



BLOCK PROGRAM LABORATORY REPORT

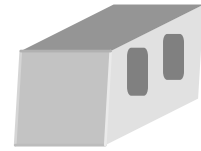


TABLE OF CONTENTS

SAMPLES SUBMITTED.....3

PURPOSE OF TEST4

PRODUCTS EVALUATED.....5

SECTION A – CLEANING INTEGRALLY COLORED CMUs

DESCRIPTION OF PRODUCTS EVALUATED.....6

TEST METHOD.....6

TEST RESULTS.....7

CONCLUSIONS.....7

RECOMMENDATION.....7

SECTION B - ADVERSE EFFECTS

DESCRIPTION OF PRODUCTS EVALUATED.....8

TEST METHOD.....8

TEST RESULTS.....8

PHOTO-CLEANING & ADVERSE EFFECTS.....9

SECTION C - PROTECTIVE WATER REPELLENTS

DESCRIPTION OF PRODUCTS EVALUATED..... 10

TEST METHODS 11

TEST RESULTS..... 11-12

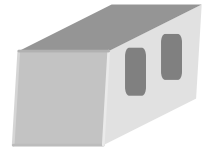
PHOTO-WEATHER SEAL TREATMENTS 12

CONCLUSIONS 13

RECOMMENDATIONS 13



BLOCK PROGRAM LABORATORY REPORT



PROSOCO, Inc.

Page 2

ATTACHMENTS

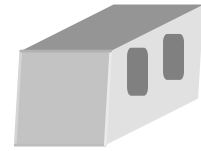
Technical Services TECH Note RILEM Test Method No. II.4

Product Data literature for all products evaluated

Material Safety Data Sheets for all products evaluated



BLOCK PROGRAM LABORATORY REPORT



PROSOCO, Inc.

Page 3

FOR: Richard Mirowski
cc: Mike Dickey

SUBJECT: Calstone Company
1155 Aster Avenue
Sunnyvale, CA 94086

DATE: October 4, 2000

PROJECT: 0008-01 BP

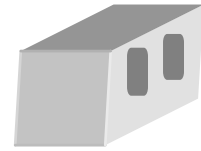
SAMPLES SUBMITTED:

<u>Block</u>	<u>Color</u>	<u>Size</u>
(A) #100 Rough Face CMU	Gray	8" x 8" x 16"
(B) #112 Rough Face CMU	Buff	8" x 8" x 16"
(C) #200 Rough Face CMU w/ black aggregate	Smoke	8" x 8" x 16"
(D) #5500 Rough Face CMU w/ Dry Block	Gray	8" x 8" x 16"
(E) #500 Rough Face CMU w/ black & white aggregate	Smoke	8" x 8" x 16"
(F) #5500 Rough Face CMU w/ Dry Block	Light Gray	8" x 8" x 16"
(G) #336 Rough Face CMU	Reddish Brown	8" x 8" x 16"

Submitted by: Richard Mirowski



BLOCK PROGRAM LABORATORY REPORT



PROSOCO, Inc.

Page 4

PURPOSE OF TESTING:

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

A. Cleaning Custom 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, 7 days, and 14 days of curing.

Note: Cleaning Integrally Colored CMUs - Custom Masonry Units 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.

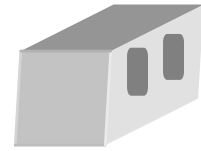
Sure Klean[®] Custom Masonry Cleaner was tested at various dilutions to clean the CMUs.

B. Adverse Effects- Sure Klean[®] 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[®] Weather Seal Siloxane WB Concentrate, Sure Klean[®] Weather Seal Siloxane PD, and Sure Klean[®] Custom Masonry Sealer were evaluated on split face CMUs only for their ability to provide water repellency to the submitted samples.



BLOCK PROGRAM LABORATORY REPORT



PROSOCO, Inc.

Page 5

CLEANING PRODUCTS EVALUATED

BLOCK TYPE	Custom Masonry Cleaner
Rough Face CMUs	1:2
	1:4
	1:6

ADVERSE EFFECTS PRODUCTS EVALUATED

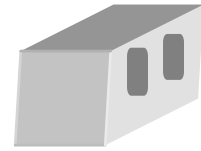
BLOCK TYPE	Custom Masonry Cleaner
Rough Face CMUs	1:2
	1:4
	1:6

WATER REPELLENT PRODUCTS EVALUATED

BLOCK TYPE	Custom Masonry Sealer	Siloxane WB Concentrate	Siloxane WB Concentrate	Siloxane PD
Rough Face CMUs	Concentrate	1:9	1:14	Concentrate



BLOCK 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.

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TEST METHOD – Cleaning

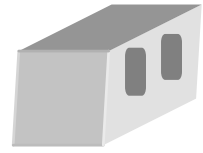
Mortar Staining- In an effort to simulate job site mortar staining, smears of Type S mortar were applied to the face of each concrete masonry unit. Following initial 24-hour cure, heavy globs of mortar were knocked off. The remaining smear was allowed to cure for 14 days. Cleaning trials were then conducted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



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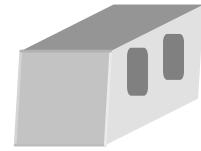


PROSOCO, Inc.

Page 7



BLOCK PROGRAM LABORATORY REPORT



PROSOCO, Inc.

Page 8

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Test Results - Cleaning

Block Type	Cleaner	Dilution		Effectiveness
Rough Face CMUs	Custom Masonry Cleaner	1:2	14 Day	100%
		1:4	14 Day	100%
		1:6	14 Day	99%

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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 blocks. In terms of cleaners, all dilutions of Sure Klean® Custom Masonry Cleaner tested affected the substrate in a similar manner, removing excess mortar and heavy concentrations of pigmented matrix from the block face, exposing small and large aggregate, and enhancing the natural appearance of the integrally colored concrete masonry unit. Sure Klean® Custom Masonry Cleaner in dilutions 1:2 and 1:4 provided the best removal of mortar smears 14 days old from the block face.

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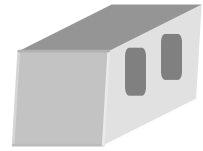
RECOMMENDED PRODUCTS AND DILUTIONS - CLEANING:

Based on these evaluations, Sure Klean® 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 all effective in removing excess mortar, and they assist in improving the color and uniformity of the concrete blocks. The most appropriate cleaner and dilution should be determined on the specific job site, and will depend 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 textured split faced CMUs, clean within 3-7 days of completion using Custom Masonry Cleaner diluted with 6 parts fresh water.



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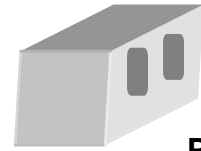


PROSOCO, Inc.

Page 9



BLOCK 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.

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TEST METHOD - Adverse Effects:

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

Sure Klean[®] Custom Masonry Cleaner evaluated at dilution 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.

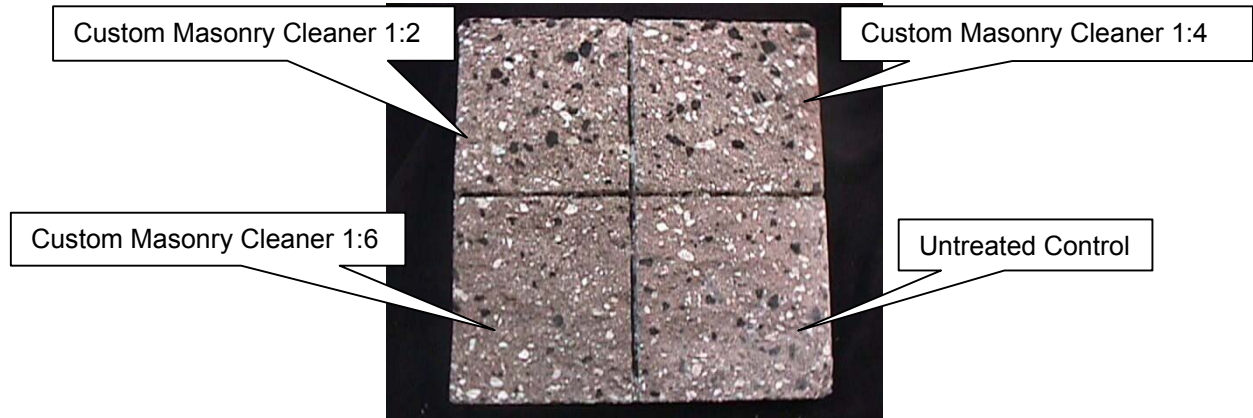
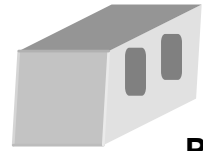
* Pressure rinsing was conducted at approximately 800 psi with a warm water flow rate of 1.9 gallons per minute.

TEST RESULTS - Adverse Effects Evaluation:

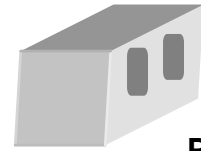
Block Type	Cleaner	Adverse Effects
Rough Face CMUs	Custom Masonry Cleaner (1:2)	Moderate exposure of aggregate/ Darkening of matrix
	Custom Masonry Cleaner (1:4)	Slight exposure of aggregate/ Darkening of matrix
	Custom Masonry Cleaner (1:6)	Very slight exposure of aggregate/ Darkening of matrix



BLOCK PROGRAM LABORATORY REPORT



#336 Rough Face



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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® 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. Custom Masonry Sealer also provides 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 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.

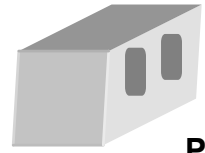
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SAMPLE PREPARATION - Protective Water Repellents:

The submitted CMU faces were sawn off each block and the face section was cut in half 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.



BLOCK PROGRAM LABORATORY REPORT

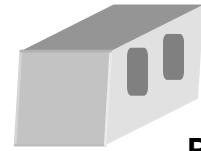


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Page 13



BLOCK PROGRAM LABORATORY REPORT



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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 wind pressure.

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TEST RESULTS - Protective Water Repellents:

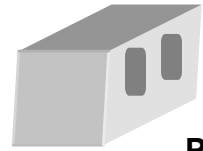
Water Absorption Tube Test: RILEM II.4, 60mph, 20 Minutes

Results

(A) #100 R/F Gray	
Untreated Control	<40mph
Custom Masonry Sealer	60 mph
Siloxane WB (1:9)	57 mph
Siloxane WB (1:14)	60 mph
Siloxane PD	60 mph
(B)#112 R/F Buff	
Untreated Control	<40mph
Custom Masonry Sealer	60 mph
Siloxane WB (1:9)	60 mph
Siloxane WB (1:14)	60 mph
Siloxane PD	60 mph
(C) #200 R/F Gray	
Untreated Control	<40mph
Custom Masonry Sealer	60 mph
Siloxane WB (1:9)	60 mph
Siloxane WB (1:14)	60 mph
Siloxane PD	50 mph
(D) #5500 R/F Smoke w/ Dry Block	
Untreated Control	<40mph
Custom Masonry Sealer	60 mph
Siloxane WB (1:9)	60 mph



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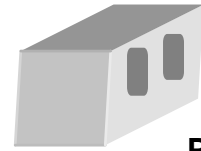
PROSOCO, Inc.

Page 15

Siloxane WB (1:14)	60 mph
Siloxane PD	60 mph

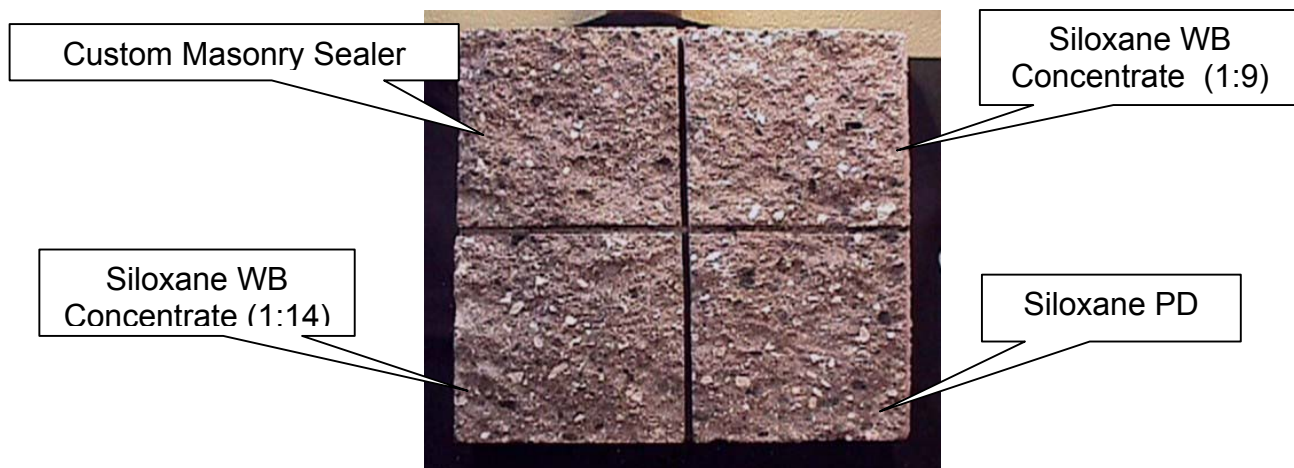


BLOCK PROGRAM LABORATORY REPORT



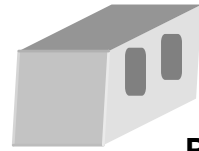
(E) #500 R/F Smoke	
Untreated Control	<40mph
Custom Masonry Sealer	60 mph
Siloxane WB (1:9)	60 mph
Siloxane WB (1:14)	60 mph
Siloxane PD	57 mph
(F)#5500 R/F Gray w/ Dry Block	
Untreated Control	<40mph
Custom Masonry Sealer	60 mph
Siloxane WB (1:9)	60 mph
Siloxane WB (1:14)	60 mph
Siloxane PD	55 mph
(G) #336 R/F Reddish Brown	
Untreated Control	<40mph
Custom Masonry Sealer	60 mph
Siloxane WB (1:9)	60 mph
Siloxane WB (1:14)	60 mph
Siloxane PD	60 mph

#336 Rough Face





BLOCK PROGRAM LABORATORY REPORT



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Page 17

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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, Sure Klean[®] Weather Seal Siloxane WB Concentrate (diluted with fresh water 1:9; 1:14) or Sure Klean[®] Weather Seal Siloxane PD. Sure Klean[®] Custom Masonry Sealer enhanced the natural appearance of the stone. Sure Klean[®] Weather Seal Siloxane WB Concentrate and Sure Klean[®] Weather Seal Siloxane PD had no change in visual appearance.

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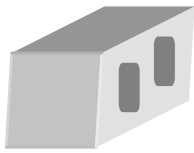
RECOMMENDATIONS - Protective Water Repellents:

Based on evaluations, both Sure Klean[®] Custom Masonry Sealer, Siloxane WB Concentrate (1:9 and 1:14), and Sure Klean[®] Weather Seal Siloxane PD can be recommended for job site testing to provide water repellency. For water repellent protection and to simplify removal of applied graffiti, Custom Masonry Sealer can be recommended for job site evaluation.

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



Laboratory Report

Block Program Evaluation

**Calstone Company
Sunnyvale, CA**

Project No. 0008-01 BP

Prepared For:

Richard Mirowski

Prepared By:



***PROSOCO, Inc.
October 2000***