



# Technical Information Sheet

Rev: TIS-LY-DAY-2013-06

*Colloidal Silica is at the heart of Lythic technology.*

It is a substance that reacts with the chemistry of concrete to produce more cementitious material, which translates into higher performance concrete.

*\*Issued August 2013. Subject to change. Contact Solomon/Brickform for most up-to-date information*

<b>001: PRODUCT DESCRIPTION</b> .....	p1
<b>002: FEATURES &amp; ADVANTAGES</b> .....	p1
002A: FINISHING AID .....	p1
002B: HARDENING & DENSIFICATION .....	p2
002C: CONCRETE CURING PROPERTIES .....	p2
002D: EFFLORESCENCE & SURFACE DEFECTS .....	p2
002E: CURLING REDUCTION .....	p2
<b>003: SUSTAINABILITY</b> .....	p2
<b>004: MATERIALS PACKAGING</b> .....	p2
<b>005: COVERAGE RATES</b> .....	p2
<b>006: SAFETY PRECAUTIONS</b> .....	p2
<b>007: MIXING &amp; DILUTION</b> .....	p2
<b>008: EQUIPMENT</b> .....	p3
<b>009 PRE-APPLICATION</b> .....	p3
<b>010: PROJECT TESTING</b> .....	p3
<b>011: APPLICATION GUIDELINES</b> .....	p3
010A: FINISHING AID APPLICATION .....	p3
010B: PERFORMANCE CONCRETE APPLICATIONS .....	p3
<b>012: NEXT STEPS</b> .....	p3
<b>013: LIMITATIONS &amp; IMPORTANT NOTES</b> .....	p3
<b>014: LYTHIC DAY1 USED IN CONJUNCTION WITH</b> .....	p4
<b>015: PHYSICAL PROPERTIES</b> .....	p4
<b>016: STORAGE &amp; SHELF LIFE</b> .....	p4
<b>017: WARRANTY</b> .....	p4
<b>018: FIRST AID</b> .....	p4

## 001: PRODUCT DESCRIPTION

**Lythic DAY1** Troweling Aid, Densifier and Curing Agent is a colloidal silica-based topical additive that makes concrete flatwork finishing easier and faster, produces a better result, and provides multiple long-term advantages to the concrete slab.

Applied during floating and troweling of freshly-placed concrete, **Lythic DAY1** reacts with the cement matrix as it is forming. **Lythic DAY1** is 99.5% pure silica in nano-scale particles, suspended in an ultra-low surface-tension liquid using a proprietary, "green" manufacturing process. Colloidal silica reacts with calcium hydroxide (aka lime) that is being created as a by-product of cement hydration, and turns it into additional calcium silicate hydrates (CSH), the active binder in cement paste. This additional cement paste immediately improves workability. **Lythic DAY1** slows down moisture-loss, allowing cement

hydration to proceed properly, which extends workability time. It increases the proportion of cementitious material in the surface, making it denser and harder for its entire service life.

**Lythic DAY1** improves workability without the addition of excess water. Finishers often add water to "bring up" more cream, but that weakens the slab surface by raising the local water/cement ratio. **Lythic DAY1** accomplishes this while not altering the w/c ratio. All water added is consumed during the chemical reaction with **Lythic DAY1**. **Lythic DAY1** lubricates troweling for easier, faster finishing, and increases cream for a smoother, more consistent finish.

Because it slows moisture-loss, **Lythic DAY1** significantly extends workability time under adverse conditions such as wind, high heat, sun, or low humidity. **Lythic DAY1** slows surface drying and premature set, and eliminates the need for adding water to complete finishing.

Once troweled into the surface, **Lythic DAY1** provides moisture-retention performance like a liquid membrane-forming curing compound; however, no membrane is formed. **Lythic DAY1** becomes a permanent part of the slab, there is nothing to remove, and curing is effectively extended, reducing water vapor transmission through the slab. Improved surface consolidation and colloidal silica densifying reaction result in increased surface compressive strength and durability. **Lythic DAY1** has been shown to successfully mitigate slab curling by reducing evaporation at the surface, thereby diminishing the shrinkage differential and the curling it causes. **Lythic DAY1** also minimizes the potential for checking, crazing, and other drying-related surface issues.

**Lythic DAY1** reduces the potential for efflorescence on both colored and standard concrete mixes. It also gives the concrete surface hydrophobic-like properties for better resistance to liquid penetration and staining.

## 002: FEATURES & ADVANTAGES

**Lythic DAY1** offers a multitude of advanced features and benefits for freshly placed concrete, and provides long-term high performance properties to treated concrete surfaces.

### - 002A - FINISHING AID

- ◇ Lubricates for more efficient closing of surface
- ◇ Speeds finishing
- ◇ Extends surface workability time by 15 to 30 minutes
- ◇ Helps finishing under hot, dry, sunny & windy conditions
- ◇ Reduces operator fatigue and trowel wear
- ◇ Promotes easier workability with shake-on hardeners

**- 002B - HARDENING & DENSIFICATION**

- ◇ Increases abrasion resistance
- ◇ Creates a denser, less permeable surface for resistance to liquid penetration, staining
- ◇ Increases impact resistance
- ◇ Increases surface compressive strength approximately 20% - 30%

**- 002C - CONCRETE CURING**

- ◇ Reduces Water Vapor Transmission Per ASTM F1869 - (MVER)
- ◇ Mitigates Volume of Water Vapors Per ASTM D 4263

**- 002D - EFFLORESCENCE & SURFACE DEFECTS**

- ◇ Colloidal silica chemical reaction reduces Ca(OH)<sup>2</sup> migration
- ◇ Reduces efflorescence on both colored & standard concrete
- ◇ Minimizes checking, crazing & scaling
- ◇ Decreases potential for alkali silica reaction - \*(ASR)

**- 002E - CURLING REDUCTION**

- ◇ Reduces potential for slab curling

**003: SUSTAINABILITY**

**Lythic DAY1** increases the durability and performance of a concrete surface, extending its service life and minimizing materials- and energy-consumption for its replacement.

When used in an exposed concrete floor, such as a polished concrete floor, **Lythic DAY1** becomes an integral part of an inherently sustainable flooring solution that is durable, and offers a very long service life with only simple maintenance. Concrete flooring lowers materials- and energy-consumption by eliminating the need for frequently-replaced floor covering materials. Exposed concrete floors require minimal, low-impact maintenance, thereby lowering maintenance energy-consumption and eliminating harsh chemicals and solvents used strip and wax some floor coverings.

**Lythic DAY1** has specific sustainability benefits:

- ◇ Zero-VOC formula
- ◇ Ships as concentrate to lower environmental impacts and shipping and storage costs
- ◇ No hazardous waste

**004: MATERIALS PACKAGING**

**Lythic DAY1** is packaged as a concentrate, minimizing shipping and handling expense. Packaging Detail:

1 gallon / 3.78 liter containers.....concentrate  
 5 gallon / 19 liter pails.....concentrate

**005: COVERAGE RATES**

**Lythic DAY1** will yield different results based on the jobsite conditions and usage demands. Test on a small sample area to determine appropriate application rate and technique before applying to entire project area. \*(See section 010: Project Testing) Use these coverage rates as a starting point to determine necessary application rates.

Finishing Aid :

(RTU mixture)..... 1000 sf / gal

Performance Concrete:

(RTU mixture)..... 800-1000 sf / gal

**\*IMPORTANT:** When applying multiple times or using in combination with other colloidal silica treatments, **total combined applications should not exceed 1 gal/400sf**

\*(See section 01: Limitations & Important Notes)

**006: SAFETY PRECAUTIONS**

WARNING: FOR PROFESSIONAL USE ONLY. BEFORE USING PRODUCT, READ MATERIAL SAFETY DATA SHEET (MSDS) AND INSTRUCTIONS ON PACKAGING. ALKALINE CONCENTRATE: CONTACT CAN DAMAGE EYES, SKIN AND OTHER BODY TISSUES. HANDLE WITH CARE. EYE AND SKIN IRRITANT. POSSIBLE DIGESTIVE TRACT IRRITANT; DO NOT TAKE INTERNALLY. KEEP OUT OF REACH OF CHILDREN. SPRAY MIST IS RESPIRATORY TRACT IRRITANT. USE ONLY WITH ADEQUATE VENTILATION. Do not breathe vapors or spray mist. Avoid contact with eyes, skin, clothing. Observe appropriate safety and jobsite controls. Wear appropriate protection including eye protection and chemical-resistant gloves. Ensure fresh air flow during application and until dry. If you experience headaches, dizziness, eye watering, or if air monitoring shows vapor/mist levels above applicable limits, wear a properly fitted P100/organic vapor respirator (NIOSH TC-84A approved), used according to manufacturer's directions, during application and drying.

**007: MIXING & DILUTION**

**Lythic DAY1 is shipped as a concentrate. Before use, it must be diluted with clean potable water in a ratio of 4:1.**

- 1- Before opening **Lythic DAY1** container, shake to agitate the concentrate.
- 2- Pour one part **Lythic DAY1** concentrate into mixing container or directly into sprayer.
- 3- Add four parts clean potable water.
- 4 - Mix for 30 seconds using low-to-medium speed drill and mixing paddle, or shake sprayer for 60 seconds, until mixture is homogeneous and uniform.

We recommend calculating the quantity of material needed for the immediate work at hand, and only making as much **Lythic DAY1** RTU mixture as needed. Left over RTU mixture can be stored in an air-tight container, and needs to be used within 2 months after being mixed from concentrate or the stated expiration date, whichever comes first. Manufacturing date can be found within the batch number on the original packaging. Over prolonged periods of time, **Lythic DAY1** RTU mixture may settle. Before using RTU mixture, agitate container to mix contents.

**\*IMPORTANT:** The water used to dilute **Lythic DAY1** concentrate must be clean potable water. Any contaminants in the water could reduce the shelf life of RTU mixture.

### 008: EQUIPMENT

Apply **Lythic DAY1** using a low-pressure pump sprayer. Automatic low pressure sprayers can also be used for larger projects.

### 009: PRE-APPLICATION

Advanced planning is critical to all successful concrete placement, including the use of **Lythic DAY1**.

- ◇ Any adjacent areas, surfaces, or objects not intended to be treated with **Lythic DAY1** should be protected from overspray or drift with plastic sheeting or other proven protective material.
- ◇ Measure area (square feet) that will require **Lythic DAY1**.
- ◇ Mix an appropriate quantity of **Lythic DAY1** for job-size, per instructions in Section **007: MIXING & DILUTION**, using estimated coverage rates in Section **005 COVERAGE RATES**.
- ◇ Check that sprayers and tips are in working order.
- ◇ Designate trained operator(s) to apply **Lythic DAY1** throughout project, to ensure consistent application.

### 010: PROJECT TESTING

**FINISHING AID:** Since every batch of concrete is unique, and its behavior varies depending on surrounding conditions, testing is only relevant on the actual batch being finished. At the beginning of floating, and again at the beginning of troweling, test **Lythic DAY1** on a small sample section to verify needed application rate and technique.

**PERFORMANCE CONCRETE APPLICATIONS:** Test a sample slab of similar mix design 28 days (or more) prior to actual pour to determine if performance standards are achieved.

### 011: APPLICATION GUIDELINES

**Lythic DAY1** is designed to be used during the placement and finishing of concrete. It can be used to assist concrete floating or troweling at any point during the finishing process. Multiple applications can be made as needed, as long as the combined total of all colloidal silica applications is no greater than 400 sf/gal RTU mixture. (*See section 005: Coverage Rates*)

*\*IMPORTANT: Lythic DAY1 must be floated or trowelled into the concrete surface to prevent white powders being visible on the surface. Should this happen the white powder needs to be cleaned prior to any sealers or cures being applied.*

#### ◇ 011A- FINISHING AID APPLICATION

**Lythic DAY1** is designed to be used during the placement and finishing of concrete. It can be used to assist concrete floating or troweling at any point during the finishing process. Multiple applications can be made as needed, as long as the combined total of all colloidal silica applications is no greater than 1 gal/400 sf RTU mixture per application. (*See section 005: Coverage Rates*)

- 1- Agitate **Lythic DAY1** RTU mixture before use.

- 2- Pour **Lythic DAY1** RTU mixture into sprayer. Keep the sprayer at optimized levels, allowing even distribution when applying to concrete surface.
- 3- Spray apply to concrete surface during floating or troweling, holding spray tip 12-24 in. (30-60 cm) above surface and moving in a circular motion to achieve even distribution.
- 4- Float or trowel into wet concrete surface. Finisher should determine when additional **Lythic DAY1** is needed to improve workability. **Lythic DAY1** must be worked into the surface of the concrete and or the dry-shake-hardener/color hardener.

**Lythic DAY1** can be applied as required to improve the workability of the concrete surface. It is recommended to apply **Lythic DAY1** throughout the entire project for most consistent results. **Lythic DAY1** can be applied both before and after the application of dry-shake-hardeners/color hardeners, and may be especially useful when there is a limited amount of bleed-water to wet-out the powdered hardeners.

#### ◇ 011B: PERFORMANCE CONCRETE APPLICATIONS

The chemical action of **Lythic DAY1** enhances the performance of concrete. *\*(See section 001: Product Description & 002B - 002E: Features & Benefits).* **Lythic DAY1** results are optimized when supported by good concrete placement techniques. Apply **Lythic DAY1** immediately after the concrete has been leveled or as soon as possible in the floating or troweling stage. When immediate application is not possible, apply within three hours of initial concrete placement for optimum concrete performance.

- 1- Agitate **Lythic DAY1** RTU mixture before use.
- 2- Pour **Lythic DAY1** RTU mixture into sprayer. Keep sprayer at optimized levels, allowing even distribution when applying to the concrete surface.
- 3- Spray apply to concrete surface, holding spray tip 12-24 in. (30-60 cm) inches above surface and moving in a circular motion to achieve even distribution at a rate of approximately 800 - 1000 sf / gallon per application

Additional applications of **Lythic DAY1** as a finishing aid can be made during the later stages of the process, or with the use of dry-shake-hardener/color hardener. Finishing aid use also will provide performance enhancement if it is applied within the Performance Concrete coverage range.

*\*IMPORTANT: The combined total of all colloidal silica applications should not exceed 400 sf/gal RTU mixture.*

### 012: NEXT STEP

Cure concrete according to given specifications. **Lythic DAY1** becomes a permanent part of the concrete, and there is nothing to wash, neutralize, or remove.

**013: LIMITATIONS & IMPORTANT NOTES**

- ◇ **Lythic DAY1** densifies the concrete surface but should not be confused with concrete sealers; it will not seal or prevent staining.
- ◇ **Lythic DAY1** must be floated or troweled into the concrete and not allowed to puddle or pond on surface.
- ◇ **Lythic DAY1** is not a topical curing compound; it must be worked into the concrete for optimal results.
- ◇ Do not exceed 400 sf/gal RTU mixture in a combined usage or multiple application. Over-application can lead to residual colloidal silica migrating to the surface, or surface softening.
- ◇ Additional surface preparation will be required prior to other decorative materials and sealer being applied. Refer to secondary material manufacturer’s guidelines for preparation requirements. *\*(Also ICRI Surface Preparation Guide-line)*
- ◇ Jobsite samples are strongly recommended prior to application of all Solomon/Brickform and Lythic products.
- ◇ **Lythic DAY1** performance and third party testing are based on typical concrete mix designs. **Lythic DAY1** reacts with calcium hydroxide (Ca(OH)<sub>2</sub>, also known as hydrated lime and Portlandite) that is present in concrete as a byproduct of Portland cement hydration. High performance concretes often include alternative (non-Portland) cements that have different chemical characteristics; additional jobsite samples should be carried out for performance review.

**014: LYTHIC DAY1 CAN BE USED IN CONJUNCTION WITH:**

- ◇ **LYTHIC DENSIFIER** .....(Standard colloidal silica densifier)
- ◇ **Lythic Densifier XL** .....(Larger particle densifier)
- ◇ **Lythic Protector** .....(Color enhancer & stain reducer)
- ◇ **Lythic SPD Protector** .....(Color enhancer & stain protection)
- ◇ **Lythic Cleaner** .....(Colloidal silica cleaning agent)
- ◇ **CONTRAZZO** .....(Polished concrete overlay system)
- ◇ **Pro-Dye** .....(Penetrating colorant concentrate)
- ◇ **Stealth Seal** .....(Penetrating sealer non-film forming)

*\*Other Solomon/Brickform products can be used in conjunction with **Lythic DAY1**.*

**015: PHYSICAL PROPERTIES**

- Appearance .....(Milky white liquid)
- VOC Content.....(0 g/l – free)
- Total Solids ..... (50-60%)
- Material pH .....(apx 9.5)
- Freeze point ..... (32°F - 0°C)

- Shelf Life .....(24 Months)
- Concentrate Material .....(100%)

**016: STORAGE & SHELF LIFE**

**Lythic DAY1** should be kept in the original container when possible, with the lid fastened tightly. **Lythic DAY1** concentrate has an optimized shelf life of 24 months from the date of manufacture. This date is available on the batch reference number on the original container.

**Storage of RTU mixture:** see Section **007: Mixing & Dilution**

Keep in a cool, dry place raised off the floor. Keep in temperature range of 40–100°F or 4–38°C.

**\*Important: Do Not Allow to Freeze**

**017: WARRANTY**

**Lythic DAY1** is intended for use by licensed contractors and installers, experienced and trained in the use of these types of products. It is warranted to be of uniform quality, within manufacturing tolerances. The manufacturer has no control over the use of this product, therefore, no warranty, expressed or implied, is or can be made either as to the effects or results of such use. In any case, the manufacturer’s obligations shall be limited to refunding the purchase price or replacing **Lythic DAY1** proven defective. The end user shall be responsible for determining product’s suitability and assumes all risks and liability.

**018 FIRST AID**

**Ingestion:** Not expected to be toxic. Never give an unconscious person anything to ingest. If swallowed, immediately give two glasses of water, seek medical attention if ill effects develop.

**Inhalation:** May cause irritation. Remove to fresh air and provide oxygen. If not breathing, give artificial respiration. Seek medical attention if irritation persists.

**Eye Contact:** Flush with plenty of water for at least 15 minutes. Seek medical attention if irritation persists.

**Skin Contact:** May cause irritation. Wash affected area with soap and water. Remove contaminated clothing and shoes. Seek medical attention if irritation persists.



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**IMPORTANT NOTE:** Lythic DAY1 is designed to be floated or trowelled into the concrete surface. **DO NOT** Spray on the concrete surface after troweling. Lythic DAY1 is **NOT** a film forming cure for concrete.