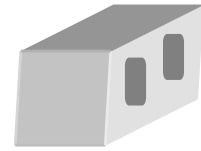




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**PROSOCO, Inc.**

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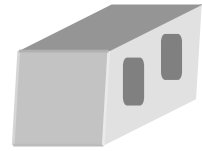
Technical Services TECH Note RILEM Test Method No. II.4

Product Data literature for all products evaluated

Material Safety Data Sheets for all products evaluated



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**FOR:** Steve Szoke

**cc:** Tom Yager  
John Bourne

**SUBJECT:** Oldcastle Alwine Block  
New Oxford, PA 17350

**DATE:** June 4, 2001

**PROJECT:** 0105-04 BP

**SAMPLES SUBMITTED:** 4 concrete brick faces (red w/black slurry)

**Block**  
"Quik-Brik"

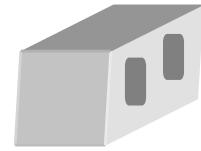
**Color**  
"Promenade"

**Size**  
7½" x 3 ½" x ¾"

**Submitted by:** Tom Yager



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## PURPOSE OF TESTING:

Four integrally red colored concrete brick with black slurry were submitted for testing using PROSOCO's new construction cleaning and water repellent products.

**A. Cleaning Concrete Masonry Units:** Sure Klean<sup>®</sup> Concrete Brick Cleaner\* was evaluated at various dilutions for removal of laboratory applied mortar.

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 7 days and 14 days of curing.

**B. Surface Alteration Testing** - Sure Klean<sup>®</sup> Concrete Brick Cleaner was 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 Alteration was 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.

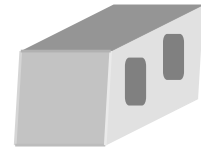
In addition to removing excess mortar and construction related soiling, the goal of any cleaning operation undertaken on integrally colored CMU should include removal of unnaturally high concentrations of surface pigment. By revealing the natural through-body color on the integrally colored unit, the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

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

\*In the original report, this product was called Sure Klean<sup>®</sup> Burnished Custom Masonry Cleaner. This report was revised when the product name was changed.



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## CLEANING PRODUCTS EVALUATED

SAMPLE	Concrete Brick Cleaner
"Promenade"	1:2
	1:3

## SURFACE ALTERATION PRODUCTS EVALUATED

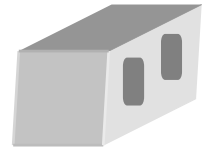
SAMPLE	Concrete Brick Cleaner
"Promenade"	1:2
	1:3

## WATER REPELLENT PRODUCTS EVALUATED

SAMPLE	Product	Dilution
"Promenade"	Custom Masonry Sealer	Concentrate
	Siloxane WB	1:9



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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® Concrete Brick Cleaner** – Removes common construction and atmospheric staining from concrete brick and other architectural concrete surfaces. This general-purpose, non-etching, acidic cleaner removes rust, mud, oil, atmospheric dirt, mortar smears and other stains without altering the surface texture. Concrete Brick Cleaner adds depth to colors and brightens white matrices and exposed aggregate.

### TEST METHOD – Cleaning

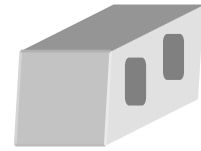
Dilution ratios refer to mixtures of parts concentrated cleaner : parts fresh water. Chemical cleaners were evaluated using the following procedure:

1. Prewet the surface with water.
2. Apply cleaner at the appropriate dilutions.
3. Allow appropriate exposure time.  
Concrete Brick Cleaner ..... 5 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 1300 psi with a warm water flow rate of 1.9 gallons per minute.



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## Test Results - Cleaning

Sample	Cleaner	Dilution	Cure	Effectiveness
"Promenade"	Concrete Brick Cleaner	1:2	7 day	100%
		1:3		100%
		1:2	14 day	100%
		1:3		100%

## CONCLUSIONS - Cleaning:

Based on the test data, "Promenade" concrete bricks were efficiently cleaned with each dilution of Sure Klean<sup>®</sup> Concrete Brick Cleaner. Use higher concentrations and surface agitation to maximize aggregate exposure. Use low concentration and surface agitation to minimize aggregate exposure.

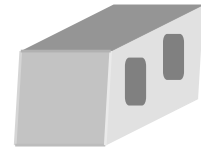
## RECOMMENDED PRODUCTS AND DILUTIONS - CLEANING:

Based on these evaluations, Sure Klean<sup>®</sup> Concrete Brick Cleaner diluted with three parts water can be recommended for job-site testing. It is effective in removing excess mortar, and slightly assists in improving the color and uniformity of these concrete blocks. 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: To remove excess mortar while minimizing aggregate exposure and color enhancement, clean within 7 days of completion using Sure Klean<sup>®</sup> Concrete Brick Cleaner diluted with 3 parts fresh water.



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## SECTION B – Surface Alterations:

### DESCRIPTION OF PRODUCTS EVALUATED – Surface Alterations:

**Sure Klean® Concrete Brick Cleaner** – Removes common construction and atmospheric staining from concrete brick and other architectural concrete surfaces. This general-purpose, non-etching, acidic cleaner removes rust, mud, oil, atmospheric dirt, mortar smears and other stains without altering the surface texture. Concrete Brick Cleaner adds depth to colors and brightens white matrices and exposed aggregate.

### TEST METHOD – Surface Alteration Testing:

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

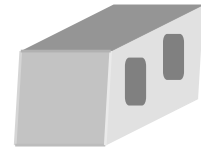
Sure Klean® Concrete Brick Cleaner evaluated at dilution 1:2 and 1:3. The following procedure was used:

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

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



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## Surface Alteration Results:

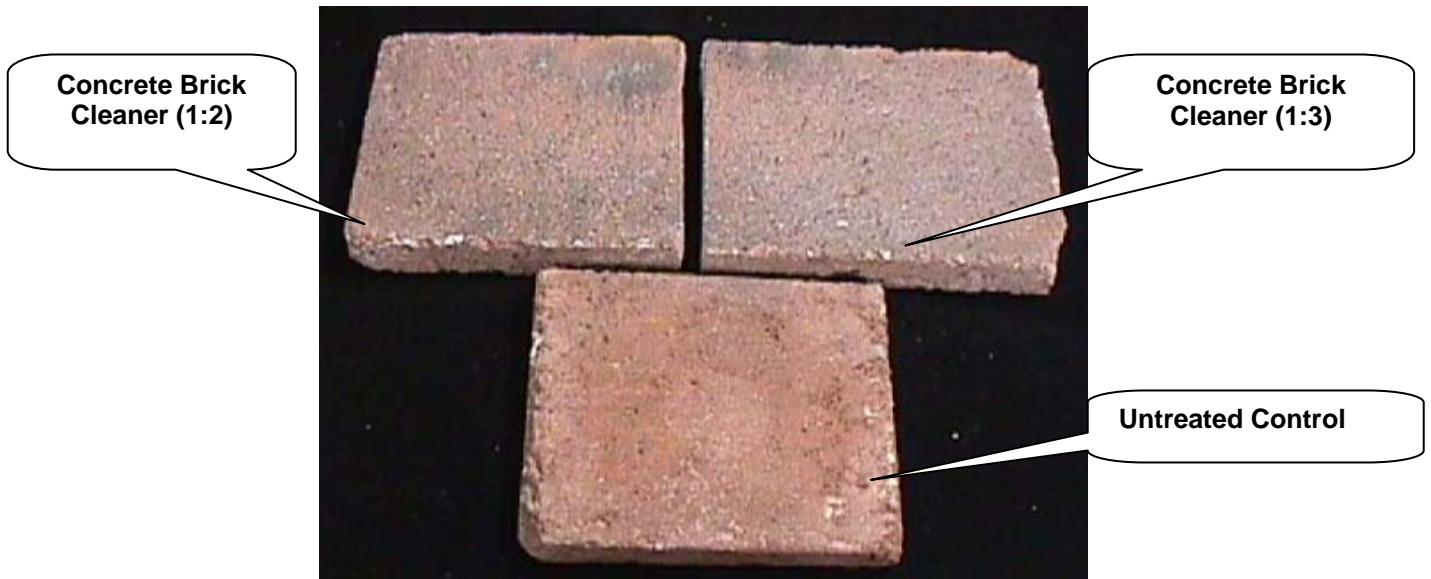
<b>Substrate: Concrete Brick</b>		<b>Pigment Color: "Promenade" 7 Days</b>			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Concrete Brick Cleaner	1:2	1	2	1	0
Concrete Brick Cleaner	1:3	1	1	1	0
<b>Substrate: Concrete Brick</b>		<b>Pigment Color: "Promenade" 14 Days</b>			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Concrete Brick Cleaner	1:2	1	1	1	0
Concrete Brick 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

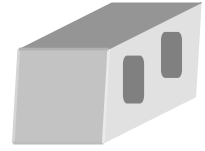
## Photos of "Promenade" After 14 Day Cleaning:







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## CONCLUSIONS-Surface Alterations:

Based upon laboratory evaluations, Sure Klean<sup>®</sup> Concrete Brick Cleaner diluted with 3 parts water produced the least amount of surface alterations. Use higher concentrations and surface agitation to maximize aggregate exposure. Use low concentration and surface agitation to minimize aggregate exposure.

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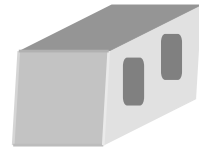
## RECOMMENDATIONS- Surface Alterations

Based on evaluations, Sure Klean<sup>®</sup> Concrete Brick Cleaner diluted with three parts water is recommended for job site testing on the submitted "Promenade" concrete brick samples submitted by Oldcastle Alwine Block, New Oxford, PA. The cleaner is effective in removing excess mortar and in improving the 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:** To remove excess mortar while minimizing aggregate exposure and color enhancement, clean within 7 days of completion using Sure Klean<sup>®</sup> Concrete Brick Cleaner diluted with 3 parts fresh water.



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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® 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® 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 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 72 hours prior to testing.

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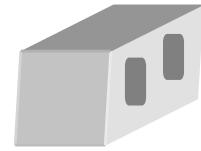
## **TEST METHODS - Protective Water Repellents:**

### **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.



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## TEST RESULTS - Protective Water Repellents:

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

RESULTS	
"Promenade"	
Untreated Control	< 40mph
Custom Masonry Sealer	60mph
Siloxane WB (1:9)	60mph

## CONCLUSIONS - Protective Water Repellents:

Based upon laboratory evaluations, Sure Klean® Custom Masonry Sealer and Sure Klean® Weather Seal Siloxane WB Concentrate diluted with nine parts water provided above average water repellency on the submitted "Promenade" concrete brick samples. Sure Klean® Custom Masonry Sealer was also found to enhance the appearance of the concrete brick samples.

## RECOMMENDATIONS - Protective Water Repellents:

Based on evaluations, Sure Klean® Custom Masonry Sealer and Sure Klean® Weather Seal Siloxane WB Concentrate diluted with nine parts fresh water can be recommended for jobsite testing on the "Promenade" concrete brick samples submitted by Oldcastle Alwine Block, New Oxford, PA.

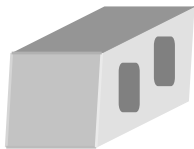
Apply all products in accordance with the manufacturer's recommendation provided on container labels and product data sheets. On-site testing should be conducted to determine the most appropriate water repellent product and procedures for a particular project. See product literature for additional application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

Donald M. Muathe

Donald M. Muathe

Technical Services Analyst

DMM/csm



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***Laboratory Report***

**Block Program Evaluation**

**Oldcastle Alwine Block  
New Oxford, PA 17350**

***Project No. 0105-04 BP***

***Prepared For:***

**Steve Szoke  
Oldcastle Alwine Block  
299 Brickyard Rd.  
New Oxford, PA 17350**

***Prepared By:***



***PROSOCO, Inc.  
June 2001***