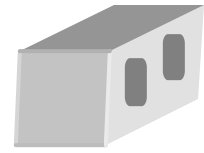




# PALLET TAG PROGRAM LABORATORY REPORT



**PROSOCO, Inc.**

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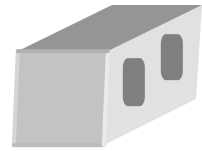
## ATTACHMENTS

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

Product Data literature for all products evaluated



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**FOR:** David Lee, Lee Brick and Block  
**cc:** Ben Bates  
James Holt  
Steve Dean  
Paul Tessier

**SUBJECT:** Lee Brick & Block  
South Frankfort, KY

**DATE:** April 16, 2002

**PROJECT:** 0203-03 PTP

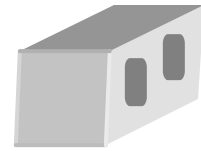
**SAMPLES SUBMITTED:** Three different colors of split-face CMU faces.

<u>Sample</u>	<u>Color</u>	<u>Size</u>
(3) Split-face CMU faces	"Charcoal"	8" x 16" x 2"
(3) Split-face CMU faces	"Buff"	8" x 16" x 2"
(3) Split-face CMU faces	"Pecan"	8" x 16" x 2"

**Submitted by:** Ben Bates  
Specialty Materials, Inc.  
P. O. Box 22856  
Lexington, KY 40522



# PALLET TAG PROGRAM LABORATORY REPORT



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## PURPOSE OF TESTING:

Three different integrally colored split-face CMU faces with large, small and fine aggregate were submitted for testing using PROSOCO, Inc.'s new construction cleaning and water repellent products.

**A. Cleaning Concrete Masonry Units:** Sure Klean<sup>®</sup> Custom Masonry Cleaner and Sure Klean<sup>®</sup> Burnished Custom Masonry Cleaner were tested at various dilutions for removal of laboratory applied mortar from the CMUs.

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 Ash Grove<sup>®</sup> 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 after 24 hours. Prepared cleaning solutions are then evaluated for their effectiveness in removing residual Ash Grove<sup>®</sup> Type S mortar staining after 3 days, 7 days, and 14 days of curing.

Refer to “\*Note: When cleaning integrally colored CMU” in the following section, “Color Uniformity Testing.”

**B. Surface Alterations Testing** - Sure Klean<sup>®</sup> Custom Masonry Cleaner and Sure Klean<sup>®</sup> Burnished Custom Masonry Cleaner were tested at various dilutions to determine if a cleaning program implemented to remove excess mortar and related new construction soiling would otherwise alter the appearance of cleaned surfaces. Surface alterations were evaluated visually based upon perceived discoloration or erosion/etching of the masonry unit.

Aggregate Exposure is the visual examination of the CMU comparing aggregate exposure of the untreated control surface to surfaces cleaned with selected product(s) at given dilutions.

Surface Pigment Alteration/Removal\* is the visual examination of the CMU comparing the surface pigmentation of the untreated control to surfaces cleaned with selected product(s) at given dilutions.

Matrix Erosion is the visual examination comparing the untreated control surface to surfaces cleaned with selected products at given dilutions looking for any potential erosion/digestion of the cementitious matrix of the CMU.

Staining is the visual examination for changes that are the result of a chemical reaction that leaves a staining precipitate.

The following is the scale used for reporting results of all categories:

0 – no change	3 – heavy
1 – slight	4 – excessive
2 – moderate	

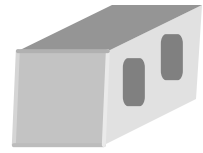
### \* NOTE: When cleaning integrally colored CMU.

Integrally colored concrete masonry units (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.

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 on the integrally colored unit, the overall color uniformity and weathering resistance of the completed CMU wall is improved.



# PALLET TAG PROGRAM LABORATORY REPORT



PROSOCO, Inc.

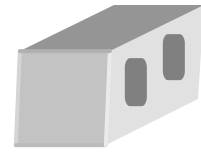
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**C. Protective Water Repellents** - Sure Klean<sup>®</sup> Custom Masonry Sealer and Sure Klean<sup>®</sup> Weather Seal Siloxane WB Concentrate were evaluated for their ability to provide water repellency to the submitted samples.



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## PRODUCTS EVALUATED FOR CLEANING AND SURFACE ALTERATIONS

Block Type	Product	Dilution
All colors of split-face CMUs	Sure Klean <sup>®</sup> Custom Masonry Cleaner	1:2, 1:4, 1:6
	Sure Klean <sup>®</sup> Burnished Custom Masonry Cleaner	1:2, 1:3

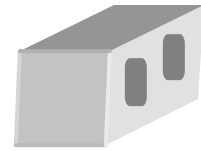
## WATER REPELLENT PRODUCTS EVALUATED

Block Type	Product	Dilution
All colors of split-face CMUs	Sure Klean <sup>®</sup> Custom Masonry Sealer	Concentrate
	Sure Klean <sup>®</sup> Weather Seal Siloxane WB Concentrate	1:9

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



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## 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.

**Sure Klean® Burnished Custom Masonry Cleaner** – A general purpose, non-etching acidic cleaner removes rust, mud, oil, atmospheric dirt, mortar smears and other stains without altering the surface texture. Liquid concentrate for dilution with 2-3 parts water. Apply by brush or low-pressure spray.

### TEST METHOD – Cleaning

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

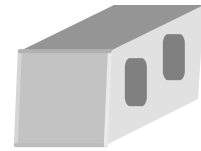
1. Prewet the surface with water.
2. Apply the cleaner.
3. Allow appropriate dwell time, as specified.
 

Custom Masonry Cleaner.....	3 minutes
Burnished Custom Masonry Cleaner.....	5 minutes
4. Pressure rinse thoroughly.\*

\* Pressure rinsing was conducted at approximately 1300 psi with a warm water flow rate of 1.9 gallons per minute.



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## TEST RESULTS - Cleaning

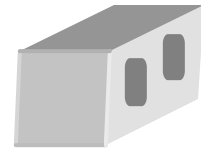
Block Type	Cleaner	Dilution	Cure	% Effectiveness
"Buff" split-face CMUs	Sure Klean® Custom Masonry Cleaner	1:2	3 day	100%
		1:4		100%
		1:6		100%
		1:2	7 day	100%
		1:4		100%
		1:6		100%
		1:2	14 day	100%
		1:4		100%
		1:6		100%

Block Type	Cleaner	Dilution	Cure	% Effectiveness
"Pecan" split-face CMUs	Sure Klean® Custom Masonry Cleaner	1:2	3 day	100%
		1:4		100%
		1:6		100%
		1:2	7 day	100%
		1:4		100%
		1:6		99%
		1:2	14 day	100%
		1:4		98%
		1:6		98%

Block Type	Cleaner	Dilution	Cure	% Effectiveness
"Charcoal" split-face CMUs	Sure Klean® Custom Masonry Cleaner	1:2	3 day	100%
		1:4		100%
		1:6		100%
		1:2	7 day	100%
		1:4		100%
		1:6		100%
		1:2	14 day	99%
		1:4		98%
		1:6		95%



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## TEST RESULTS – Cleaning Continued

Block Type	Cleaner	Dilution	Cure	% Effectiveness
"Buff" split-face CMUs	Sure Klean® Burnished Custom Masonry Cleaner	1:2	3 day	98%
		1:3		98%
		1:2	7 day	98%
		1:3		98%
		1:2	14 day	98%
		1:3		98%

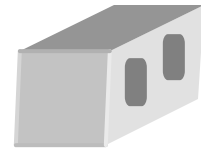
Block Type	Cleaner	Dilution	Cure	% Effectiveness
"Pecan" split-face CMUs	Sure Klean® Burnished Custom Masonry Cleaner	1:2	3 day	100%
		1:3		100%
		1:2	7 day	100%
		1:3		99%
		1:2	14 day	95%
		1:3		90%

Block Type	Cleaner	Dilution	Cure	% Effectiveness
"Charcoal" split-face CMUs	Sure Klean® Burnished Custom Masonry Cleaner	1:2	3 day	98%
		1:3		98%
		1:2	7 day	98%
		1:3		98%
		1:2	14 day	98%
		1:3		98%





# PALLET TAG PROGRAM LABORATORY REPORT



PROSOCO, Inc.

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## CONCLUSIONS - Cleaning

Based on the test data, most of the submitted block samples were efficiently cleaned with each dilution of the selected PROSOCO Inc.'s cleaning products. Sure Klean<sup>®</sup> Custom Masonry Cleaner was more effective at cleaning the samples than Sure Klean<sup>®</sup> Burnished Custom Masonry Cleaner. Use higher concentrations and surface agitation to maximize aggregate exposure. Use low concentration and surface agitation to minimize aggregate exposure.

All dilutions of Sure Klean<sup>®</sup> Custom Masonry Cleaner tested affected the substrate in a similar manner, removing slight to moderate concentrations of pigmented matrix from the split-face CMU faces, exposing small and large aggregate, and enhancing the natural appearance of the integrally colored concrete masonry unit.

All dilutions of Sure Klean<sup>®</sup> Burnished Custom Masonry Cleaner tested affected the substrate in a similar manner, removing slight concentrations of pigmented matrix from the split-face CMU faces, 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

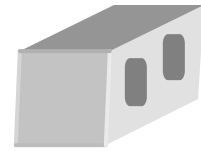
Recommendations for cleaning for each type CMU submitted by Lee Brick & Block, South Frankfort, KY, are provided in the chart below. Recommendations are based on the optimum dilution for complete removal of mortar while limiting surface alterations.

Block Type	New Construction Cleaning (Type S, 14 day cleaning)
"Charcoal" split-face CMU	Sure Klean <sup>®</sup> Custom Masonry Cleaner (1:2)
"Buff" split-face CMU	Sure Klean <sup>®</sup> Custom Masonry Cleaner (1:2)
"Pecan" split-face CMU	Sure Klean <sup>®</sup> Custom Masonry Cleaner (1:6)

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 cleaning product and procedures for a particular project. See product literature for additional application and product information.



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## SECTION B – SURFACE ALTERATIONS

### DESCRIPTION OF PRODUCTS EVALUATED – Surface Alterations

**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.

**Sure Klean® Burnished Custom Masonry Cleaner** – A general purpose, non-etching acidic cleaner removes rust, mud, oil, atmospheric dirt, mortar smears and other stains without altering the surface texture. Liquid concentrate for dilution with 2-3 parts water. Apply by brush or low-pressure spray.

### TEST METHOD – Surface Alterations Testing:

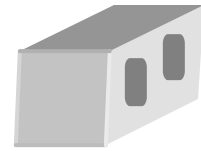
Dilution ratios refer to mixtures of parts concentrated cleaner : parts fresh water. Chemical cleaners were evaluated using the following procedure:

1. Prewet the surface with water.
2. Apply the cleaner.
3. Allow appropriate dwell time, as specified.
  - Custom Masonry Cleaner..... 3 minutes
  - Burnished Custom Masonry Cleaner..... 5 minutes
4. Pressure rinse thoroughly.\*

\* Pressure rinsing was conducted at approximately 1300 psi with a warm water flow rate of 1.9 gallons per minute.



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**TEST RESULTS – Surface Alterations**

<b>Substrate:</b> Split-face CMU		<b>Pigment Color:</b> “Charcoal”			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:2	1	1	1	0
Custom Masonry Cleaner	1:4	1	1	1	0
Custom Masonry Cleaner	1:6	1	1	1	0
Burnished Custom Masonry Cleaner	1:2	1	1	1	0
Burnished Custom Masonry Cleaner	1:3	1	1	1	0
<b>Substrate:</b> Split-face CMU		<b>Pigment Color:</b> “Buff”			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:2	1	1	1	0
Custom Masonry Cleaner	1:4	1	1	1	0
Custom Masonry Cleaner	1:6	1	1	1	0
Burnished Custom Masonry Cleaner	1:2	1	1	1	0
Burnished Custom Masonry Cleaner	1:3	1	1	1	0
<b>Substrate:</b> Split-face CMU		<b>Pigment Color:</b> “Pecan”			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:2	1	2	1	0
Custom Masonry Cleaner	1:4	1	1	1	0
Custom Masonry Cleaner	1:6	1	1	1	0
Burnished Custom Masonry Cleaner	1:2	1	1	1	0
Burnished Custom Masonry Cleaner	1:3	1	1	1	0

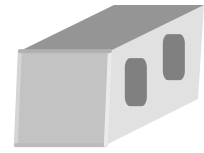
Scale used for reporting results of all categories

0 – no change  
1 – slight  
2 – moderate

3 – heavy  
4 – excessive



# PALLET TAG PROGRAM LABORATORY REPORT

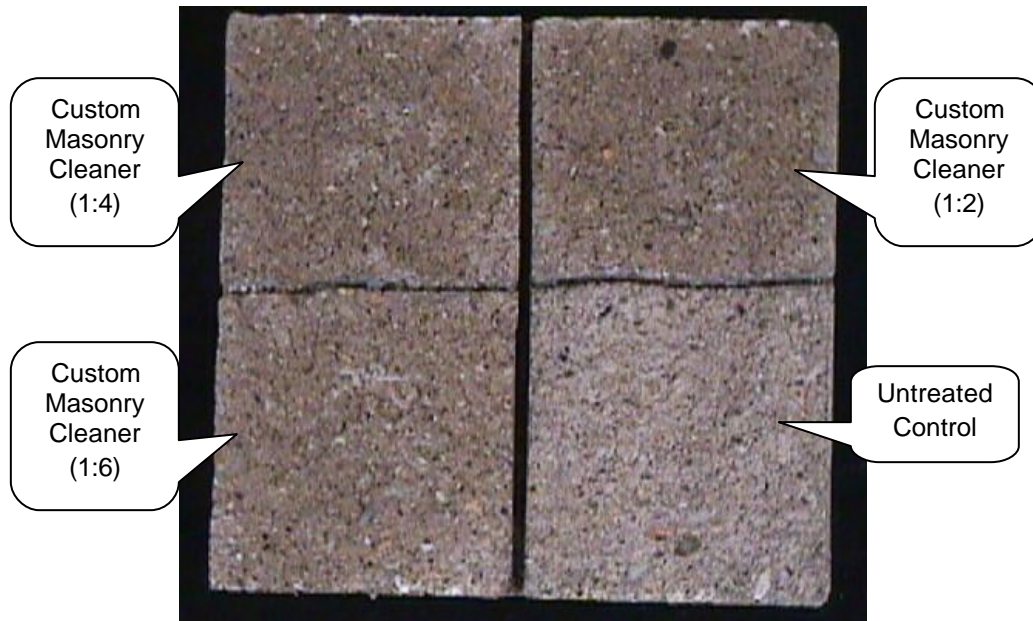


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## PHOTOGRAPHS – Surface Alterations

“Pecan” after 14 day cleaning

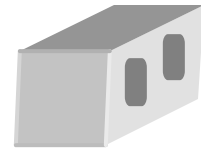


“Pecan” after 14 day cleaning





# PALLET TAG PROGRAM LABORATORY REPORT



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## CONCLUSIONS – Surface Alterations

All dilutions of Sure Klean® Custom Masonry Cleaner tested affected the substrate in a similar manner, removing slight to moderate concentrations of pigmented matrix from the split-face CMU faces, exposing small and large aggregate, and enhancing the natural appearance of the integrally colored concrete masonry unit.

All dilutions of Sure Klean® Burnished Custom Masonry Cleaner tested affected the substrate in a similar manner, removing slight concentrations of pigmented matrix from the split-face CMU faces, exposing small and large aggregate, and enhancing the natural appearance of the integrally colored concrete masonry unit.

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## RECOMMENDATIONS – Surface Alterations

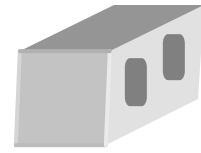
Recommendations for cleaning for each type CMU submitted by Lee Brick & Block, South Frankfort, KY, are provided in the chart below. Recommendations are based on the optimum dilution for complete removal of mortar while limiting surface alterations.

Block Type	Surface Alterations
“Charcoal” split-face CMU	Sure Klean® Custom Masonry Cleaner (1:2)
“Buff” split-face CMU	Sure Klean® Custom Masonry Cleaner (1:2)
“Pecan” split-face CMU	Sure Klean® Custom Masonry Cleaner (1:6)

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 cleaning product and procedures for a particular project. See product literature for additional application and product information.



# PALLET TAG PROGRAM LABORATORY REPORT



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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

---

## 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 WB Concentrate** – A self-emulsifying water repellent concentrate designed for dilution with fresh water at the jobsite. This solvent-free blend of silanes and oligomeric alkoxysiloxanes mixes easily with water to produce a penetrating water repellent ideal for application to dense or porous masonry surfaces.

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## SAMPLE PREPARATION - Protective Water Repellents:

The submitted blocks were scored, allowed to dry, and to reabsorb atmospheric humidity for 24 hours prior to treatment. The treatment method consisted of a wet-on-wet brush application. All treatments were allowed to cure at least three days prior to testing.

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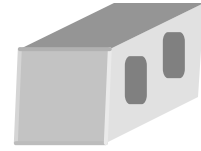
## TEST METHODS - Protective Water Repellents:

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

The water absorption tube test simulating wind driven rain conditions was performed. This test simulates 60 mile per hour wind driven rain conditions for a period of 20 minutes.



# PALLET TAG PROGRAM LABORATORY REPORT



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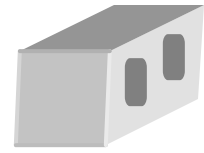
**TEST RESULTS - Protective Water Repellents:**

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

	RESULTS
<b>“Charcoal”</b>	
Untreated Control	< 40 mph
Custom Masonry Sealer	56 mph
Siloxane WB Concentrate (1:9)	56 mph
<b>“Buff”</b>	
Untreated Control	< 40 mph
Custom Masonry Sealer	54 mph
Siloxane WB Concentrate (1:9)	56 mph
<b>“Pecan”</b>	
Untreated Control	< 40 mph
Custom Masonry Sealer	59 mph
Siloxane WB Concentrate (1:9)	55 mph



# PALLET TAG PROGRAM LABORATORY REPORT



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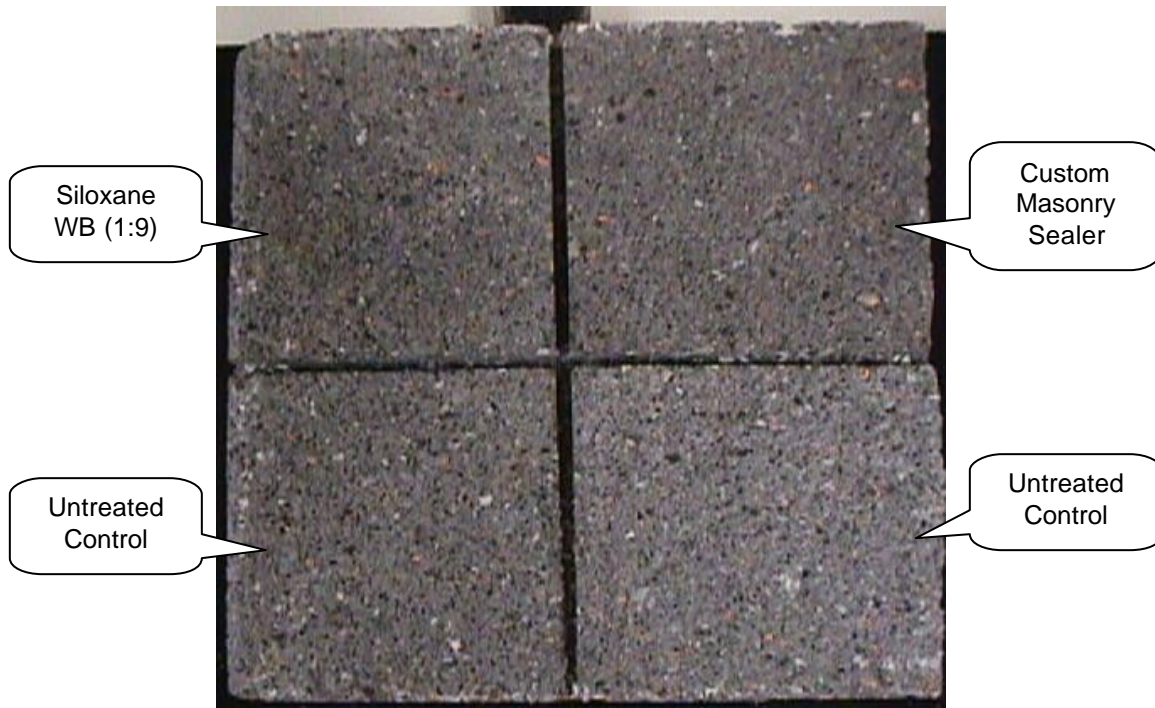
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## PHOTOGRAPHS – Protective Water Repellents

“Pecan” after water repellency



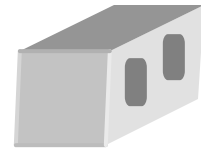
“Charcoal” after water repellency







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## CONCLUSIONS – Protective Water Repellents

Based upon laboratory evaluations, Sure Klean<sup>®</sup> Custom Masonry Sealer and Sure Klean<sup>®</sup> Weather Seal Siloxane WB Concentrate diluted with nine parts fresh water provided above average water repellency to all submitted samples. Sure Klean<sup>®</sup> Custom Masonry Sealer moderately enhanced the natural color of the split-face CMUs and Sure Klean<sup>®</sup> Weather Seal Siloxane WB Concentrate slightly enhanced the natural color of the split-face CMUs.

## RECOMMENDATIONS - Protective Water Repellents:

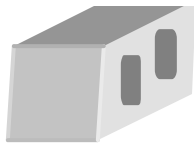
Recommendations for water repellency treatment for each type of CMU submitted by Lee Brick & Block, South Frankfort, KY, are provided in the chart below. Recommendations are based on the treatment that proved most effective and can provide water repellency on all types submitted if possible.

Block Type	Water Repellents
"Charcoal" split-face CMUs	Sure Klean <sup>®</sup> Weather Seal Siloxane WB Concentrate (1:9)
	Sure Klean <sup>®</sup> Custom Masonry Sealer
"Buff" split-face CMUs	Sure Klean <sup>®</sup> Weather Seal Siloxane WB Concentrate (1:9)
	Sure Klean <sup>®</sup> Custom Masonry Sealer
"Pecan" split-face CMUs	Sure Klean <sup>®</sup> Weather Seal Siloxane WB Concentrate (1:9)
	Sure Klean <sup>®</sup> Custom Masonry Sealer

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.

Lisa Toburen  
Assistant Laboratory Technician

LT/CMN



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***Laboratory Report***

**Pallet Tag Program Evaluation**

**Lee Brick & Block  
South Frankfort, KY 40601**

***Project No. 0203-03 PTP***

***Prepared For:***

**David Lee  
Lee Brick & Block  
2000 U.S. 127 South  
South Frankfort, KY 40601**

***Prepared By:***



***PROSOCO, Inc.  
April 2002***