

BRINGING PROJECTS TO LIFE



Making Concrete Better

- Creates a Hard, Durable Floor
- Low Cost and Easy to Maintain
- "Green" Flooring

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LYTHIC Colloidal Silica Nano Technology: New Technology For Better Concrete

Product Description

Lythic™ Densifier is a blend of inorganic polymer materials that penetrates slab concrete to increase surface density and hardness. Utilizing a proprietary and “green” manufacturing process, Lythic™ Densifier’s unique formulation of uniform, concentrated, Nano sized particles, suspended in an ultra low surface tension liquid, penetrates deeply into concrete surfaces bonding with the cement components of the slab. Lythic™ Densifier makes an extremely hard, dense floor surface that has increased wear resistance to foot and fork lift traffic. It is water based and environmentally friendly and is VOC compliant in all states.

Features / Benefits

Fills porosity/capillaries of concrete creating a permanent bond that makes floors and walls harder, less prone to dusting and absorption of most liquids.

- Meets all VOC regulations.
- Meets LEED qualifying standards
- Resists penetration of many liquids including oils and many chemicals
- Helps minimize many rubber tire marks in warehouse applications
- Application equipment may be cleaned with water
- Will not discolor or blush over time
- Not affected by bond breaker systems when used as directed
- Will not leave a white cast on floor if over used or not removed
- Reduces operating costs by increased ease of maintenance and cleaning.

Performance Advantages

- Lower pH improves reactivity and stability of materials
- Low viscosity and smaller molecular size provides deeper and more complete penetration
- Will not peel
- Reduces dusting
- Can be applied to newly troweled green slabs

Packaging

- 19 liters

Technical Information

- Drying Time 20 min to 1 hour
- VOC Content 0 g/l
- Total Solids 18%
- Active Ingredients 100% of total solids
- pH 9
- Freeze Point 32°F
- Slip Resistance Does not change floor friction coefficient
- Shelf Life 1 year

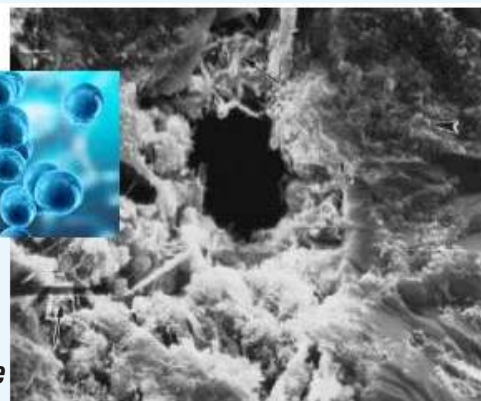
How It Works

- Colloidal silica works by reacting with lime in concrete. During hydration, approximately 20 % of a concrete mixture's Portland cement is converted to lime, which has no structural value in concrete.
- However, colloidal silica pozzolanically reacts with lime to form CSH strengthening crystals.
- Concrete also contains naturally occurring silica. Because silica bonds best to itself (a property not found in any silicate densifier) colloidal silica is able to build up more density and strength in a concrete surface.
- It can be applied to new, hard-trowelled floors, or to existing slabs.

Colloidal Silica



Microscopic view of pore in concrete



Primary Applications



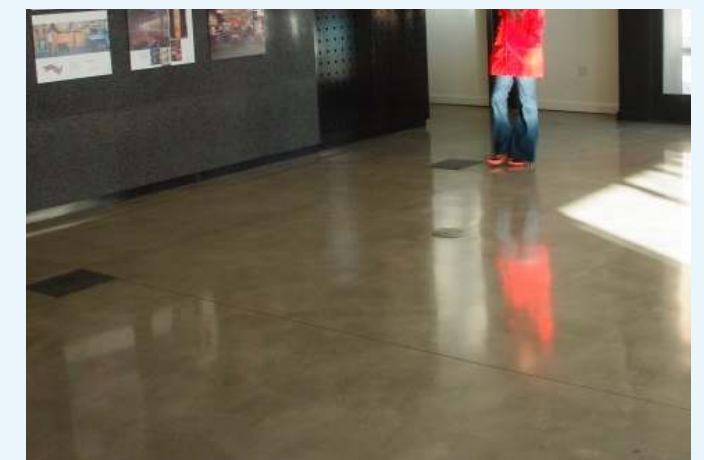
Interior or exterior concrete



Medical and Research



Warehouses / Distribution center floors



Residential garages and floors



Manufacturing plants



Commercial floors

Direction

Lythic™ Densifier has two primary methods of application. The first method is designed for application while the slab is still green just after final trowel. The second is designed for use with existing or cured concrete.



New Concrete (Green)

Lythic™ Densifier may be applied to newly installed concrete after final trowel while slab is still Green. Slab must be clean and free of all materials such as curing compounds, bond breakers, form release oils or construction dust and debris, etc. Use a low pressure sprayer to achieve a consistent, even application and to ensure consistent coverage of the surface. Reapply as necessary to keep surface wet for 20 minutes. Let surface dry. No cleaning, flooding, neutralizing or rinsing is necessary. If curing agent is to be applied, it can now be applied over dried application of Lythic™ Densifier.



Existing, Cured Concrete

Lythic™ Densifier can be applied to concrete of any age. Surface must be clean and structurally sound. Surface also must be clear of membrane forming curing compounds, sealers, oils, dust and other surface contaminants. For best results use a black scrubbing pad with Lythic™ Cleaner. If more aggressive surface preparation is needed to remove surface contaminants, 60-100 grit sanding screens can be used. A thorough cleaning is needed after additional scrubbing



Diamond grinding/polishing to an 800 grit finish with Lythic™ Densifier, will provide the most durable and stain resistant floor surface.

Use a low pressure sprayer to apply Lythic™ Densifier to form an even sheen across surface to ensure complete saturation of surface. Apply enough Lythic™ Densifier to keep the surface wet for 15 to 20 minutes. Let surface dry 1 hour before heavy traffic.

The HardWear Floor™ - Benefits

For a floor that could stand up to abuse, easy to clean, cost effective to make, beautiful and aesthetically pleasing to look at, we suggest our HardWear Floor Solution. The HardWear Floor is considered the best option for creating a beautiful and hard-wearing surface with following benefits:

- Permanently bonds to concrete
- Prevents dusting
- Minimizes rubber tire track marks
- Will not cause the floor to blush or discolour over time
- Enhances coloured concrete floors
- Increases floor durability
- Boosts stain resistance
- Promotes water repellency
- Increases slip resistance
- Meets all VOC regulations,
- Reduces costs by saving labour and time
- Can be used in occupied buildings

Process For Lythic HardWear Floor

The Lythic HardWear Floor is a cost-effective alternative to diamond polishing. The Lythic HardWear Floor is based on a double treatment of Lythic Reactive Colloidal Silica densifiers. It can be applied to new, hard-trowelled floors, or to existing slabs with light grinding. The first treatment, with standard Lythic Densifier, bonds silica particles of about 5-nanometre size to the concrete. This base layer forms a bonding surface (or landing pad) for a special version of the densifier, Lythic XL, with silica particles of about 45-nanometre size. These larger particles quickly build up density in the surface and may actually fill in finer scratch patterns. When this newly-made, high-silica surface is burnished, it produces a near-polished gloss. It eliminates two or three diamond-polishing passes, saving on the costs of both labour and diamond tooling. After stain protection, a 100-grit grind can resemble an 800-grit polish. It has all the performance properties of a polished concrete floor, and similar low maintenance requirements.



The HardWear Floor

Products



Lythic Densifer

Lythic™ Densifier's unique formulation of uniform, concentrated, Nano sized particles, suspended in an ultra low surface tension liquid, penetrates deeply into concrete surfaces bonding with the cement components of the slab. Lythic™ Densifier makes an extremely hard, dense floor surface that has increased wear resistance to foot and forklift traffic. It is water based and environment friendly.



XL Densifer

Lythic™ Densifier is a colloidal silica based concrete hardener and densifier that prevents dusting and increases durability in concrete floors. Engineered with a specifically sized silica particle, it is designed to strengthen soft porous concrete slabs. Floors treated with Lythic XL Densifier are durable and resistant to dusting and wear. It fills the surface capillaries of concrete with silica creating a permanent bond that makes floor surfaces harder, less prone to dusting & the absorption of most liquids.



Protector

Lythic™ Protector is a penetrating concrete sealer formulated to enhance and protect polished concrete floors. It is a unique product that includes colloidal silica for surface hardness and lithium for water repellency. It is a water-based, environment friendly product that enhances coloured concrete floors, and increases durability, as well as slip resistance.



Cleaner

Lythic™ cleaner is a non-corrosive cleaner, formulated to remove surface dirt and soil from concrete floor surfaces. It fortifies concrete surfaces with amorphous silica as it cleans to increase durability and maintain surface polish.



Maintenance

Routine sweeping, mopping and periodic mechanical scrubbing with a neutral pH, non-rinsing cleaner or water is needed. We recommend using Lythic Cleaner for all cleaning regimes. Avoid any acidic cleaners. Acidic cleaners may etch the surface over time and cause a dulling of the finish. No aggressive scrubbing brushes such as straogrit, nylogrit or other aggressive scrubbing brush should be used. Avoid detergents containing hydroxides or sulfates.

Lythic Densifier Vs Conventional Silicate Densifiers

- Lythic Densifier eliminates the risk of whitening as it contains less than one half of 1 % metallic salts unlike other Silicate densifiers, which may have up to 25% metallic salts, and presents a risk of whitening of surface.



No whitening

- The self-bonding ability is the driving force in our Lythic Protector & Lythic Cleaner products. Each delivers more silica, bonded into the floor, improving the surface with every application and ensuring that each application bonds tightly.
- Reactive Colloidal Silica densifier is far safer to handle than silicates. It has a pH similar to baking soda. Conventional sodium silicate densifiers are far more caustic and produce lye (sodium hydroxide) as a by- product.
- Lythic Products are water based and environment friendly.
- Safer for Workers and Jobsite: It is thousand times less caustic than silicates.
- Speeds up project: No, scrubbing in, no overnight curing, no scrub off.
- Safer for Environment: No caustic residue to scrub off and dispose of as a hazardous material. Shipped as on centrate to reduce transportation impacts.
- Works well on overlays too: Bonds directly to silica in the overlay cement, making it stronger and more polishable.
- Cost-Effective: Cuts steps, reduces labour, high coverage rate,
- Shipped as concentrate to save shipping costs.

Old Technology: Silicate-based Densifiers	New Technology: Lythic Colloidal Silica
Highly caustic with 11 pH or greater	9 pH, a thousand times safer
High viscosity requires scrubbing to break surface tension, adding to labour cost	Low viscosity and simple spray-on application for quick penetration
Slow reacting, can require overnight dwell time	Reacts within minutes. Does not delay project
Alkaline residues require additional labour to remove and treatment as hazardous waste	No alkaline surface residue. No disposal costs
Surface must be rinsed to remove residue as water damage to building and finishes is possible	No rinsing required
Potential for difficult to remove surface whitening	No potential for whitening
Contains water soluble compounds that may be left in the slab and cause problems	Does NOT contribute to alkali-silica- reaction (ASR) which can cause swelling and cracking
Inconsistent and variable sized particles	Consistent 5 nanometer - sized particles



Frequently Asked Questions about Concrete Densifiers

What is Concrete?

Concrete is a mixture of portland cement, aggregate (sand and rock), water and additional ingredients called admixtures. A chemical reaction called hydration causes the cement and water to harden and bind the aggregates.

How do Densifiers Work?

Densifiers, also known as “hardeners,” contain special silica-based chemicals. When applied to a concrete surface, the silica reacts with lime and produces additional CSH. The new CSH crystals permanently bond, filling the microscopic concrete pores to decrease porosity, reduce “dusting,” and create a denser and harder concrete surface.

Is there a Difference in Densifiers?

Yes! Until recently, all densifiers used alkali-metal compounds called “silicates” – such as sodium silicate, potassium silicate, or lithium silicate. Silicates are old technology. They work, but have many drawbacks that must be dealt with by the contractor and building owner. A new type of densifier chemistry, colloidal silica, overcomes these drawbacks. How is concrete formed? Hydration produces calcium-silicate-hydrate (CSH). CSH crystals are the glue that holds concrete together. A by-product of this reaction is calcium hydroxide (lime). Lime is water-soluble and the weakest part of concrete. Hydration continues throughout the life of a slab producing lime that causes “dusting” on the concrete.

Note: Floor where any burnishing to be done, at such location our product “Lythic Densifier XL” preforms more .

What is Densifying?

As excess water in a mix evaporates, it leaves a network of tiny voids called pores. Densification fills these pores with additional cementitious crystals. This hardens the surface, makes it more resistant to staining, and reduces dusting of the concrete surface. It is an important step in creating decorative polished concrete finishes and is increasingly being used on ordinary concrete floors to make hardwear surfaces that are more durable and easier to maintain.

How is Lythic Densifier Different?

Regardless of the type of densifier, only the silica reacts with lime to create CSH. The question is, how to get silica into the concrete, and Lythic™ Densifier is the most efficient means. That’s because the sodium or potassium in other densifiers form compounds that actually impede silica’s reaction with lime. Lythic™ Densifier, on the other hand, contains colloidal silica – nearly pure silica in a water solution – so it reacts quickly, cleanly, and completely. And colloidal silica particles are nano-sized to penetrate all but the smallest pores in concrete for maximum densification.

What are other benefits of Lythic™ Densifier?

Lythic™ is available as a concentrate to reduce shipping and storage costs. It contains zero VOCs, can be used in occupied buildings, and is compatible with concrete dyes.

For materiel & other information



Next Generation Concrete Systems Pvt. Ltd.

S-9, Second Floor, Malik Buildcon Plaza-II, Pocket - 5, Plot No.6, Sector- 12, Dwarka, New Delhi - 110075

M : +91 84 708 54405 | **T :** 011 42804024

E : info@ngcs.co.in | **W :** www.ngcs.co.in

For Application



Lamba Techno Flooring Solutions Pvt. Ltd.

Q-27, Phase-I, Extn. New Palam Vihar, Gurgaon

M : +91 97 178 54400, 84 708 54401

E : LTFSP@gmail.com, info@Ltf solutions.co.in

W : www.Ltf solutions.co.in

Branch Offices: Delhi • Haryana • Rajasthan • Karnataka • Maharashtra • Gujrat