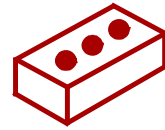




# PALLET CARD PROGRAM LABORATORY REPORT



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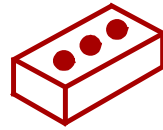
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PROSOCO, Inc.

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## ATTACHMENTS

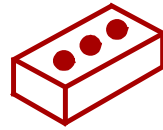
Technical Services TECH Note RILEM Test Method No. II.4

Product Data literature for all products evaluated

Material Safety Data Sheets for all products evaluated



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**FOR:** Barry Lee  
Lee Brick & Block  
Cc: Mark Williams  
Steve Dean  
Paul Tessier

**SUBJECT:** Lee Brick & Block  
Bardstown, KY

**DATE:** November 14, 2000

**PROJECT:** 9912-11 PC

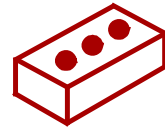
**SAMPLES SUBMITTED:** Three sleeves with six bricks in each sleeve.

<u>Block</u>	<u>Color</u>	<u>Size</u>
(A) "Lexington" Concrete Brick	Brown/Gray	3" x 4" x 8"
(B) "Cardinal" Concrete Brick	Red	3" x 4" x 8"
(C) "Oakwood" Concrete Brick	Brown	3" x 4" x 8"

**Submitted by:** Mark Williams  
S.M.I.  
2005 N. Park Central Ave.  
Nicholasville, KY 40356



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## PURPOSE OF TESTING:

The submitted custom masonry units (or CMUs), included three integrally colored concrete bricks. All bricks were submitted for testing to determine the effectiveness of PROSOCO's new construction cleaning and water repellent products.

**A. Cleaning Integrally Colored CMUs-** Integrally colored CMUs frequently have high amounts of pigments concentrated on the surface of the cured concrete unit. Variation of surface pigment concentrations from one CMU to the next creates a blotchy appearance in the completed wall. Allowed to remain on the surface of the CMU, the weakly bound pigment will weather and streak, further detracting from the appearance of the completed CMU wall.

To simulate new construction soiling, all CMUs are placed on a bench with finished surface facing upward. Hollow cylinders measuring 50 mm in diameter and 75 mm tall are positioned on top of each CMU and filled with a wet mixture of Type S cementitious mortar. The wet, mortar-filled cylinder is allowed to remain in contact with the CMU for 10 minutes before removal.

Soiled CMUs are allowed to dry before test cleaning.

Heavy deposits of mortar are removed with dry scraping. Prepared cleaning solutions are then evaluated for their effectiveness in removing residual mortar staining after 7 days and 14 days of curing.

In addition to removing excess mortar and construction related soiling, the goal of any cleaning operation undertaken on integrally colored CMU should include removal of unnaturally high concentrations of surface pigment. By revealing the natural through-body color of the integrally colored unit, the overall color uniformity and weathering resistance of the completed CMU wall is improved.

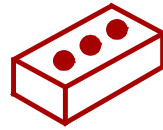
Sure Klean<sup>®</sup> Custom Masonry Cleaner was tested at various dilutions, to clean the CMUs.

**B. Adverse Effects-** Sure Klean<sup>®</sup> Custom Masonry Cleaner was tested at various dilutions to determine if they would produce any adverse effects during the cleaning process. Adverse effects were evaluated visually, looking for discoloration or erosion/etching of the masonry unit.

**C. Protective Water Repellents-** Sure Klean<sup>®</sup> Weather Seal Siloxane WB Concentrate, Sure Klean<sup>®</sup> Weather Seal Siloxane PD and Sure Klean<sup>®</sup> Custom Masonry Sealer were evaluated on the concrete bricks for their ability to provide water repellency to the submitted samples.



# PALLET CARD PROGRAM LABORATORY REPORT



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## CLEANING PRODUCTS EVALUATED

SAMPLE	Custom Masonry Cleaner
All Submitted Concrete Brick	1:2
	1:4
	1:6

## ADVERSE EFFECTS PRODUCTS EVALUATED

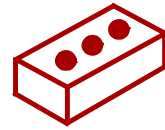
SAMPLE	Custom Masonry Cleaner
All Submitted Concrete Brick	1:2
	1:4
	1:6

## WATER REPELLENT PRODUCTS EVALUATED

SAMPLE	Custom Masonry Sealer	Siloxane WB Concentrate	Siloxane WB Concentrate	Siloxane PD
All Submitted Concrete Bricks	Concentrate	1:9	1:14	Concentrate



# PALLET CARD PROGRAM LABORATORY REPORT



## SECTION A – CLEANING INTEGRALLY COLORED CMUs

### DESCRIPTION OF PRODUCTS EVALUATED

These cleaning trials were conducted to determine the optimal cleaning/cure time combination.

**Sure Klean® Custom Masonry Cleaner** – A general purpose, concentrated acidic cleaner for most custom masonry and colored concrete. Removes concrete splashes, excess mortar, mud, heavy efflorescence and surface soiling, leaving the masonry clean and uniform with no acid burning or streaking. Liquid concentrate for dilution with 2-6 parts water. Apply by brush or low-pressure spray.

### TEST METHOD – Cleaning

**Mortar Staining** - In an effort to simulate job site mortar staining, smears of Type S mortar were applied to the face of each concrete masonry unit. Following initial 24-hour cure, heavy globs of mortar were knocked off. The remaining smear was allowed to cure for 7 days and 14 days. Cleaning trials were then conducted to determine the effectiveness of various product dilutions at removing the mortar smears.

Dilution ratios refer to mixtures of parts concentrated cleaner : parts fresh water. Chemical cleaners were evaluated using the following procedure:

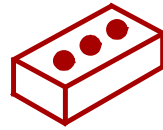
1. Prewet the surface with water.
2. Apply the cleaner.
3. Allow the appropriate dwell time, as specified.  
     Custom Masonry Cleaner (1:2, 1:4, 1:6).....3 minutes
4. Pressure rinse thoroughly.

### Test Results - Cleaning

SAMPLE	Cleaner	Dilution	Cure	Effectiveness
All Submitted Concrete Brick	Custom Masonry Cleaner	1:2	7 Day	100%
			14 Day	99%
		1:4	7 Day	100%
			14 Day	99%
		1:6	7 Day	100%
			14 Day	99%



# PALLET CARD PROGRAM LABORATORY REPORT

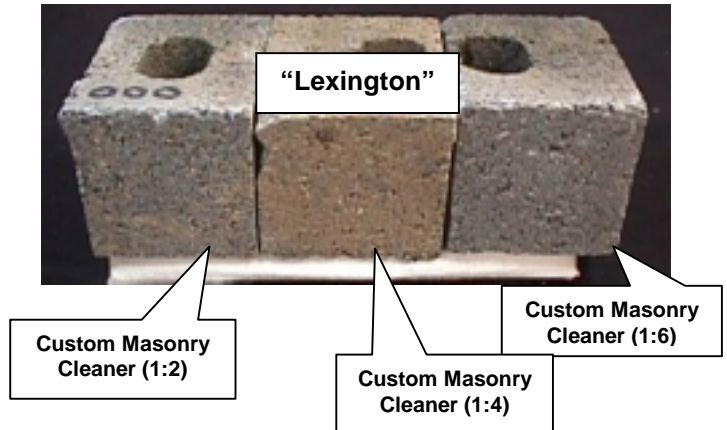


## BEFORE & AFTER CLEANING 7 Day

Before



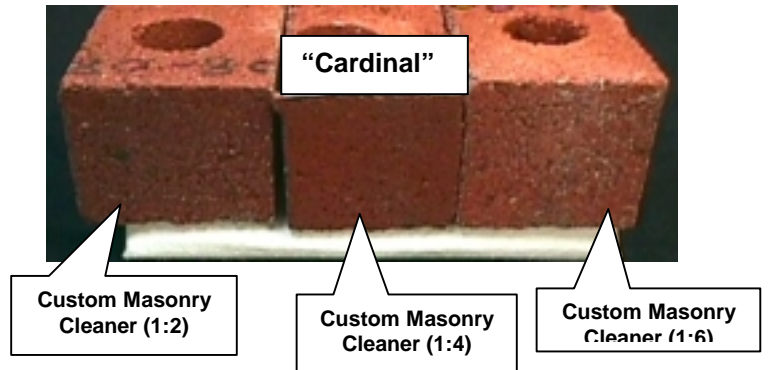
After



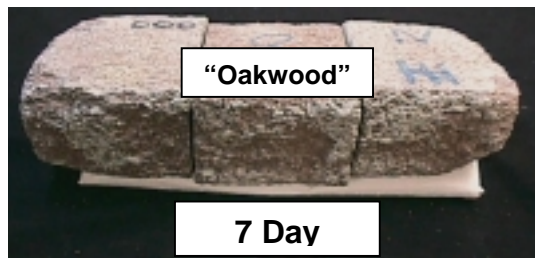
Before



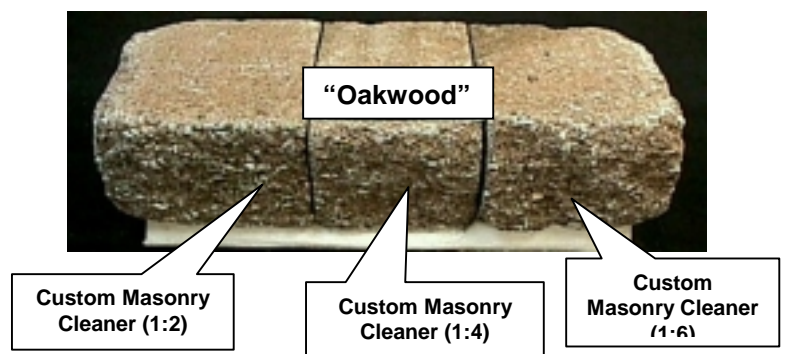
After



Before

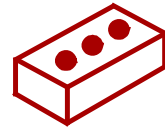


After





# PALLET CARD PROGRAM LABORATORY REPORT



PROSOCO, Inc.

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## CONCLUSIONS - Cleaning:

Based on the test data, several conclusions can be made about the use of PROSOCO, Inc.'s products on the submitted integrally colored concrete bricks. In terms of cleaners, all dilutions of Sure Klean<sup>®</sup> Custom Masonry Cleaner tested affected the substrate in a similar manner, removing heavy concentrations of pigmented matrix from the brick face, exposing small and large aggregate, and enhancing the natural appearance of the integrally colored concrete masonry unit.

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## RECOMMENDED PRODUCTS AND DILUTIONS - CLEANING:

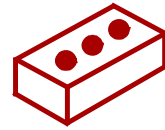
Based on these evaluations, Sure Klean<sup>®</sup> Custom Masonry Cleaner in 1:2 and 1:4 dilutions with a 3-minute dwell time can be recommended for job site testing. They are effective in removing excess mortar, and they assist in improving the color and uniformity of the concrete bricks. The most appropriate cleaner and dilution should be determined on the specific job-site, and will be dependent primarily on the nature and severity of soiling present at that location.

Note: If it is desirable to remove excess mortar while minimizing aggregate exposure and color enhancement of the integrally colored concrete bricks, clean within 3-7 days of completion using Custom Masonry Cleaner diluted with 4 parts fresh water.





# PALLET CARD PROGRAM LABORATORY REPORT



## **SECTION B - ADVERSE EFFECTS:**

### **DESCRIPTION OF PRODUCTS EVALUATED - Adverse Effects:**

**Sure Klean® Custom Masonry Cleaner** – A general purpose, concentrated acidic cleaner for most custom masonry and colored concrete. Removes concrete splashes, excess mortar, mud, heavy efflorescence and surface soiling, leaving the masonry clean and uniform with no acid burning or streaking. Liquid concentrate for dilution with 2-6 parts water. Apply by brush or low-pressure spray.

### **TEST METHOD - Adverse Effects:**

Dilution ratios refer to mixtures of concentrated cleaner : fresh water.

Sure Klean® Custom Masonry Cleaner was evaluated at dilutions 1:2, 1:4, and 1:6. The following procedure was used:

1. Prewet the surface with water.
2. Apply each cleaner at the appropriate dilutions.
3. Allow for appropriate exposure time:  
    Custom Masonry Cleaner.....3 minutes
4. Reapply the products and moderately agitate with a brush.
5. Pressure rinse thoroughly.\*
6. Allow the surface to dry for at least 18 hours and visually examine.

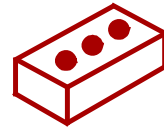
\* Pressure rinsing was conducted at approximately 800 psi with a warm water flow rate of 1.9 gallons per minute.

### **TEST RESULTS - Adverse Effects Evaluation:**

<b>SAMPLE</b>	<b>Cleaner</b>	<b>Adverse Effects</b>
<b>All Submitted Concrete Brick</b>	<b>Custom Masonry Cleaner (1:2)</b>	<b>Moderate exposure of aggregate/ Darkening of matrix</b>
	<b>Custom Masonry Cleaner (1:4)</b>	<b>Slight exposure of aggregate/ Darkening of matrix</b>
	<b>Custom Masonry Cleaner (1:8)</b>	<b>Very slight exposure of aggregate/ Darkening of matrix</b>



# PALLET CARD PROGRAM LABORATORY REPORT



PROSOCO, Inc.

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## **SECTION C - PROTECTIVE WATER REPELLENTS:**

The testing described below evaluates the suitability of water repellent treatments.

The surface treatments evaluated were selected for their suitability for application based on the following selection criteria:

1. Weatherproofing properties
2. Color change
3. Ease of application

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### **DESCRIPTIONS OF PRODUCTS EVALUATED - Protective Water Repellents:**

**Sure Klean<sup>®</sup> Custom Masonry Sealer** - A clear, solvent-based silicone elastomer formulated to weatherproof custom masonry units, cast stone, and concrete block without altering the natural appearance. Custom Masonry Sealer penetrates and fills pores to prevent water penetration through exterior walls exposed to normal weathering as well as long-lasting protection against many types of graffiti.

**Sure Klean<sup>®</sup> Weather Seal Siloxane PD** - A low odor, alkaline stable, water-based blend of silanes and oligomeric alkoxy siloxanes. Weather Seal Siloxane PD is supplied pre-diluted and is designed for use on concrete and clay masonry surfaces. Weather Seal Siloxane PD penetrates more deeply than conventional water or solvent-based water repellents.

**Sure Klean<sup>®</sup> Weather Seal Siloxane WB Concentrate** - A self-emulsifying water repellent concentrate designed for dilution with fresh water at the job site. This solvent-free blend of silanes and oligomeric alkoxy siloxanes mixes easily with water to produce a penetrating water repellent which is ideal for application to either dense or porous masonry surfaces.

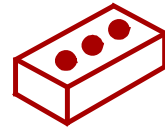
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### **SAMPLE PREPARATION - Protective Water Repellents:**

The submitted concrete bricks were each cut into three parts for adequate use of substrate and for ease of handling. The samples were then allowed to dry and to reabsorb atmospheric humidity for 24 hours prior to treatment. The treatment method consisted of a wet-on-wet application. All treatments were allowed to cure for 2 weeks prior to testing.



# PALLET CARD PROGRAM LABORATORY REPORT



## TEST METHODS - Protective Water Repellents:

### Water Absorption Tube Test: RILEM II.4, 60mph, 20 minutes

The water absorption tube test simulating wind driven and wind blown rain conditions was also performed. The water absorption tube produces a 60 mph dynamic wind pressure.

### Water Absorption: ASTM C 67, Immersion

Water absorption was determined by comparing the dry weight of the sample with its weight after immersion in water at 10-minute, 30-minute, 60-minute and 24-hour intervals. See ASTM C 67 for additional information.

Reduced water absorption values – reported as effectiveness – measure the effectiveness of selected treatments in protecting samples from water penetration and water related decay mechanisms. Generally a reduction of approximately 80% is required to provide resistance to water intrusion under normal exposure conditions.

## TEST RESULTS - Protective Water Repellents:

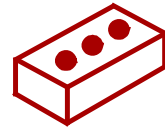
### Water Absorption Tube Test: RILEM II.4, 60mph, 20 Minutes

#### Results

<b>(A) "Lexington" Concrete Brick</b>	
Untreated Control	<40mph
Custom Masonry Sealer	60 mph
Siloxane WB (1:9)	60 mph
Siloxane WB (1:14)	60 mph
<b>(B) "Cardinal" Concrete Brick</b>	
Untreated Control	<40 mph
Custom Masonry Sealer	60 mph
Siloxane WB (1:9)	60 mph
Siloxane WB (1:14)	60 mph
<b>(C) "Oakwood" Concrete Brick</b>	
Untreated Control	<40 mph
Custom Masonry Sealer	60 mph
Siloxane WB (1:9)	60 mph
Siloxane WB (1:14)	60 mph



# PALLET CARD PROGRAM LABORATORY REPORT



PROSOCO, Inc.

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## TEST RESULTS - Protective Water Repellents:

### Water Absorption: ASTM C 67, Immersion

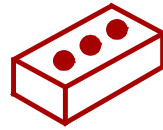
<b>"Lexington" Concrete Brick</b>	<b>% Absorption</b>	<b>% Effectiveness</b>
Untreated Control	7.00	0.0
Custom Masonry Sealer	1.54	78.0
Siloxane WB (1:9)	0.89	87.3
Siloxane WB (1:14)	1.48	78.8
Siloxane PD	1.06	84.8
<b>"Cardinal" Concrete Brick</b>	<b>% Absorption</b>	<b>% Effectiveness</b>
Untreated Control	6.62	0.0
Custom Masonry Sealer	0.89	86.5
Siloxane WB (1:9)	1.02	84.6
Siloxane WB (1:14)	0.80	87.9
Siloxane PD	1.02	84.7
<b>"Oakwood" Concrete Brick</b>	<b>% Absorption</b>	<b>% Effectiveness</b>
Untreated Control	4.10	0.0
Custom Masonry Sealer	1.01	75.3
Siloxane WB (1:9)	0.70	83.0
Siloxane WB (1:14)	1.00	75.6
Siloxane PD	0.65	84.0

## CONCLUSIONS - Protective Water Repellents:

Based upon laboratory evaluations, all of the submitted concrete bricks exhibited above average water repellency when treated with Sure Klean<sup>®</sup> Siloxane WB Concentrate at a dilution of 1:9 and Sure Klean<sup>®</sup> Weather Seal Siloxane PD.



# PALLET CARD PROGRAM LABORATORY REPORT



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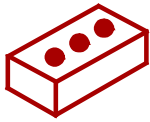
## RECOMMENDATIONS - Protective Water Repellents:

Based on laboratory evaluations, both Weather Seal Siloxane WB Concentrate (1:9), and Sure Klean<sup>®</sup> Siloxane PD can be recommended for job-site testing to determine the most appropriate water repellents for all three concrete brick types submitted.

Apply all products in accordance with the manufacturer's recommendation provided on container labels and product data sheets. On-site testing should be conducted to determine the most appropriate water repellent product and procedures for a particular project. See product literature for additional application and product information.

Carmen M. Hupp  
Technical Services Analyst

CMH/csm



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***Laboratory Report***

**Pallet Card Program**

**Lee Brick & Block  
Bardstown, KY**

***Project No. 9912-11 PC***

***Prepared For:***

**Barry Lee  
Lee Brick & Block  
Box 646  
Hopkinsville, KY 42241**

***Prepared By:***



***PROSOCO, Inc.  
November 2000***