



BLOCK PROGRAM LABORATORY REPORT

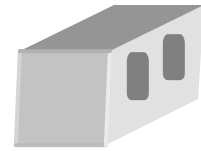
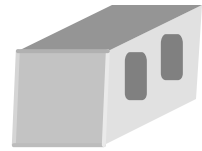


TABLE OF CONTENTS

SAMPLES SUBMITTED.....	3
PURPOSE OF TEST	4-5
PRODUCTS EVALUATED	6
SECTION A – CLEANING INTEGRALLY COLORED CMUs	
DESCRIPTION OF PRODUCTS EVALUATED	7
TEST METHOD.....	7
TEST RESULTS	8
CONCLUSIONS	8
RECOMMENDATIONS	8
SECTION B – SURFACE ALTERATIONS	
DESCRIPTION OF PRODUCTS EVALUATED	9
TEST METHOD.....	9
TEST RESULTS	10-12
PHOTOGRAPHS OF CMU BEFORE & AFTER SURFACE ALTERATION TESTING	13
SECTION C - PROTECTIVE WATER REPELLENTS	
DESCRIPTION OF PRODUCTS EVALUATED	14
TEST METHODS.....	15
TEST RESULTS	15-17
CONCLUSIONS	18
RECOMMENDATIONS	18



BLOCK PROGRAM LABORATORY REPORT



PROSOCO, Inc.

Page 2

ATTACHMENTS

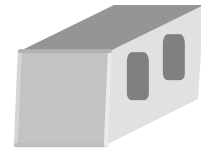
Technical Services TECH Note RILEM Test Method No. II.4

Product Data literature for all products evaluated

Material Safety Data Sheets for all products evaluated



BLOCK PROGRAM LABORATORY REPORT



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Page 3

FOR: Jesse Borchert
Cc: Mike Dickey
Kevin Gwinn

SUBJECT: King's Material
3800 S. 1st Street
Eldridge, IA 52748

DATE: October 27, 2000

PROJECT: 0009-16 BP

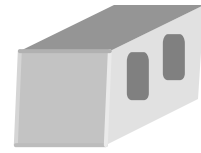
SAMPLES SUBMITTED: 13 Integrally colored concrete CMU faces

<u>Block</u>	<u>Color</u>	<u>Size</u>
#100 Rough face	Purple	16" x 8" x 1"
#200 Rough face	Red	16" x 8" x 1"
#300 Rough face	Smoke Gray	16" x 8" x 1"
#325 Rough face	Gray	16" x 8" x 1"
#400 Rough face	Sandstone	16" x 8" x 1"
#425 Rough face	Tan	16" x 8" x 1"
#500 Rough face	Brown	16" x 8" x 1"
#525 Rough face	Light Brown	16" x 8" x 1"
#600 Rough face	Dark Brown	16" x 8" x 1"
#700 Rough face	Natural Gray	16" x 8" x 1"
#800 Rough face	White Gray	16" x 8" x 1"
#825 Rough face	Light Gray	16" x 8" x 1"
#850 Rough face	Buff	16" x 8" x 1"

Submitted by : King's Material
550 42nd St.
Bettendorf, IA 52722



BLOCK PROGRAM LABORATORY REPORT



PROSOCO, Inc.

Page 4

PURPOSE OF TESTING:

Thirteen integrally colored rough face concrete blocks with large, small and fine aggregate were submitted for testing using PROSOCO's new construction cleaning and water repellent products.

A. Cleaning Concrete Masonry Units: Sure Klean® New Construction Cleaners were evaluated 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 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 3 days and 7 days of curing.

Refer to “*Note: When cleaning integrally colored CMU” in the following section, “Surface Alteration Testing.”

B. Surface Alteration Testing - Sure Klean® Custom Masonry 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.

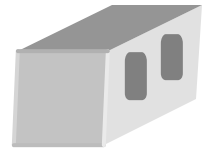
Surface Pigment Alteration/Removal* is the visual examination of the CMU comparing the surface pigmentation of the untreated control to surfaces cleaned with selected product(s) at given dilutions.

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.



BLOCK PROGRAM LABORATORY REPORT



PROSOCO, Inc.

Page 5

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

- 0 – no change
- 1 – 1-24% change – slight
- 2 – 25-49% change – moderate
- 3 – 50-74% change – heavy
- 4 – 75-100% change – excessive

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

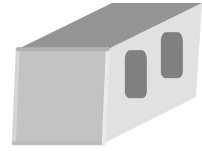
Integrally colored concrete masonry units (CMUs) frequently have high amounts of pigments concentrated on the surface of the cured concrete unit. Variation of surface pigment concentrations from one CMU to the next creates a blotchy appearance in the completed wall. Allowed to remain on the surface of 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[®] Weather Seal Siloxane WB Concentrate (1:9, 1:14), Sure Klean[®] Custom Masonry Sealer (concentrate) and Sure Klean[®] Weather Seal Siloxane PD were evaluated for their ability to provide water repellency to the submitted samples.



BLOCK PROGRAM LABORATORY REPORT



PROSOCO, Inc.

Page 6

CLEANING PRODUCTS EVALUATED

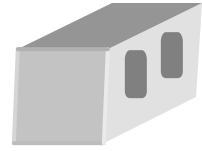
BLOCK TYPE	Custom Masonry Cleaner
All Colors of Rough Face CMUs	1:4
	1:6

SURFACE ALTERATION PRODUCTS EVALUATED

BLOCK TYPE	Custom Masonry Cleaner
All Colors of Rough Face CMUs	1:4
	1:6

WATER REPELLENT PRODUCTS EVALUATED

Block Type	Dilution	Product
All Colors of Rough Face CMUs	1:9 and 1:14	Siloxane WB
	Concentrate	Custom Masonry Sealer
	Concentrate	Siloxane PD



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.

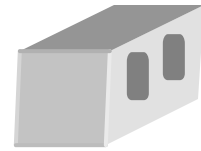
TEST METHOD – Cleaning

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(1:4, 1:6)3 minutes
4. Pressure rinse thoroughly.



BLOCK PROGRAM LABORATORY REPORT



PROSOCO, Inc.

Page 8

Test Results - Cleaning

Block Type	Cleaner	Dilution	Cure	Effectiveness
All Colors of Rough Face CMUs	Custom Masonry Cleaner	1:4	3 day	100%
		1:4	7-day	100%
		1:6	3 day	100%
		1:6	7 day	100%

CONCLUSIONS - Cleaning:

Based on the test data, all of the submitted block samples were efficiently cleaned with each dilution of the selected PROSOCO Inc.'s cleaning products. 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[®] Custom Masonry Cleaner tested affected the substrate in a similar manner, removing heavy concentrations of pigmented matrix from the rough and smooth block faces, exposing small and large aggregate, and enhancing the natural appearance of the integrally colored concrete masonry unit.

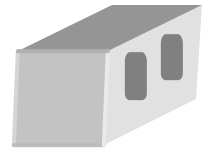
RECOMMENDED PRODUCTS AND DILUTIONS - CLEANING:

Based on these evaluations, all of the dilutions of Custom Masonry Cleaner tested can be recommended for job site testing. They all are effective in removing excess mortar, and they all assist 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 Custom Masonry Cleaner diluted with 6 parts fresh water.



BLOCK PROGRAM LABORATORY REPORT



PROSOCO, Inc.

Page 9

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.

TEST METHOD – Surface Alteration Testing:

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

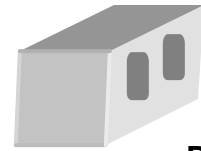
Sure Klean® Custom Masonry Cleaner evaluated at dilution 1:4 and 1:6. The following procedure was used:

1. Prewet the surface with water.
2. Apply each cleaner at the appropriate dilutions.
3. Allow 3-5 minute exposure time.
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.



BLOCK PROGRAM LABORATORY REPORT



PROSOCO, Inc.

Page 10

Surface Alteration Results:

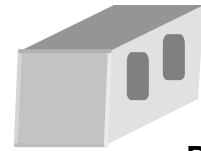
Substrate: #100		Pigment Color: Purple			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:4	2	2	1	0
Custom Masonry Cleaner	1:6	1	2	1	0
Substrate: #200		Pigment Color: Red			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:4	2	2	1	0
Custom Masonry Cleaner	1:6	1	2	1	0
Substrate: #300		Pigment Color: Smoke Gray			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:4	2	2	1	0
Custom Masonry Cleaner	1:6	1	2	1	0
Substrate: #325		Pigment Color: Gray			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:4	2	2	1	0
Custom Masonry Cleaner	1:6	1	2	1	0

Scale used for reporting results of all categories

- | | |
|------------------------------|--------------------------------|
| 0 – no change | 3 – 50-74% change – heavy |
| 1 – 1-24% change – slight | 4 – 75-100% change – excessive |
| 2 – 25-49% change – moderate | |



BLOCK PROGRAM LABORATORY REPORT



PROSOCO, Inc.

Page 11

Surface Alteration Results Continued:

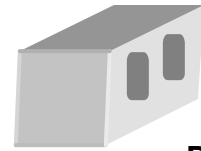
Substrate: #400		Pigment Color: Sandstone			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:4	2	2	1	0
Custom Masonry Cleaner	1:6	1	2	1	0
Substrate: #425		Pigment Color: Tan			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:4	2	2	1	0
Custom Masonry Cleaner	1:6	1	2	1	0
Substrate: #500		Pigment Color: Brown			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:4	2	2	1	0
Custom Masonry Cleaner	1:6	1	2	1	0
Substrate: #525		Pigment Color: Light Brown			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:4	2	2	1	0
Custom Masonry Cleaner	1:6	1	2	1	0

Scale used for reporting results of all categories

- | | |
|------------------------------|--------------------------------|
| 0 – no change | 3 – 50-74% change – heavy |
| 1 – 1-24% change – slight | 4 – 75-100% change – excessive |
| 2 – 25-49% change – moderate | |



BLOCK PROGRAM LABORATORY REPORT



PROSOCO, Inc.

Page 12

Surface Alteration Results Continued:

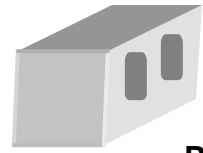
Substrate: #600		Pigment Color: Dark Brown			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:4	2	2	1	0
Custom Masonry Cleaner	1:6	1	2	1	0
Substrate: #700		Pigment Color: Natural Gray			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:4	2	2	1	0
Custom Masonry Cleaner	1:6	1	2	1	0
Substrate: #800		Pigment Color: White Gray			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:4	2	2	1	0
Custom Masonry Cleaner	1:6	1	2	1	0
Substrate: #825		Pigment Color: Light Gray			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:4	2	2	1	0
Custom Masonry Cleaner	1:6	1	2	1	0
Substrate: #850		Pigment Color: Buff			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:4	2	2	1	0
Custom Masonry Cleaner	1:6	1	2	1	0

Scale used for reporting results of all categories

- | | |
|------------------------------|--------------------------------|
| 0 – no change | 3 – 50-74% change – heavy |
| 1 – 1-24% change – slight | 4 – 75-100% change – excessive |
| 2 – 25-49% change – moderate | |

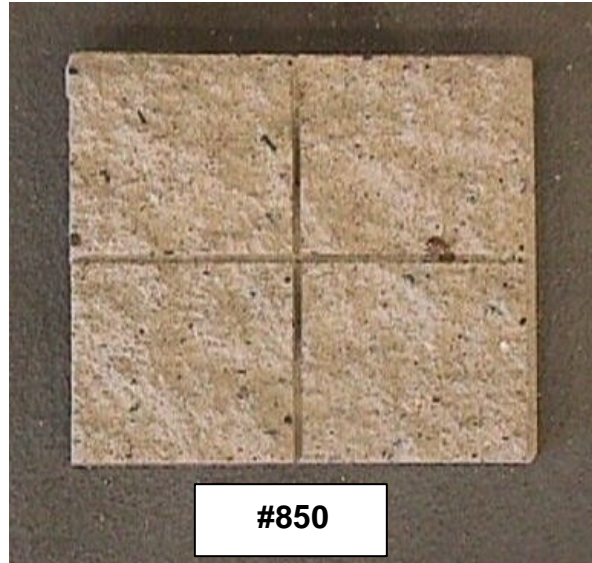


BLOCK PROGRAM LABORATORY REPORT

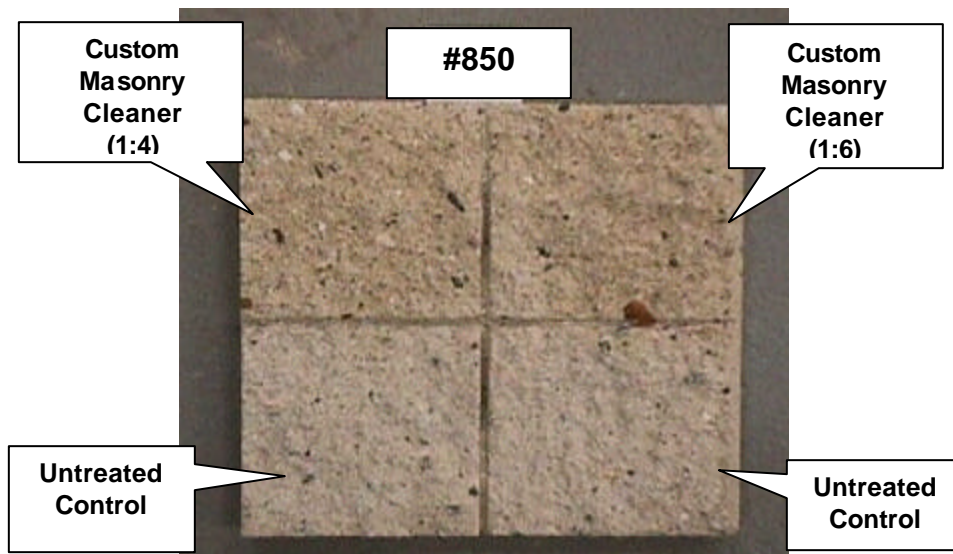


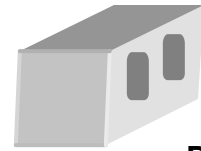
Photographs of block during cleaning evaluation

Untreated Control



3 Day Mortar Cleaning





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 which is ideal for application to either dense or porous masonry surfaces.

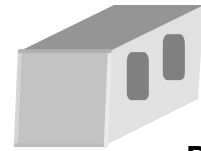
Sure Klean[®] Weather Seal Siloxane PD - A ready-to-use, water-based silane/siloxane water repellent designed for use on concrete and masonry surfaces. This solvent-free water repellent penetrates and chemically bonds deep within the masonry substrate to provide long-lasting protection.

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 on application. All treatments were allowed to cure for 14 days prior to testing.



BLOCK PROGRAM LABORATORY REPORT



TEST METHODS - Protective Water Repellents:

Capillary Water Absorption Test: PROSOCO Test 8: 60 minutes

Samples were tested by placing the treated face on a water-saturated sponge and recording its weight after 10-minute, 30-minute, and 60-minute intervals.

For laboratory treated samples, water absorption is determined by comparing the dry weight of the sample with its weight after face is placed onto water saturated sponge at 10-minute, 30-minute, and 60-minute intervals.

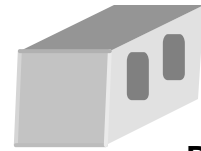
TEST RESULTS - Protective Water Repellents:

Capillary Water Absorption Test: PROSOCO Test 8: 60 minutes

	% Effectiveness (60 Minutes)
#100	
Untreated Control	0.0%
Custom Masonry Sealer	96.4%
Siloxane WB (1:9)	95.6%
Siloxane WB (1:14)	97.7%
Siloxane PD	98.9%
#200	
Untreated Control	0.0%
Custom Masonry Sealer	98.0%
Siloxane WB (1:9)	98.6%
Siloxane WB (1:14)	97.7%
Siloxane PD	97.5%
#300	
Untreated Control	0.0%
Custom Masonry Sealer	98.0%
Siloxane WB (1:9)	97.9%
Siloxane WB (1:14)	97.3%
Siloxane PD	99.0%



BLOCK PROGRAM LABORATORY REPORT



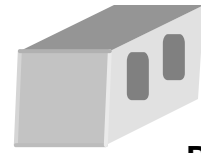
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Page 16

	% Effectiveness
#325	
Untreated Control	0.0%
Custom Masonry Sealer	97.9%
Siloxane WB (1:9)	93.3%
Siloxane WB (1:14)	95.0%
Siloxane PD	93.5%
#400	
Untreated Control	0.0%
Custom Masonry Sealer	86.8%
Siloxane WB (1:9)	93.2%
Siloxane WB (1:14)	91.7%
Siloxane PD	80.9%
#425	
Untreated Control	0.0%
Custom Masonry Sealer	97.9%
Siloxane WB (1:9)	97.7%
Siloxane WB (1:14)	98.2%
Siloxane PD	96.4%
#500	
Untreated Control	0.0%
Custom Masonry Sealer	98.3%
Siloxane WB (1:9)	97.5%
Siloxane WB (1:14)	96.9%
Siloxane PD	96.5%
#525	
Untreated Control	0.0%
Custom Masonry Sealer	98.3%
Siloxane WB (1:9)	98.3%
Siloxane WB (1:14)	97.0%
Siloxane PD	97.4%
#600	
Untreated Control	0.0%
Custom Masonry Sealer	89.2%
Siloxane WB (1:9)	97.9%
Siloxane WB (1:14)	95.8%
Siloxane PD	91.3%



BLOCK PROGRAM LABORATORY REPORT



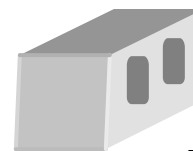
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Page 17

	% Effectiveness
#700	
Untreated Control	0.0%
Custom Masonry Sealer	97.4%
Siloxane WB (1:9)	98.2%
Siloxane WB (1:14)	96.6%
Siloxane PD	97.2%
#800	
Untreated Control	0.0%
Custom Masonry Sealer	97.7%
Siloxane WB (1:9)	96.9%
Siloxane WB (1:14)	96.2%
Siloxane PD	96.6%
#825	
Untreated Control	0.0%
Custom Masonry Sealer	90.8%
Siloxane WB (1:9)	94.9%
Siloxane WB (1:14)	97.8%
Siloxane PD	86.6%
#850	
Untreated Control	0.0%
Custom Masonry Sealer	96.8%
Siloxane WB (1:9)	96.8%
Siloxane WB (1:14)	96.4%
Siloxane PD	96.9%



BLOCK PROGRAM LABORATORY REPORT



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Page 18

CONCLUSIONS - Protective Water Repellents:

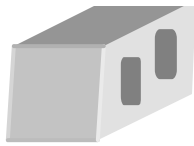
Based upon laboratory evaluations, all of the submitted CMU exhibited above average water repellency when treated with Sure Klean[®] Custom Masonry Sealer, Weather Seal[®] Siloxane WB Concentrate (diluted 1:9 and 1:14) with fresh water and Sure Klean[®] Weather Seal Siloxane PD. Sure Klean[®] Custom Masonry Sealer darkened the substrate creating a natural wet look. No other water repellents changed the appearance of the substrate.

RECOMMENDATIONS - Protective Water Repellents:

Based on evaluations, either Sure Klean[®] Custom Masonry Sealer, Siloxane WB Concentrate (1:9 and 1:14), or Sure Klean[®] Weather Seal Siloxane PD can be recommended for job-site testing to provide water repellency. For added graffiti protection and to more effectively facilitate graffiti removal as well as color enhancement, Custom Masonry Sealer should be recommended for job site testing.

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



Laboratory Report

Block Program Evaluation

**King's Material
Bettendorf, IA**

Project No. 0009-16 BP

Prepared For:

Jesse Borchert

**King's Material
3800 S. 1st Street
P. O. Box 320
Eldridge, IA 52748**

Prepared By:



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