



## Product Information Sheet

**SINAK Lithium Cure™ 1000** is the most significant advancement in concrete curing over the past 50 years. SINAK's lithium technology outperforms all other curing products and methods. **Lithium Cure™ 1000** minimizes or eliminates plastic shrinkage cracking in freshly placed concrete, and produces highly durable surfaces for pavements, bridge decks and precast elements.

### COMPOSITION AND MATERIALS

**Lithium Cure™** is a water-based lithium silicate with a proprietary formula in solution. It requires NO mixing, diluting or agitation. **Lithium Cure™** contains NO volatile organic compounds or solvents.

**Lithium Cure™** is a clear solution. However, it can be produced in a white color by incorporating titanium dioxide in the solution. Other colors can be produced using fugitive dyes.

### ADVANTAGES

- **Applied earlier than other cures**
- **Mitigates plastic shrinkage cracking**
- **Retains high internal moisture content**
- **Contributes to higher efficiency cement hydration**
- **Reduces permeability**
- **Reduces warping and curling in pavements**
- **Acts as a surface finishing aid**
- **Excels in hot weather**

### HOW IT WORKS

**Lithium Cure™** is applied to freshly placed concrete ***much earlier*** than other curing methods. The lithium silicate reaction with the hydrating cement produces additional gel products near the concrete surface.

As the curing process continues to develop, the added gel products fill the channels that allow water to escape from the concrete surface. By preserving more moisture at and near the concrete surface, it reduces the build up of surface tension that is responsible for plastic shrinkage cracks.

Other curing products and moisture cure are applied at a later period of the setting process. Conventional curing compounds attempt to coat the concrete surface to prevent moisture escape. This curing has been shown to produce mixed results related to mitigating plastic shrinkage cracking and enhanced surface durability. Unlike their performance in the lab on the small test samples in a controlled environment, their effectiveness in the field is highly variable and dependant on mix proportions, surface area, ambient and concrete temperatures, wind conditions, rate of application and time of application. Removal of membrane products may be required.

**Lithium Cure™** does not interfere with the bonding of joint sealants, patching materials, lane markers and paint striping. Over-spray on reinforcement steel and cold-joints does not require removal.

### SEALING

Concrete that has been cured with Lithium Cure can also be sealed with Lithium Cure when additional protection is desired. Lithium Cure used as a sealer waterproofs and protects against chloride ion penetration, freeze/thaw damage and provides stain resistance. Lithium Cure is excellent for use on bridge decks, parapet walls, PCC paving, parking structures and all other cast-in-place and precast concrete.

Lithium Cure will not stain, discolor or alter the appearance or surface texture or skid-number (SN) rating. Upon the last coat drying, treated surfaces can be immediately opened for both foot and vehicular traffic. SINAK Lithium Cure treated surfaces are compatible with paint and striping, cementitious toppings, caulking, crack repair, topically applied systems, etc. Lithium Cure never requires re-application.

Areas to receive Lithium Cure must be clean of dirt, oil, and any other foreign matter. Concrete to be sealed must be a minimum of 14 days old and the surface must be completely dry. Lithium Cure can be applied at a temperature of 40 degrees F and rising. Do not apply to frozen substrates.

### RESULTS

As a result of using **Lithium Cure™** plastic shrinkage cracking will be mitigated and surface permeability reduced producing more durable pavements, bridge decks, and precast elements.

Research at Florida State University demonstrated that slabs treated with **Lithium Cure™** exhibited no plastic shrinkage cracks, even under magnification. There was also a noticeable decrease in warping compared to the untreated control slabs.

Field results from Arkansas Highway and Transportation Department showed that **Lithium Cure™** application on bridge decks greatly reduced shrinkage cracking compared to their standard curing methods using membrane cure followed by a 7-day wet cure.

**Lithium Cure™** is especially effective in preventing plastic shrinkage cracks in hot, windy, and low-humidity conditions such as those prevailing in a 2.5-mile major concrete paving project in Honolulu, Hawaii. The Hawaii DOT reported that the application of **Lithium Cure™** during the paving operation prevented the development of plastic shrinkage cracking despite these severe conditions.

### LITHIUM CURE™ AS A FINISHING AID

Both the Hawaii and Arkansas DOT projects demonstrate that the use of **Lithium Cure™** as a finishing aid during floating or screeding of the pavement surface speeds up placement. It also improves quality of the surface finishing without resorting to the use of water.

Contractors in both projects were very pleased with the use of **Lithium Cure™** as



a finishing aid. They indicated that its use prevented surface blemishes and streaks normally caused by sticky concrete surfaces, which improved workers' productivity and quality of the finish.

## TESTING

ASTM C-39			
Compressive Strength PSI			
	Water Cure	Lithium Cure™	Lithium Cure%
7 Days	7252	7445	102.7%
28 Days	8726	8992	103.0%

ASTM C 1202-94/AASHTO T 277			
Rapid Chloride Permeability Test (28 Days)			
Total Charge Passed (Coulombs)			
	Water Cure	Lithium Cure™	
Sample 1	3999	2988	
Sample 2	4027	2914	
Sample 3	3981	3012	
<b>Average</b>	<b>4002</b>	<b>2971</b>	

**26% Improvement Over Water-Cure**

BS 1881: Part 5			
Initial Surface Absorption ml/m <sup>2</sup> /sec (After 10 Minutes)			
	Water Cure	Lithium Cure	
Sample 1	.11	.10	
Sample 2	.12	.10	
Sample 3	.11	.10	
<b>Average</b>	<b>.11</b>	<b>.10</b>	

**9% Improvement Over Water-Cure**

## LONG TERM BENEFITS

By eliminating surface cracks and decreasing the permeability and sorptivity of the concrete, **Lithium Cure™** improves the durability of bridge decks and pavements. It is very effective in protecting the concrete from adverse effects of deicing salts, freeze-thaw conditions, and seawater environments.

## APPLICATION GUIDE

### Bridge Decks and Pavements

**Lithium Cure™** is applied in conjunction with paving slip-form and bridge deck paving equipment.

Once final finishing, texturing, and/or tining has been completed, apply **Lithium Cure™** as final cure in one spray application until the surface appears shiny.

Typical application rates range between 200-300 square feet per gallon.

### Vertical Cast-in-Place Concrete

Immediately after concrete placement, apply **Lithium Cure™** to all exposed concrete at a rate of approximately 200-300 square feet per gallon in one spray coat. Upon removal of form work, apply **Lithium Cure™** to the freshly exposed concrete surfaces at a rate of 250-350 square feet per gallon in two coats.

### Protective Surface Treatment

The Lithium Cure shall be applied by spraying to obtain uniform coverage at the specified rate. All areas shall receive two applications of the Lithium Cure spray treatment. The first application shall be at a rate of 1 gallon per 33 square yards (1 gallon per 300 square feet) and the second application at the rate of 1 gallon of the mixture per 33 square yards (1 gallon per 300 square feet).

*Clean all equipment by rinsing with water*

## STORAGE AND HANDLING

Store in cool dry area out of direct sunlight. Must be kept in tightly secured containers to prevent evaporation and contamination.

**Lithium Cure™** MUST be protected from freezing. Product that has frozen will not function as intended, and should be discarded.

**Lithium Cure™** has no other shelf life limitations.

## AVAILABILITY

**Lithium Cure™** is available in 5-gallon plastic pails, 55-gallon drums and 275-gallon biodegradable totes from selected distributors. Contact SINAK Corporation for details.

**Lithium Cure™** is a clear solution. However, it is available in white or other colors by special order.

## MAINTENANCE

After application, no special maintenance is required.

## TECHNICAL ASSISTANCE

Technical assistance is available from manufacturer and from trained field representatives.

## LIMITED WARRANTY

**SINAK Corporation warrants its products to be of the highest quality. Since application of the product is a crucial factor in obtaining satisfactory results, and is beyond the control of SINAK Corporation, refund of purchase price or replacement of product shall constitute the limit of SINAK Corporation's liability. SINAK Corporation makes no other warranties, express or implied, with respect to the products or any service and disclaims all other warranties, including any warranty of merchantability and fitness for a particular purpose. This limited warranty may not be modified by representatives of SINAK Corporation, its distributors or dealers.**

