spec Guide Section 033510 at www.fgs-permashine.com.

Note: Upon completion of the floor polishing steps, install a two-coat application of FGS HARDENER

PLUS, a water-based, odorless proprietary solution by L&M Construction Chemicals, to harden, seal, and densify the exposed concrete surface. Install system using an FGS PermaShine approved installer/contractor. A ten-year non-dusting warranty shall be issued to the owner upon satisfactory completion of the process.

LIMITED WARRANTY

FGS HARDENER PLUS is a component of the FGS Permashine Floor Process. As a component, sound and properly treated concrete floors are guaranteed to resist dusting due to abrasion for a minimum of ten years. Should FGS HARDENER PLUS fail to perform as specified, sufficient labor and material to retreat the affected area will be provided to the owner at no cost.

The long term life of floor gloss and shine are a function of a good in-house maintenance program and other conditions out of the control of the FGS Permashine Process and, therefore, are not included in this warranty.

This product is warranted to be free of defects in material and workmanship, and conform to L&M Construction Chemicals ("L&M") quality control standards. All recommendations, statements and technical data herein are based on tests we believe to be reliable and correct, but accuracy and completeness of said tests are not guaranteed and are not to be construed as a warranty or guaranty of any kind, expressed or implied including but not limited to, an implied warranty of merchantability or an implied warranty of fitness for a particular purpose. Satisfactory results depend upon many factors beyond L&M's control. User shall rely on his or her own information and tests to determine suitability of the product for the intended use and user assumes all risk, loss, damage, expense and liability resulting from his or her direct use, indirect use or consequential to their use of the product. L&M shall not be liable to the buyer or any third person for any injury, loss or damage directly or indirectly resulting from tuse or inability to use the product. L&M's sole responsibility shall be to replace that portion of the product which proves to be defective. Any warranty claim must be made within six (6) months from the date of the claimed breach. This limited warranty applies only if the product was properly installed and used according to all instructions and was properly stored prior to use.

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