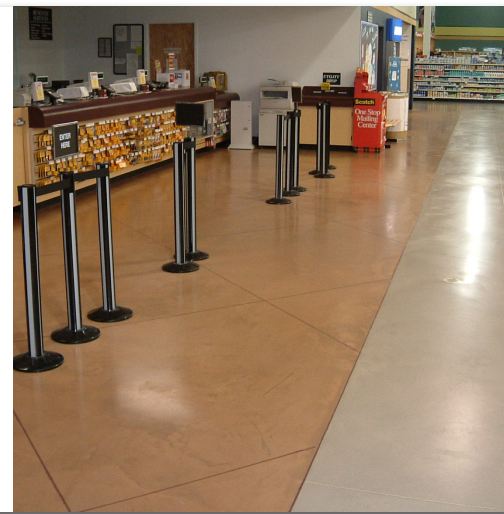
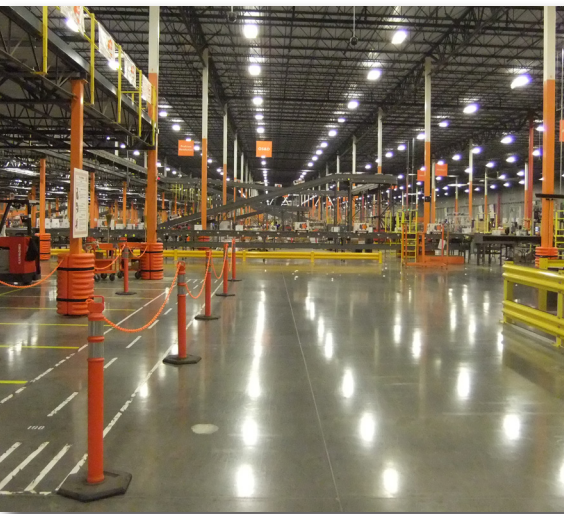




**EUCLID CHEMICAL**

# REACTIVE SEALERS



EUCO DIAMOND HARD

ULTRASIL LI<sup>+</sup>

ULTRAGUARD

EUCOSIL

SURFHARD

# EUCO DIAMOND HARD

## THE SUPERIOR SEALING SOLUTION

**EUCO Diamond Hard** is a liquid densifier and sealer for concrete that penetrates, chemically reacts, and bonds within the surface to produce a harder, dustproof, liquid repellent floor.

Concrete treated with Diamond Hard resists tire marking and is easily maintained. Because Diamond Hard is a sealer that penetrates, it doesn't change the texture of concrete and never shows wear patterns or peels off like membrane forming coatings often do.

### THE EUCO DIAMOND HARD ADVANTAGE

- Silicate and silicate blend densifies and seals in one step.
- Reduces porosity and increases density of the concrete surface.
- Resists penetration of liquids, including oil and many chemicals.
- Provides a low sheen luster that enhances the appearance of the concrete surface.
- Will not blush, peel, flake or wear away.
- Minimizes tire marks and enables them to be easily removed.
- Can contribute to LEED points.

### MEASURABLE BENEFITS

#### Quick Return to Service

**Diamond Hard is easily applied to a clean and sound concrete surface.** The process is quick and easy – a treated floor can be opened to foot traffic in as little as 4 hours. One day after application the floor is fully functional and can be returned to service.

#### Low Maintenance

**The best way to maintain a Diamond Hard floor is to use it!** Normal cleaning and daily use will accelerate the densification process and bring out the floor's sheen. Good housekeeping practices and quick clean-up of spills will help keep the floor looking new. Stubborn tire marks and oil stains can be removed with a citrus-based detergent like EUCO CLEAN & STRIP, a natural and biodegradable cleaner and degreaser.

#### Environmentally Responsible

Choosing "green" products that are safe for workers and the environment is a priority for most designers today. **Diamond Hard is water based and odorless**, so specifying Diamond Hard can contribute to the LEED certification of your next building project.

#### Proven Performance

Silicate materials have been used to improve the durability of concrete for decades. **The synergy of silicate and silicate together has been proven in Diamond Hard for over two decades.** Join an impressive list of businesses and design firms who have specified Diamond Hard for their most important projects.

#### Protection That Beautifies

Concrete treated with Diamond Hard develops a subtle sheen that is especially attractive in commercial and retail establishments. **The use of a Diamond Hard treated floor will improve its appearance, as traffic and regular maintenance work to buff in a deeper shine over the years.** In addition to protecting and beautifying concrete floors, Diamond Hard provides a finish that is dustproof and easy to keep clean.





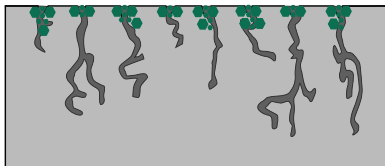
## USING REACTIVE SEALERS

### HOW SILICATES WORK

**The silicate and siliconate compounds present in EUCO Diamond Hard each play a unique role in densifying and sealing concrete.** The silicate in Diamond Hard chemically reacts with calcium hydroxide (also known as portlandite) in the surface to produce calcium silicate hydrate (CSH) – the primary strength-providing portion of concrete paste. Portlandite is a soft, porous mineral that is subject to carbonation and chemical attack, so replacing it with the much stronger CSH is a major benefit of Diamond Hard. The siliconate in Diamond Hard also reacts with the concrete to form a hydrophobic polymer within the pores and on the concrete surface. The ultimate result is a concrete floor that is exceptionally dense and liquid-repellent, which equals long-lasting protection and durability.

1

#### CSH Gel



The silicate in Diamond Hard reacts to form extremely hard crystals in the pores of concrete surfaces.

2

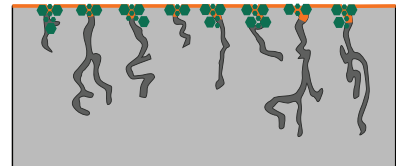
#### Siliconate



The siliconate in Diamond Hard also reacts to create a liquid-repellent seal on the concrete surface.

3

#### Siliconate CSH Gel



The synergistic activity of silicate and siliconate provides both a strengthened and sealed concrete surface by the action of the silicate and siliconate described in diagrams #1 and #2.

## "CURING" THE CURING MYTH

Liquid densifiers are not effective in curing new concrete. Independent laboratory test results prove that concrete "cured" with a liquid densifier loses as much moisture in the first three days after placement as concrete that is not cured at all. This means that using a liquid chemical hardener on fresh concrete for the purpose of curing can result in a slab with low strength and poor surface quality. Properly curing concrete with a membrane forming curing compound that meets the requirements of ASTM C 309 or ASTM C 1315 will prevent these problems and ensure that the new floor achieves the strength and durability as specified and designed.

## THE TRUTH ABOUT ABRASION RESISTANCE

Silicate products for concrete are efficient dustproofers, sealers, and densifiers. They are not, however, replacements for dry shake floor hardeners. Dry shake floor hardeners give wear resistance above and beyond that of a liquid densifier. However, the system of a dry shake hardener with a liquid densifier like Diamond Hard on the surface will produce a floor with exceptional durability. The abrasion resistance of the dry shake plus the densification and liquid repellency of the silicate and siliconate equals years of unbeatable performance. The Euclid Chemical Company offers a variety of mineral and metallic aggregate hardeners to fulfill all possible design and performance requirements.

# TECHNICAL DATA

## CHEMICAL RESISTANCE

Chemical attack is influenced by temperature, exposure period, and concentration. The information below should be used for reference purposes only and is not intended to guarantee product performance.

- O** No Effect
- M** Moderate Effect
- S** Severe Effect

Acids	Effect
10% Lactic	M
10% Citric	M
Glacial Acetic	M
10% Acetic	M
10% Formic	M
10% Oxalic	M
10% Tannic	O
10% Chromic	M
10% Hydrochloric	M
Concentrated Hydrochloric	S
10% Nitric	S
Concentrated Phosphoric	M
10% Sulfuric	M
Concentrated Sulfuric	S

Alcohols	Effect
Benzyl Alcohol	O
Ethyl Alcohol (Ethanol)	O
Isopropyl Alcohol (Isopropanol)	O
Methyl Alcohol (Methanol)	O
Ethylene Glycol (anti-freeze)	O
MEK	O

Bases	Effect
5% Ammonium Hydroxide	O
Concentrated Ammonium Hydroxide	O
50% Potassium Hydroxide	M
50% Sodium Hydroxide	M
Concentrated Calcium Hydroxide	O
10% Potassium Hydroxide	M
10% Sodium Hydroxide	M

Water/Miscellaneous	Effect
Tap/Deionized/Distilled Water	O
Sea Water	M
Clorox (bleach)	O
Animal Fat, Blood, Urine	O
Alkaline Detergent Cleaning Solution	O

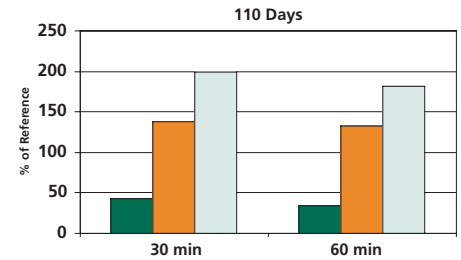
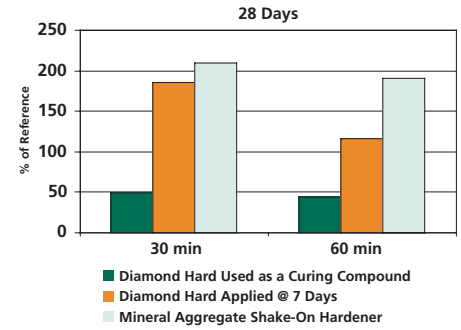
Salts (30% Solutions)	Effect
Ammonium Chloride	M
Ammonium Nitrate	O
Calcium Chloride	O
Calcium Hypochlorite	M
Cupric Chloride	M
Ferric Chloride	M
Ferric Nitrate	O
Magnesium Chloride	M
Potassium Chloride	M
Sodium Bicarbonate	O
Sodium Chloride	O
Sodium Chloride - Saturated Solution	M

Solvents	Effect
Acetone	O
Benzene/Xylene	O
Carbon Tetrachloride	O
Cyclohexane	O
Dichlorobenzene	M
Dichloroethane	M

Hydraulic Fluids/Oils/Fuels	Effect
Skydrol	O
Automatic Transmission Fluid	O
Brake Fluid	O
Gasoline/Jet Fuel	O
JP-4 Kerosene	O
10W30 Motor Oil	O
Aircraft Motor Oil	O
Heating Oil	M

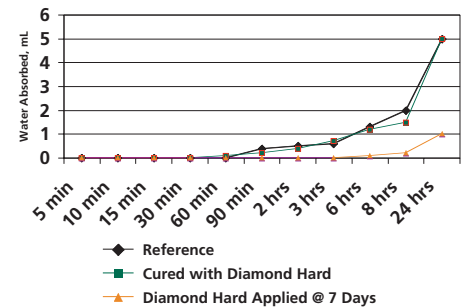
Other Chemicals	Effect
Formaldehyde	O
10% Urea	O
Cola	O
Mustard	O
Ketchup	O

## ABRASION RESISTANCE, ASTM C 779



## LIQUID REPELLENCY

RILEM tubes provide a simple method for measuring the amount of water absorbed by a concrete surface within a specified time period. RILEM Test Method 11.4 is used to assess the degree of protection provided by a surface sealer or treatment.



## COEFFICIENT OF FRICTION

### 4000 psi concrete, steel trowel finish

Diamond Hard applied after 7 days at 200 ft<sup>2</sup>/gallon Coefficient of Friction Results:

**Dry** – 0.81 **Wet** – 0.72 A minimum coefficient of friction value of 0.5 has become the commonly accepted threshold for classifying a surface as slip resistant.

## MAINTENANCE

1. Clean the floor often during the first several months after application of Diamond Hard, and wash on a regular basis thereafter. The more buffing the Diamond Hard receives, the greater the sheen of the floor.

2. Use mild, alkaline (high pH) soaps or detergents to clean your Diamond Hard treated floor. Do not use inorganic acid cleaners (those based on hydrochloric acid, nitric acid, muriatic acid, etc.). Spot clean to remove grease, oil, or tire marks.

## ADDITIONAL REACTIVE SEALERS FROM EUCLID CHEMICAL INCLUDE:

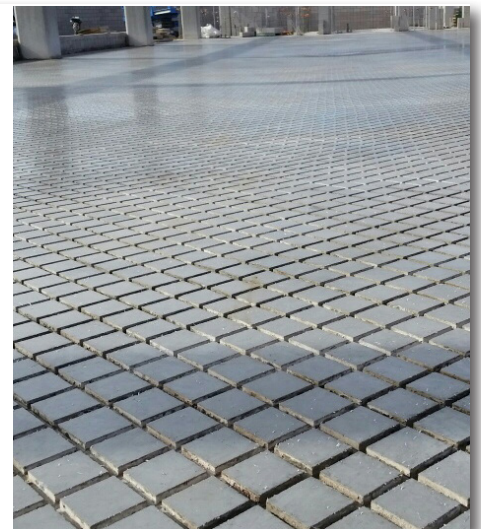
**UltraSil Li<sup>+</sup>** is a water-based lithium silicate solution used to densify, seal and dustproof concrete surfaces. UltraSil Li<sup>+</sup> penetrates and chemically reacts within the concrete surface, producing extremely hard and dense calcium silicate hydrate (CSH) in the pores. The result is concrete that is more durable, easier to clean, and more resistant to damage from water and mild chemicals. Because the product of the lithium silicate-concrete reaction is formed internally, the protection of UltraSil Li<sup>+</sup> never peels or flakes off, is unaffected by moisture, and lasts much longer than surface sealers and coatings. UltraSil Li<sup>+</sup> provides comparable benefits to Diamond Hard, with the following additional features:

- Faster surface sheen development
- Easy one step application with no generation of wastewater

**UltraGuard** is a water-based polymeric protectant that improves the appearance and durability of concrete floors. UltraGuard contains a powerful, migratory stain-resistant additive that is activated with high-speed burnishing. UltraGuard is additionally fortified with lithium silicate. It can be used alone but is especially effective when applied to concrete that has already been densified. UltraGuard provides an immediately glossy finish and a protective seal.

**Eucosil** is a sodium silicate solution that improves a concrete surface by introducing additional silica that reacts with the excess calcium hydroxide to form more CSH. This results in denser, harder concrete surfaces. Because the concrete is dry when the silicate is applied, this additional CSH formation takes place primarily in concrete surface capillaries. Filling these capillaries with CSH provides an additional degree of impermeability and density to the surface, but the concrete retains its ability to “breathe”, allowing water vapor to freely exit the slab surface. Eucosil does not contain silicate, so if a surface seal, liquid repellency, and chemical resistance is desired, Diamond Hard is the better choice.

**Surfhard** is a water-based magnesium silicofluoride solution that reacts chemically with excess calcium hydroxide in the concrete surface to form CSH. However, fluorosilicates also react with calcium carbonate, CaCO<sub>3</sub>, which is not abundantly present in good quality concrete surfaces but is a major constituent of inadequately cured, carbonated, or dusting slabs. Fluorosilicate replaces calcium carbonate with silicofluoric gel, a hard and dense material. Fluorosilicates are mainly remedial products, used to improve the durability of dusting floors as recommended in the American Concrete Institute publication 302.1R, Guide for Concrete Floor and Slab Construction, Section 5.8. Therefore, much of the potential benefit of Surfhard is wasted when applied to good quality concrete.



## INDUSTRY LEADERSHIP

For more than 100 years, The Euclid Chemical Company has served as a leading supplier to the concrete and masonry industry offering a full line of engineered concrete admixture and construction products marketed under the EUCCO brand name. These products include concrete admixtures, block and masonry additives, curing and sealing compounds, epoxy adhesives, floor and wall coatings, structural grouts for columns, equipment and machinery, joint fillers and repair products. The Euclid Chemical Company strives to bring innovative technologies and products to the concrete market with industry leading customer service.

## CUSTOMER SOLUTIONS

The Euclid Chemical Company is unique in our offering of superior products and unparalleled customer service and industry support. The Euclid team delivers a range of value-added resources and in-depth industry experience to architects, designers, engineers, building contractors and owners. Comprised of highly trained professionals who are available in local offices across the Americas, our experts are active members on industry technical committees including American Concrete Institute (ACI), International Concrete Repair Institute (ICRI) and American Society for Testing and Materials (ASTM). Our experienced field team is available to support you and your projects using Euclid Chemical solutions and products manufactured under the stringent standards of our ISO 9000:2008 certified quality system. The Euclid Chemical Company works hand-in-hand with customers:

- supplying field evaluations, recommendations and application problem-solving on a project-by-project and technology basis.
- assisting in product selection, specification, installation and related technology.
- attending pre-design meetings, assisting in clarifying specifications and recommending product selection.
- supporting you by providing proper pre-installation instructions and methods for achieving quality results.

## LABORATORY SERVICES

Our world class Cement and Concrete Reference Laboratory (CCRL) inspected facilities are equipped with state-of-the-art technologies and staffed by an exceptional team of professional, ACI certified technicians. These outstanding resources provide The Euclid Chemical Company the capability to offer comprehensive analytic and petrographic evaluation and testing services via programs that conform to the standards prescribed by the American Society for Testing and Materials, the U.S. Army Corps of Engineers (USACE), the American Concrete Institute and the International Concrete Repair Institute.

## TRAINING

The Euclid Chemical Company generously shares product information and technical knowledge through training and seminars conducted for project owners, contractors, distributors and design professionals. Many programs are AIA/CEU registered, allowing eligible attendees to earn professional development hours. Euclid Chemical is proud to sponsor these opportunities for our associates and colleagues as part of our ongoing commitment to the concrete construction industry.

## BUILDING GREEN

The Euclid Chemical Company offers an extensive line of green products that are specific to LEED guidelines. The LEED (Leadership in Energy & Environmental Design) Green Building Rating System provides a national standard for defining an environmentally friendly, sustainable "green" building. Points awarded to building projects based on water savings, energy efficiency, materials and indoor environmental quality.



**EUCLID CHEMICAL**

19215 Redwood Road  
Cleveland, OH 44110  
t 800-321-7628  
f 216-481-7072

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